6-3-2020 11:00 AM

Interprofessional Role Clarification Among Licensed Health Care Practitioners in Rural and Smaller Community Hospitals

Dianne E. Allen, *The University of Western Ontario*

Supervisor: Orchard, Carole, *The University of Western Ontario*

A thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Nursing

Abstract

Enhancement of healthcare systems has increased the demand for healthcare practitioners (HCPs) to share client care by functioning in a variety of roles within interprofessional teams. When these roles are integrated into team practice, the outcome can be collaborative sharing of client care responsibilities but without sharing, team members can experience uncertainty as to what their contributions should be. Understanding this shift in practice begins with role clarification, whereby HCPs have self-awareness about their own roles, and then gain an understanding of the roles of others in their collaborative practitioner groupings. Interprofessional role clarification (IPRC) is thought to be necessary for collaborative practice, but a paucity of literature and measurement instruments address its nature and processes, resulting in gaps that limit our knowledge. This study examined factors that potentially influence HCPs' capacity to achieve IPRC when engaging with IP team members. Structural equation modeling was used to examine the relationships between contributing antecedents (general self-efficacy, conscientiousness, work engagement) and HCPs' IPRC and furthermore whether these relationships were mediated by their work engagement and/or moderated by members' reciprocity with team members. The competency of IPRC require further development; this study began with a concept analysis of role clarification as a means to identify its attributes to generate instrument items, followed by psychometric testing of an instrument designed to measure its effectiveness in licensed HCPs. The model was tested using a convenience sample of 238 HCPs from 15 licensed professions who provided client care. The preliminary model demonstrated a reasonably good fit [X^2 (df) = (111.65/48) = 2.33, p<.0001, GFI =.93, RMSEA = .08, SRMR=.07, CFI =.94]. Results revealed a significant

relationship between general self-efficacy and IPRC ($\beta = .41, <.001$). The Interprofessional Role Clarification Scale was found to be valid and reliable, however additional testing is needed to strengthen these findings. Further research discover contributing antecedent variables to IPRC. The results have implications for nursing, healthcare practice, continuing health care education, as well as for post-secondary and undergraduate health professions education. As well, the findings have relevance to guide future research in IPRC and interprofessional practice.

Keywords: interprofessional role clarification (IPRC), Interprofessional Role Clarification Scale (IPRCS), measurement, general self-efficacy (GSE), self-efficacy, healthcare practitioners, healthcare providers, healthcare practice, structural equation modelling, role theory

Summary for Lay Audience

When providing healthcare, those providing the care work must work well together to ensure that the care is safe, effective and takes clients' needs and wishes into account. When care providers (HCPs) from two or more healthcare professions work together to share the care for a patient, this is referred to as interprofessional collaborative care. Research suggests HCPs working within a healthcare team must fully understand their own professional roles and the roles of other professions because without this understanding, problems can develop between team members and can negatively affect patient care. Clarifying roles within the IP team has been recommended as a necessary competency for HCPs, however, there is limited research to back this claim. The intent of this research study was to explore factors that could contribute to interprofessional role clarification (IPRC). No instrument to measure IPRC was found, therefore, the Interprofessional Role Clarification Scale was developed for this study. In total, 238 HCPs from 15 licensed healthcare professions participated in this study. A concept analysis of IPRC was completed to help define IPRC and outline its antecedents, attributes and consequences. A literature review explored IPRC with possible links to conscientiousness, general self-efficacy (GSE), work engagement, and reciprocity with coworkers within a proposed framework. The results indicated that HCPs overall reported only a midrange level of IPRC, with room to improve it. Of all the concepts mentioned above, only GSE had a significant impact on IPRC; this meant that as HCPs level of GSE went up, their level of IPRC also went up. If we can guide HCPs in building their self-efficacy, this could raise their levels of IPRC and provide further insight into role clarification. These contributions could help to facilitate development of IPRC as a key

component in team building as well as a professional competency.This in turn, could be valuable for HCPs, healthcare organizations, post-secondary healthcare education, and future research.

Co-Authorship Statement

I, Dianne Allen, acknowledge that this thesis includes five integrated manuscripts in addition to an introducation and conclusion chapter. These were produced as a result of collaboration with my PhD supervisor and committee members. In the five manuscripts, the primary contribution was made by me in terms of methodology, study design, research ethics board applications, conduction of the literature review, development of the concept analysis, data collection, review and analysis of the data and writing the manuscript. The contribution of Dr. Carole Orchard was provided by providing supervison, with substantial intellectual and editorial support. Contributions of supervisory committee members, Dr. Mickey Kerr, Dr. Eunice Gorman and Dr. Marilyn Evans provided further supervision, guidance, intellectual and editorial support in writing a number of iterations of the manuscripts.

Acknowledgments

This dissertation would not have been possible if not for the support of many wonderful people surrounding me. Thank you to my supervisor, Dr. Carol Orchard for her patience, encouragement and wisdom imparted on me throughout this journey. My gratitude is also extended to my advisory committee for their input throughout this process - Dr. Mickey Kerr for his ongoing input, encouragement and insight during the statistical analysis, and Drs. Eunice Gorman and Marilyn Evans for their encouragement and feedback. I also want to express my sincere gratitude to Dr. Carol Wong, despite her newly retired status, who provided me with much needed advice and direction regarding the process of parceling.

I am grateful to the healthcare practitioners who took the time participate in my study and the many leaders from the hospitals and alliances that acknowledged the value of my research and granted me permission to conduct the research. Thank you also to at Conestoga College for their ongoing support that helped keep me going, my colleagues especially in listening to me in the moments where I was overwhelmed.

Finally, my family and friends have been there every step of this long process and patiently understood when I bowed out of "life" on many occasions to sit in front of my computer to do PhD work. I can't imagine how tiring it was to listen to me at times! My husband, Brian helped me in whatever way he could to make the journey easier; I asked for many things. To Tara, Paul, Scott and Sean, thank you for listening to me during my ups and downs and giving me what I needed, when I needed it. My parents, Cindy and Al, have always supported me in life and studies and even at this stage in my life, I have leaned on you and am grateful that I have you in my corner.

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Chapter 1 - Interprofessional Role Clarification in Licensed Healthcare Providers

Interprofessional collaborative practice (IPCP) is meant to provide a diversity of perspectives for safe and effective care (World Health Organization (WHO), 2010; 2005) and is crucial to help alleviate the health system challenges throughout the world (WHO, 2013). As such, the Canadian healthcare system continues to evolve with the overall goal to provide Canadians with care excellence. One proposed approach to reach this excellence is for health and social care providers (HCPs) to develop and maintain collaborative interprofessional (IP) relationships [Canadian Interprofessional Health Collaborative (CIHC), 2010]. Moreover, healthcare practice with the increasing complexity of patient's comorbidities and social issues has increased the demand for healthcare providers to function collaboratively in a variety of team roles. To assist governments in moving towards this healthcare delivery shift, professional licensing bodies have set entry to practice expectations for their members to competently engage in IP collaborative healthcare practice (College of Nurses of Ontario, 2016; College of Occupational Therapists of Ontario, 2017; College of Physicians and Surgeons of Ontario (CPSO), 2007; College of Physiotherapists of Ontario, 2017; Ontario College of Social Workers and Social Service Workers, 2015).

1.1 Background and Significance

Individuals from different professions have varying profession-based viewpoints that collectively can more fully address patients' complex healthcare needs. However, this approach has a potential flaw since it is based on the assumption that these teams will collaboratively function well together. Instead, IP team members can have different views

regarding care based on their professional background (Verhaegh et al., 2017). When IP team members have practiced or been educated in environments that encourage them to articulate their own professional roles while also drawing on the knowledge of IP colleagues' roles, they will be better prepared to collaboratively share client care.

Interprofessional role clarification (IPRC) among HCPs is theorized as a way to develop interprofessional collaborative practice (IPCP) (Hardy & Conway, 1988) to support shared responsibility, to embrace new ideas and flexibility in providing client care (Adams, Orchard, Houghton, & Ogrin, 2014). Such teamwork is thought to be possible only with a clear understanding of each team member's role capacities based on identification of where members share aspects of their knowledge, skills, and expertise to enhance the quality of client care provided. While a full complement of expertise is needed to achieve the shared goal of effective IP collaborative client-centred care, disagreements and uncertainty about each other's capabilities around how to reach goals can cause interference with the effectiveness of their teamwork (Conway & Hardy, 1988). Conversely, when each team member's roles are known by all team members, there is a greater possibility of integrated team practice with collaborative sharing of client care responsibilities (Adams, Orchard, Houghton & Ogrin, 2012).

A number of role issues such as role conflict and role ambiguity can ensue if teams do not come together to share how they each might contribute to cient care (Conway & Hardy, 1988). When involved in a client's care, team contact through a sharing of each member's knowledge, skills, and expertise can reduce anxiety when individuals are new to the team (Pettigrew & Tropp, 2006). Sharing about each other's roles is a key component in IPCP and can be achieved through IPRC.

IPRC is identified as crucial to ensure that HCPs can function within a variety of roles across a team (CIHC, 2010) while a lack of clarity is known to undermine sharing and collaboration (Brown et al., 2011; Goh & Di Prospero, 2017) leading to fragmented care (Fitzgerald & Davison, 2008; Parker et al., 2013), and threats to patient safety (Frank & Brien, 2008; WHO, 2010). It has been reported that when IP role sharing occurs, clients report higher satisfaction (Cutler, Morecroft, Carey & Kennedy, 2019; Körner et al., 2016). To achieve IPRC, members of the IP team must be able to engage in discourses to ascertain an understanding of what other members bring to client-centered care in addition to their own contributions. Thus team-based practice needs to begin with HCPs gaining self- awareness about their own roles, then having the capacity to interact with their team members to understand roles of others (Conway & Hardy, 1988)

While a strong consensus exist advising the need for role clarification, there is limited understanding of what this means in terms of collaborative practice in healthcare teams, leading to calls to explore IPRC as a tenet of IP collaboration (CIHC, 2010). Therefore, there is a need to examine the factors and conditions that may influence HCPs' capacity to achieve IPRC when engaging with IP team members, and further, how they may reciprocate in sharing their role knowledge, skills, and expertise as part of their client care planning. Since varying viewpoints can impede reaching a shared understanding about team members' care roles, clear articulation of role contributions by all IP team members must occur as an early step in team collaborative practice. Subsequently, it is proposed that addressing the above will provide learning about how HCPs complement one another in providing a reciprocal and shared approach to client-centred collaborative

care. It is also theorized that effective and safe client-centred care necessitates engagement in and valuing of IP team members' integrated roles.

1.2 Purpose of the Study

The purpose of this study was to examine the factors and conditions that may influence HCPs' capacity to achieve IP role clarification when engaging with IP team members. To study these factors and conditions a theorized model was used in which relationships between contributing antecedents (self-efficacy, conscientiousness, work engagement) and effective HCPs' IP role clarification were proposed, with further examination of whether this relationship was moderated by members' role reciprocity and/or mediated by their work engagement in teamwork. The paucity of measures to assess IPRC required development and testing of the psychometric properties of an instrument designed to measure the effectiveness of IPRC in licensed HCPs. The development of the Interprofessional Role Clarification Scale (IPRCS) required a concept analysis of interprofessional role clarification to generate instrument items.

1.3 Research Questions

The overall research questions included:

1) What are the relationships between HCPs' personal resources (conscientiousness, general self-efficacy), work engagement and IP role clarification?
2) Does work engagement mediate the relationship between conscientiousness and IPRC?
3) Does reciprocity moderate the relationship between work engagement and IP role clarification?

This study methodology used a non-experimental cross-sectional survey to test the

proposed model linking the personal resources (conscientiousness and general self-efficacy), work engagement, and reciprocity constructs with the outcome of effective interprofessional role clarification. The data analysis used both descriptive and inferential statistical procedures. In the latter phase to test the model fit, structural equation modelling was employed to determine the best fit for the theorized model.

1.4 Overview of Chapters and Integrated Article Format

This work has been prepared using the integrated article format as outlined by the Western University School of Graduate and Postdoctoral Studies in London Ontario and consists of seven chapters. The body of the thesis includes the current chapter (Chapter One), which is an introduction to the entire dissertation. Chapters Two, Three, Four, Five and Six are manuscripts developed in a publication format, each with a distinct focus but with some overlap. Chapter Seven provides a general discussion and an integrated summation and conclusions for the entire research study.

Chapter Two is a manuscript entitled Interprofessional Role Clarification: A Concept Analysis. Since literature pertaining to interprofessional role clarification (IPRC) is scant, a concept analysis was conducted to identify important elements of the concept and to provide a clear conceptual meaning for the term, as recommended by Rodgers and Knafl (2000) and Walker and Avant, (2005). For this study, Walker and Avant's eight-step approach was selected as the framework since its linear steps worked well with the complexity of analysing role clarification first as two separate concepts (*role* and *clarification*) and then as a combined term. The eight steps are discussed in detail, gathering together the information on a set of antecedents, attributes, and consequences. It concludes with the operational definition for role clarification. This

analysis helped to identify the factors that might lead HCPs to carry out effective IPRC.

Chapter Three is entitled *Exploring Interprofessional Role Clarification: A Review of the Literature* and examines the literature surrounding factors and conditions that may influence HCPs' capacity to achieve IPRC. Specifically, the literature linking IPRC to other major concepts including conscientiousness, general self-efficacy, work engagement, and reciprocity with other care providers is presented. Finally, this chapter describes the conceptual framework derived from role theory (Hardy & Conway, 1988) and the CIHC National IP Framework (2010).

Chapter Four is entitled *Development and Testing of the Interprofessional Role Clarification Scale (IPRCS)* and reports on its development, testing and refinement process. The IPRCS was used to tap into the construct of IPRC in a sample of licensed health care practitioners caring for clients in rural and smaller community hospitals.

Chapter Five is entitled *Methodology for Investigating Interprofessional Role Clarification for Licensed Healthcare Practitioners in Rural and Smaller Community Hospitals* and presents the methodology and step by step process of the study and test of the theoretically derived model. Additionally, an overview of the study design and proposed data analysis procedures are presented.

Chapter Six is entitled *Explaining Effective IP Role Clarification in Healthcare Providers in Rural and Smaller Community Hospitals*. This manuscript presents the study results that sought to explore and describe contributing antecedents (conscientiousness, general self-efficacy), mediator (work engagement), and moderator (reciprocity with co-workers) to effective interprofessional role clarification. The testing and refinement of a theoretical model using structural equation modelling linking the variables to IPRC will

also be presented.

Chapter Seven, entitled *Interprofessional Role Clarification Study Summary, Limitations and Implications* presents a discussion of the findings, study limitations, the implications of the findings with recommendations regarding IPRC with respect to HCPs, healthcare organizations, post-secondary and continuing healthcare education, nursing and nursing education, and future research. Final conclusions pertaining to the entirety of this study and its findings will close this chapter.

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Chapter Two - Interprofessional Role Clarification: A Concept Analysis

2.1 Abstract

The concept of role clarification is widely used to describe a necessary competency for interprofessional collaboration of healthcare practitioners, however, little research to support its contribution exists. The use of role theory from the standpoint of healthcare practice could provide a better basis for the conceptual understanding of interprofessional role clarification (IPRC); the aim of this article is to report on the analysis of the concept of IPRC that was guided by Walker and Avant's approach. The literature search was conducted with bibliographic databases [Proquest, Cumulative Index to Nursing and Allied Health Literature (CINAHL) (1981-2019), Web of Science] published in English from 2009 to 2019. Internet search engines (Google, Google Scholar) and hand searches also included seminal literature earlier than 2009. The analysis resulted in elements including four attributes (engagement in formal and informal communication about own and others' roles, demonstration of professional knowledge and practice competency, embracement of new learning about roles, inclusion of different healthcare professions to achieve a client-centred approach), three antecedents for IPRC (at least two members, opportunities for role socialization, willingness to engage in collaborative practice, possession of knowledge, skills, and judgements of one's own profession), and a number consequences of IPRC for clients, IP team members, and healthcare organization. These elements could comprise an IPRC framework for studying IPRC and were important in proposing an operational definition for IPRC, presented in this article. The findings of this concept analysis integrate what is known about IPRC to begin to critically investigate its importance in practice. Completing these steps provided the framework and starting

point to proceed in the instrument development for effective IPRC and to help pinpoint key concepts that could influence IPRC.

Key Concepts: role clarification, interprofessional role clarification, healthcare, practitioners, healthcare providers, concept analysis, role theory

2.2 Introduction

Role clarification has been identified nationally and internationally as a key part of interprofessional collaborative practice (IPCP) in healthcare to ensure client safety and quality care while optimizing the use of costly resources (Canadian Interprofessional `Healthcare Collaborative (CIHC), 2010; Interprofessional Education Collaborative (IPEC), 2011; World Health Organization, (WHO) 2013). The focus on both safe and effective care has increased the demand for healthcare practitioners (HCPs) to function in a variety of team roles through IPCP. IPCP necessitates team members interacting with each other and working collaboratively by sharing responsibilities and decision-making for client care (Di Renna et al, 2016; Orchard, 2010; World Health Organization, 2013). When HPCs have limited understanding of each other's knowledge, skills, and expertise, role issues can result, causing uncertainty as to what their contribution to client care should entail (Adams, Orchard, Houghton & Ogrin, 2012), undermining teamwork (Körner et al., 2016) and collaboration (Brown et al., 2011) while leading to fragmented care (Fitzgerald & Davison, 2008).

While strong assertions tout the value of interprofessional role clarification (IPRC), supportive evidence is limited (Barr, 2010, CIHC, 2010). Successful collaboration is believed to rely partly on IP team members clarifying their roles to help to facilitate use of a full complement of expertise and skills within team members to optimize care and resources (WHO, 2013). A preliminary scan of the literature revealed that while IPRC is encouraged, the meaning of IPRC within the context of teamwork and interprofessional collaboration (IPC) is lacking, thus supporting the need to understand the antecedents to, the attributes of, and the consequences for IPRC. In this chapter, a

report on the concept analysis of IPRC that was carried out using Walker and Avant's (2005) methodology is presented.

2.3 Method and Aim of Concept Analysis Approach

A concept analysis was the method of choice to create meaning for interprofessional role clarification with the aim to clarify and operationally define the concept (Rodgers & Knafl, 2000; Walker & Avant, 2005). In the absence of robust literature with a major focus on role clarification, a decision was made to analyze the term, *role clarification,* as a means to identify important elements of the concept and to provide a clear conceptual meaning. Walker and Avant's (2005) eight-step framework (shown in Table 1) was used for this analysis since it provided a systematic method to examine role clarification and has been previously used in nursing research (Brush, Kirk, Gultekin, & Baiardi, 2011) and IP teamwork (Xyrichis & Ream, 2008).

Table 1

Walker and Avant's (2005) Eight-Step Approach for Concept Analysis

1. Selection of the concept
2. Determining aims or purposes of analysis
3. Discovery of uses and definitions of the concept
4. Determination of attributes
5. Construction of model case
6. Construction of borderline and contrary cases
7. Identification of antecedents and consequences
8. Defining empirical referents

2.3.1 Aim (Step 1 and Step 2).

The concept under study is role clarification. The purpose of the overall concept analysis was to gain insight into the meaning of IPRC within healthcare environments and to further to develop a meaningful and useful definition of the term for operational application in interprofessional practice and education.

2.3.2 Literature Search Process (Step 3-Discovery).

An initial search of the theoretical and empirical literature was conducted within Proquest, Cumulative Index to Nursing and Allied Health Literature (CINAHL) (1981-2019), Web of Science databases. Appendix A (A1-A5) includes figures for each of the key terms that were searched beginning with the concept *role clarification* (A1). Next, *role* and *interprofessional collaboration* were searched alone and in combination (A2), then were further combined with terms *shar** (A3)*, understand** (A4)*, and valu** (A5). Limits were sequentially applied in the searches including year 2009 forward, English only, peer-reviewed, and full text. Searches of the concepts are discussed in more detail below.

First, the concept, *role clarification* was searched as a key term, revealing very little seminal research that focused on role clarification, but yielding a few useful articles that alluded to its importance as a necessary component of teamwork. Only three recent research articles specifically explored role clarification, one in healthcare practitioners (Brault et al. 2014), one in health profession students (Hudson et al., 2017) and the third was a secondary analysis in the context of quality improvement and partnerships in chronic disease client care (Ly, Sibbald, Verma & Rocker, 2018).

Next, the terms *role and interprofessional collaboration* were used alone and in combination searching all years, yielding thousands of articles. When the limits (i.e. year 2009 forward, English only, peer-reviewed, and full text were applied, this resulted in 526 articles (A2). Following this, searches were conducted using each of terms *shar** (A3)*, understand**(A4)*, valu** (A5) alone and in combination with *role* AND *interprofessional collaboration.* These results combined, yielded a large number of articles (n=102 + n=186

+ n=149), totaling n=437. Appendix A (A3, A4, A5) also show the subsequent, alternate search results using the terms “role shar*” (n=189), “role understand*” (n= 186) and role valu*” (n= 72) which, combined totaled n = 364 articles. Non-healthcare literature was included along with healthcare literature since research focusing on role clarification was limited in healthcare.

Next, additional exclusions were made based on review of titles, duplicates and examination of abstracts, with 80 articles remaining. Apart from the three articles with a main focus on IPRC, (Brault et al. 2014; Hudson et al., 2017; Ly, Sibbald, Verma & Rocker, 2018) mentioned earlier, the bulk of the articles mentioned role clarity or role clarification as important team components but did not examine IPRC as a primary research focus. Next, an electronic search of the *Journal of Interprofessional Care*, using the term “role clarification”, identified 63 articles; a review of the titles and abstracts revealed three more articles, none of which held IPRC as a main focus. Finally, a review of selected articles’ reference lists identified additional current and older articles, as well as textbooks that were instrumental to underpin this concept analysis and research theoretically (Biddle, B., 1979; Hardy & Conway, 1988). Using Google and GoogleScholar, grey literature including three government documents (HealthForceOntario, 2007), IP organizations (CIHC, 2010; IPEC, 2011; WHO, 2013), and seven healthcare professional standards and guidelines were examined to develop insight about IPRC in various health and social care professions and minimize possible publication biases (Forbes, 2003). Similar to the research literature, IPRC was identified as an important aspect of IPC in the grey literature but was not the main focus.

2.3.3 Results of Analysis (Step 3-Definitions and Uses of the Concepts)

Theoretical literature about role clarification as a main concept was not found with research literature that was limited and frequently discussed in terms of role issues. For this reason, to provide a more precise focus and help to inform the concept, *role clarification* was first separated into two terms, *role* and c*larification,* and their uses and definitions were described individually. Next, the complete term, *role clarification* was analyzed and described.

2.3.3.1 Role. *Role* originated from thirteenth century French *rôle,* and from old French *rolle,* and meant the roll on which an actor's part was written (Weekley, 1921). Role is a noun, described as:

1) "a character assigned or assumed" (e.g. to take on the *role* of the nurse within an IP healthcare team),
2) "a socially expected behavior pattern usually determined by an individual's status in a particular society" (e.g. a monthly visit to a family's home to assess the welfare of family members as part of the social worker's *role*),
3) "a function or part played in a particular operation or process" (e.g. the attending physician playing a major *role* in negotiating the transfer of a stabilized patient to a hospital nearest the patient's home)

(Merriam-Webster, N.D.)

Within role theory, Biddle (1979) defined role as "those behaviors characteristic of one or more persons in a context" (p. 58). The use of the term, role, is diverse and has been used to "indicate expectations (prescriptions, proscriptions, or demands), descriptions, evaluations, behaviors, and actions" (Hardy & Conway, 1988, p. 165). Role

can also refer to overt and covert processes carried out by an individual in a particular context, and is associated with perceptions the individual and others have about that role (Biddle, 1979). Considering these definitions and descriptions, role is arguably complex.

Aspects of role have been explored previously within numerous settings and disciplines through organizational research (Rizzo, House & Lirtzman, 1970), behavioural research (Li & Bagger, 2008), occupational health (Alfes, Shantz & Ritz, 2018) and healthcare (MacNaughton, Chreim, & Bourgeault, 2013). To assist in refining the complexity of roles, it will be applied within the healthcare context for this analysis. What was noteable about *role* in the literature, was its pairing with other concepts.

Rizzo et al. (1970) and Alfes et al (2018) situated *role* in terms of role theory and organizational theory. Alfes et al (2018) discussed roles as a source of conflict when the demands of a role exceed the resources to fulfill that role, referring to this as *role overload*. When roles are not clear, *role ambiguity* and feelings of uncertainty in one's performance can ensue and positive social exchanges can reduce uncertainty (Lapointe, Vandenberghe & Boudrias, 2014). Determination of roles requires members to negotiate opportunities for collaboration.

In healthcare literature, role is described as a key part of IPC within teams and not simply about the tasks that each team member carries out. Collaborative teamwork can create greater flexibility by expanding previously perceived individualized role boundaries and allow for sharing of work made possible by overlapping competencies (Orchard, Curran & Kabene, 2005). When role competencies overlap, *role blurring* can exist, causing *role strain* when perceived negatively as a threat of role encroachment but when role blurring is seen as beneficial, it can be viewed as an opportunity to expand and

share responsibilities (Brown, Crawford & Darongkamas, 2000). Further, MacNaughton et al. (2013) highlighted that a shift is required in how roles are organized for HCPs to function collaboratively while Wittenberg-Lyles, Parker Oliver, Demiris, & Regehr (2010) identified the flexible nature of role in hospice care where responsibility and learning are shared by team members. In a study about IP team crisis resource management, this entailed the need for the team to articulate ongoing role definition to address the uniqueness of each situation (Di Renna, et al., 2016), an example of role differentiation that required flexibility in *role boundaries*.

In a healthcare team regardless of the discipline, each member's role comes with expectations of specific demands and obligations for one's own behaviour and that of others (Biddle,1979; Hardy & Conway, 1988). Within this context, complex issues associated with the enactment of roles (e.g. role conflict, role ambiguity, role overload) have led researchers and scholars to press for clarification of roles as a means to facilitate effective teamwork.

2.3.3.2 Clarification. The concept of *clarification* can be defined as "an explanation that makes something clearer and easier to understand" (MacMillan, 2009). The verb form of the word is *clarify*, originating from Latin word *clarus*, meaning clear (Merriam- Webster Dictionary, N.D.). Clarify can take the form of either an intransitive or transitive verb. The intransitive use of *clarify* means: "to become clear" (Merriam-Webster (N.D.) (e.g. the role of the physiotherapist was clarified). Meanwhile, the transitive form of clarify means:

- "to be free of confusion" (Merriam-Webster (N.D.).
- "to make understandable" (Merriam-Webster (N.D.).

In the healthcare literature, clarifying involves both team communication and/or collaboration (Akeroyd, et al., 2009; Dahl & Crawford, 2018; Di Renna, 2016).

2.3.3.3 Role clarification. No dictionary definition was found that considered *role clarification* as a single concept. Hardy and Conway defined it as the articulation of role expectations that a person undertakes through a "process by which the knowledge, skills, and boundaries [of each role] are identified, shared, and defined" (1988, p. 372). In the context of healthcare, the stated standard for role clarification is that "[l]earners/ practitioners understand their own role and the roles of those in other professions, and use this knowledge appropriately to establish and achieve patient/client/ family and community goals" (CIHC, 2010, p. 12). To achieve effective role clarification, HCPs are reported to need the ability to:

- describe their own role and that of others,
- recognize and respect the diversity of other health and social care roles,
- describe their responsibilities, and competencies in their own practice,
- perform their own roles in a culturally respectful way,
- communicate [their] roles, knowledge, skills, and attitudes using appropriate language,
- request access to others' skills and knowledge appropriately,
- consider the roles of others in determining their own professional, and interprofessional roles,
- integrat[e] their own competencies/roles seamlessly into models of service delivery (CIHC, 2010, p. 12)

These descriptors suggest that role clarification is an outcome that HCPs can achieve through appropriate conditions, processes and actions. Role clarification has become a foundational cornerstone for initial and ongoing communication among IP team members instrumental for collaborative practice. For example, within an IP team, members have profession-based roles and responsibilities that can overlap with others and for effective team functioning, each member must establish role parameters with the IP team, that when shared, can contribute to team norms and team functioning (Croker, Trede & Higgs, 2012). At the same time, there remains reticence amongst some health professionals who fear their unique perspectives of client care may be overlooked and go untapped in care delivery (Ambrose & Ashcroft, 2016). When clarity of roles is not adequately articulated, individual profession-specific care enactment can be fragmented, repetitious, and challenging for colleagues and clients to understand (Jones, 2005; Parker, et al., 2013; Tyrell, 2010).

In summary, when a person assumes a role that is not clearly described, *role ambiguity* can occur (Hardy & Conway, 1988), leading to *role uncertainty* that can hamper teamwork and collaborative coordination of care (Di Renna, 2016; Orchard, 2010; Pryor, 2007). Thus, not understanding each other's roles can impede effective team functioning (Brown et al., 2011, Xyrichis & Lowton, 2008). Hence, clarification of roles should be a key step in achieving role learning for IPCP.

2.3.4 Determination of Attributes (Step 4)

Four attributes of role clarification were revealed in the healthcare literature that appear to be central to the concept namely, engagement in formal and informal

communication about own and others' roles, demonstration of professional knowledge and practice competence, embracement of new learning about roles and ability to include different health professionals in achieving a client-centred approach.

2.3.4.1 Engagement in Formal and Informal Communication About Own and Others' Roles. Lack of role clarity and poor understanding of one another's roles is reported to be a barrier to teamwork and a cause of workplace tension (Bittner, 2018; Booth & Hewson, 2002; Oelke, White, Besner, Doran, McGillis Hall, & Giovannetti, 2008). To overcome this tension, both formal and informal communications between IP team members are seen as priorities to clarify roles and facilitate role understanding (Kim et al., 2017; Kharicha, Illiffe, Levin, Davey & Fleming, 2005; Körner et al., 2016; McCallin, 2004; Morris & Matthews, 2014; Sargeant, Loney & Murphy, 2008; Sinclair, Lingard, & Mohabeer, 2009).

Formal communication serves as a means to clarify responsibilities among healthcare professionals, ensuring that clients and their families are also involved in the process (Cutler, Morecroft, Carey and Kennedy 2019; Körner et al., 2016; Waring & Bishop, 2010). Examples of formal communications include weekly care planning, family meetings, (Sinclair et al., 2009) and IP education to use innovative shared protocols and activities (Körner et al., 2016).

Kharicha et al., (2005) emphasize planning for regular formal communications among frontline staff and management to discuss patient care and other performance issues. Teamwork also requires the use of informal communications through more casual and often unplanned interactions such as impromptu or unscheduled meetings in corridors, staff lounges or clients' rooms (McNaughton et al., 2013; Waring & Bishop,

2010). These informal interactions are reported as the "backbone" of teamwork (Sargeant, Loney & Murphy, 2008) and can offer opportunities to support and extend formal communications as catalysts to achieving team effectiveness (Waring & Bishop, 2010).

Hence, role clarification requires exchanges among team members that lead to understanding of one's own role and the roles of others for safe and effective care. This cross-sharing of roles can provide the means for reciprocity and sharing between different professional team members in a team.

2.3.4.2 Demonstration of Professional Knowledge and Practice Competency.

Within all IP teams, members must be able to articulate their role across divergent HCP groups. When roles are openly shared and understood, there is a greater opportunity for respect and trust to evolve within the team (Orchard, et al., 2005). When communications are not facilitated, there is potential for distrust and lack of role understanding across health professionals that may impede sharing of information to benefit clients' care (Gottlib Conn, Oandasan, Creede, Jakubovicz, & Wilson, 2010). This lack of sharing can be a source of frustration for clients having to repetitively reiterate the same information and may be perceived as a lack of trust between team members (Cutler et al., 2019). Without sharing of roles within the team, HCPs may incorrectly question their colleagues' practice competence (Akeroyd et al., 2009). In contrast, when one's competence is confirmed by others and an individual practitioner's contribution is seen as transferable and valuable to the IP team, trust is more likely to be present (McCallin & Bamford, 2007: Mayer, Davis & Schoormean, 1995).

2.3.4.3 Embracement of New Learning About Roles. Kharicha et al. (2005) found that when regular formal interactions occurred between IP practitioners, these interactions were viewed as a learning environment with potential to enhance the understanding of each other's care provider roles. Similarly, Kim et al., (2017) found that HCPs saw IP colleagues as sources for both formal and informal feedback contributing to their continuing professional growth and IP relationships. Sargeant et al. (2008) reported that when learning about others' roles took place, a change in practice was enabled. However, role clarification does not occur naturally and necessitates IP team members to articulate their roles to other IP team members (Suter et al., 2009). This requires the transmission of knowledge between IP team members through both formal and informal learning opportunities with each other's roles.

When HCPs together engage in discourses with a client and then actively listen to their fellow IP team members they can discover reciprocal role potentials that can contribute to collaboratively to creating individualized client care plans. Thus, the capacity to learn about each other's roles including the knowledge, skills, and expertise that are shared across the team has the potential to strengthen collaborative approaches to client care.

2.3.4.4 Inclusion of Different Healthcare Professions to Achieve a Client-Centred Approach. Role clarification enables IP team members to determine the mix of HCPs who could most effectively assist the client in meeting his/her care needs (CIHC, 2010). In IP patient/client/ family/community–centred care (a domain of CIHC's IP competency framework), HCPs must value the importance of clients and family members' voices within the participatory capacity and abilities of clients and families in

shaping their care. Bainbridge (2008) found that when IPC directly involved clients, development of shared goals, recognition of IP role boundaries, and engagement in respectful IP interactions were more prevalent. Thus attention to client-centred IP care may lessen feelings of territorial protection of individual professional roles amongst team members. Indeed, a shared focus on client-centredness can precede positive change in how members think about their team, including ongoing communication and team discourse (Gotlib Conn et al., 2010). While a client-centred care philosophy is a critical value to be held by HCPs, role strain among team members can still exist, meaning that careful attention to role clarification must be ongoing (Adams et al., 2014) as a means to identify the appropriate HCPs to comprise the best complement for a client's specific needs.

Delivery of client-focused care necessitates listening to the client and responding by reaching out for assistance from IP colleagues and community resources (Kim et al., 2017). Others have found that when teams established clear role delineations, and viewed role overlap as a benefit to clients, there was acceptance of some role overlay (Booth & Hewson, 2002) with allowance for role deferral to IP colleagues (Morris & Matthews, 2014). Chan et al. (2010) found that when clients were involved in discussions about their care management with various IP team members, referrals, shared planning, and delegation of care among the team improved.

In summary, the attributes of role clarification include: the engagement in formal and informal communication, the demonstration of professional knowledge and practice competency, the embracement of new learning about roles, and the ability to weigh client

benefits for inclusion of different healthcare professions in their care. When these attributes are present, IP team members are able to share information about their professional knowledge and skills in practices needed for optimal, client-centred collaborative care.

2.3.5 Construction of Cases (Steps 5 and 6), Scenario (Model and Borderline Cases)

These two steps describe when a case reflects all attributes of role clarification and when it does not. A scenario is presented, followed by descriptions and model, borderline, related, and contrary cases will be presented and analyzed (Walker & Avant, 2005).

At the Main Street Family Health Team Clinic, Phyllis Parker attends a follow-up appointment regarding her elevated blood sugar level. Phyllis is 40 years old, thirty pounds overweight but has been in good health until the last couple of months, when two consecutive FBS have been elevated. Prior to this, her blood sugar level has consistently been within normal range. The RN has just completed his assessment of Phyllis Parker.

2.3.5.1 Model Case. A model case is an exemplary illustration of the concept that depicts all of the defining attributes of that concept (Walker & Avant, 2005).

RN (Kyle Sanchez) pulls up bloodwork results for Phyllis Parker on the computer, reads, then speaks to her:

[RN]: Phyllis, your latest fasting blood sugar level is still slightly elevated. You mentioned last visit that the change happened after you started in your new job since it involves a lot of travelling.

[Phyllis Parker]: That's right. I am trying my best to eat properly. I'm not sure what else I can do. I don't want to end up with diabetes.

[RN]: I hear what you are saying. We talked about a few strategies in the last appointment but I have some ideas that might help further. I'll be right back. I'm just going to chat with Dr. Brown for a minute.

RN leaves the examination room and goes to the health team office where Dr. Chris Brown is completing some documentation.

[RN]: Phyllis Parker's fasting plasma glucose is 5.8 and the last one was 5.6. I thought I would make a call to Rothwell Diabetes Clinic to see if their dietitian can see her. I think she needs more education than we can give her to develop strategies about her diet and activities.

[Dr.]: Good idea.

[RN]: When you're done, can you come see her and order bloodwork? I'm thinking at this point we need to do a full screening.

Dr Brown nods RN returns to the examination room.

[RN]: Phyllis, I just spoke to Dr. Brown. She's going to come see you and order some more bloodwork that will screen for pre-diabetes and Type 2 diabetes. You and I have discussed that if your blood sugar climbs, there could be a need for medication to help stabilize it. I know you're committed to trying to get this under control without medication, so we are going to see if we can connect you a dietitian at Rothwell Diabetes Clinic. What do you think?

[Phyllis Parker]: I can try that. I haven't got anything to lose. But I am not sure what to do differently. I really think that I am eating well.

[RN]: They might be able to offer tips about things that we haven't thought about. I will get in touch with them today, and either we will call you or if they prefer, they will get in touch with you. Dr. Brown will be in to see you soon.

[Phyllis Parker]: Okay. Thanks, Kyle.

Later that day [on phone]...

[Dietitian] (Mary Cromwell): Hi Kyle, this is Mary Cromwell speaking. I understand that you have a client that you want us to see.

[RN] (phone): Hi Mary. Yes, the client's name is Phyllis Parker. Her last two fasting blood sugars has been 5.6 mmol and 5.8 mmol and she is about 30 pounds overweight. She has begun to travel for a couple of weeks at a time and is eating a lot of hotel meals. We are hoping that more health teaching and diet changes might preclude the need for medication.

[Dietitian]: We do run clinics for pre-diabetic/borderline diabetic clients. I can email you the consultation request form. Can you ask Dr. Brown to complete and return it to us? Once we have that, someone will phone to arrange an appointment with her to see how we can best help her.

[RN]: Great. I will ask Phyllis to set up an appointment with Dr. Brown after the two of you meet. Is there a way that we can coordinate the information to make sure we are supporting your work with her?

[Dietitian]: With the client's approval, we can send a copy of the interview notes and the action plan to you. We can also arrange a conference call if Dr. Brown requests it.

[RN]: That sounds good. I get the referral request completed if you can send it today. Talk to you soon.

One month later…

[Dr.]: Great news to see your blood sugar level has dropped to 5. The dietitian from the clinic sent us a copy of the plans that the two of you made. How do you think it's going?

[Phyllis Parker]: She's given me such good ideas. I can see where I've been going wrong with my diet and I have made some easy changes already. I'm tracking my meals and snacks at home and when I'm away on business. And there are some nutrition and fitness classes I can take, so I am hoping to start those in a few weeks. She said I don't need any more appointments with her.

[Dr.]: Yes, that's what her notes said. It sounds like she has been a good resource for you.

Kyle called her last week just to touch base with her, so she knows we are in the loop.

[Phyllis Parker]: Yes, she told me. I am so glad that he suggested that I see her.

This represents an ideal example of IP role clarification. First, an informal phone call to the dietitian was made by the RN to inquire about the dietitian's role to ascertain that a consultation for his client would be appropriate.

Engagement in formal communication by way of a telephone call after the dietitian met with Phyllis Parker would assist all four (i.e. client, RN, GP, dietitian) to discuss and agree upon a plan and the roles that each would take in Phyllis' care. In the initial conversation with the nurse, the dietitian reinforced how her role could be assistive and *demonstrated professional knowledge* to aid the client in facilitating a healthier diet in collaboration with the GP and RN. The *practice competency* was supported by the client's response to the GP's question about the appointment with the dietitian. The physician employed *openness to learning about roles* based on the RN's suggestion and the RN demonstrated this by suggesting the initial phone call to the dietitian. Finally, the physician engaged the client in the care plan from the beginning of the first appointment

while *valuing the competence* of the RN by listening to her suggestion. Further valuing was demonstrating by the GP utilizing the dietitian in her role and following up with the dietitian later. At this point in time, the client's role included taking action to connect with the dietitian, as well as decision-making and enactment of strategies for optimizing health-related approaches to her diet and blood sugar.

2.3.5.2 Borderline Case. A borderline case contains many of the defining attributes of the concept, but not all of them. It may differ significantly in one characteristic and provide more clarity about why the model case reflects the attributes (Avant & Walker, 2005, p. 70).

Initial physician-client meeting: Dr. Brown, a GP, meets with client, Phyllis Parker, regarding her FBS results; she is 32 years old and has been in good health until the last few months when two consecutive FBS has been elevated.

[Dr.]: I noticed that this change occurred just a couple of months after you started in your new job. I recall you said you are now away from home for extended periods of time.

[Client]: That's true. I am trying my best to eat properly. I am not sure what else I can do.

[Dr.]: We could put you on medication that will help to control your blood sugar, but I would first like to see if tweaking your diet would work. What are your thoughts?

[Client]: Well, I can try that, but I am not sure what to do differently. I think I am eating well still. My brother's neighbour is a dietitian and I was telling her about this. She suggested that it might be helpful for me to see a dietitian and gave me a number for someone who I can call at the diabetic clinic.

[Dr.]: Oh yes, that clinic recently opened. I suppose that it can't hurt for you to see someone, can it? We can call and set that up.

[Client]: Okay, that's what I thought too.

Two months later, Phyllis has a follow-up appointment with her GP.

[Dr.]: Good news Phyllis, your blood sugar is back to within normal limits.

[Client]: Well I am very happy to hear that. The dietician, Amanda has helped me learn more about my eating habits. What I thought was healthy eating, wasn't always.
[Dr.]: She sent me a letter outlining how she would be able to help you and there's a copy of the plan that the two of you developed.

Dr. Brown makes a note to himself to respond to the dietitian's letter and to inform her of Phyllis Parker's latest BS result.

This case contains most of the defining attributes of role clarification, but not all of them. By sending the GP a letter outlining her role with Phyllis Parker, the dietitian engaged *in a formal communication* about her own role and the role that Phyllis would play. At this point in time, communication of roles was not reciprocal. The plan that the dietitian had sent to the GP, the client's verbalization of diet changes, and the successful reduction of blood sugar levels would have demonstrated to the GP that the dietitian possessed some professional knowledge and practice competence in the care of Phyllis Parker. The GP did consider client benefit by suggesting that "it couldn't hurt" to see the dietitian and his intent to respond to the dietitian's letter indicated that he valued the benefit to the client. What is missing in this case is the *openness about learning of other roles*. No intention to learn more about one another's role has been expressed. However, given that the GP has recognized the value of the dietitian's role in this case, this attribute might evolve in the future.

2.3.5.3 Related Case. A related case does not contain the defining attributes, but may reflect a similar concept and express ideas about the concept but are actually quite different when closely appraised (Avant & Walker, 2005). When examining the literature related to role clarification, no similar concept was identified and thus no related case is presented in this paper.

2.3.5.4 Contrary Case. A contrary case is a clear example of what the concept is not, which helps in illustrating a contrast to the desired concept (Walker & Avant, 2005). Chan et al.'s (2010) reported baseline data results, collected prior to the intervention, provided a good example of a contrary case.

"Facilitator's report: At the beginning [baseline range of collaborative actions] GP did not entirely trust allied health professionals (AHP) [dietitians] to treat the client as he wanted them treated, so he was doing all the work himself" (Chan et al., 2010, p. 521).

This report suggested that the GP did not engage in formal or informal communication with anyone regarding roles or possible contributions to the care of the client. While the GP may have some good ideas about the client's situation, the focus of general practice may not support the depth of health teaching required by a client. The lack of trust in the AHP contribution to client care indicates that the GP's past experience with an AHP may have been limited or negative; perhaps the AHP did not communicate possible contributions or the GP perceived that the AHPs knowledge and competency as lacking. There is no indication in this example that the GP entertained the idea of learning about others' professional roles as a strategy to provide optimal care to the client.

Likewise, the facilitator's report neither reflects that the GP values client benefits for inclusion of different healthcare professions nor that the GP has used a client-centred approach in "doing all the work himself" as described earlier (Chan et al., 2010). When client care reflects all of the attributes of IPRC, HCPs have ensured that roles are clarified, and responsibilities are shared for optimal, client-centred collaborative care. When care does not match a model case, IP team members must address how best to achieve the attributes of effective role clarification.

2.3.6 Antecedents and Consequences of Role Clarification (Step 7)

Antecedents are the events that happen before the occurrence of the concept while consequences are the outcomes that are associated with the concept (Walker & Avant, 2005). More specifically, antecedents can be useful in developing the defining attributes and highlighting the social context of the concept (Walker & Avant, 2005). Socialization achieved through interactions *between two or more team members is needed to achieve role clarification.* Socialization refers to "changes in the behavioral or conceptual state of the person that follow from an environmental condition and lead to a greater ability of the person to participate in a social system" (Biddle, 1979, p. 282). More specifically, healthcare professionals' socialization is a process that facilitates the development of knowledge and skills to achieve regulation for practice. However, when IPC and role sharing are viewed as a threat to practice it can impede one's professional identity development (Baker, Egan-Lee, Martimianakis, & Reeves, 2011; Hastie & Fahy, 2011; Orchard, 2010).

In contrast, IP socialization refers to changes that specifically follow IP interactions within a learning or practice situation (*opportunities for role socialization*) and it is through this process that role clarification occurs (Orchard, 2010; Orchard, Curran, & Kabene, 2005). Role learning can transpire through role clarification (Biddle, 1979) but there must be a *willingness to engage in collaborative learning* to overcome any limitation to its attainment (Brown et al., 2011; Croker et al., 2012; Khalili, Orchard, Laschinger, & Farah, 2013; Sexton & Orchard, 2016). It cannot be overlooked that HCPs must *possess the knowledge, skills and judgments* to effectively outline and negotiate role distribution as the IP team is forming. Failure to illustrate these competencies, might call

their capabilities into question leading to distrust by team members (Anderson, Pollard, Conroy & Clague-Baker, 2014; Akeroyd et al., 2009), thereby undermining the team's collaborative processes. Additionally, if the extent of one's role and capabilities are not clearly articulated, a team member may take on another's professional duties, leading to role issues, redundancies or inefficiencies (Akeroyd et al., 2009; Chan et al., 2010; Goh & Prospero, 2017). In summary, the antecedents of role clarification include: the involvement of at least two team members, opportunities for role socialization, willingness to engage in collaborative practice, and the possession of knowledge, skills, and judgments of one's own profession.

Lastly, consequences can be defined as the events that occur as a result of the concept and can be important in defining attributes and highlighting the social contexts of that concept (Walker & Avant, 2005). In healthcare, clarifying roles has been found to benefit *clients, IP team members* and *healthcare organizations*. Role clarification can benefit clients by contributing to their satisfaction with care and positive healthcare experiences. Examples include shorter wait times (MacNaughton, et al., 2013), less inefficiencies (Goh & Di Prospero, 2017), effective quality care (Reeves et al., 2013) and supporting patient safety and mitigation of errors (Bainbridge et al., 2010; CIHC, 2010; Waring & Bishop, 2010).

Role clarification provides HCPs with an increased understanding of the role capacities of IP colleagues and making them better equipped to utilize skills and knowledge resources of team members (Di Renna et al., 2016). Dunn et al., (2018) noted that when IP team members understood each other's roles, shared decision-making by the IP team was nurtured. Role clarification can include strategies to help HCPs to define

their roles, which can be advantageous in improving team performance (Di Renna, et al., 2016).

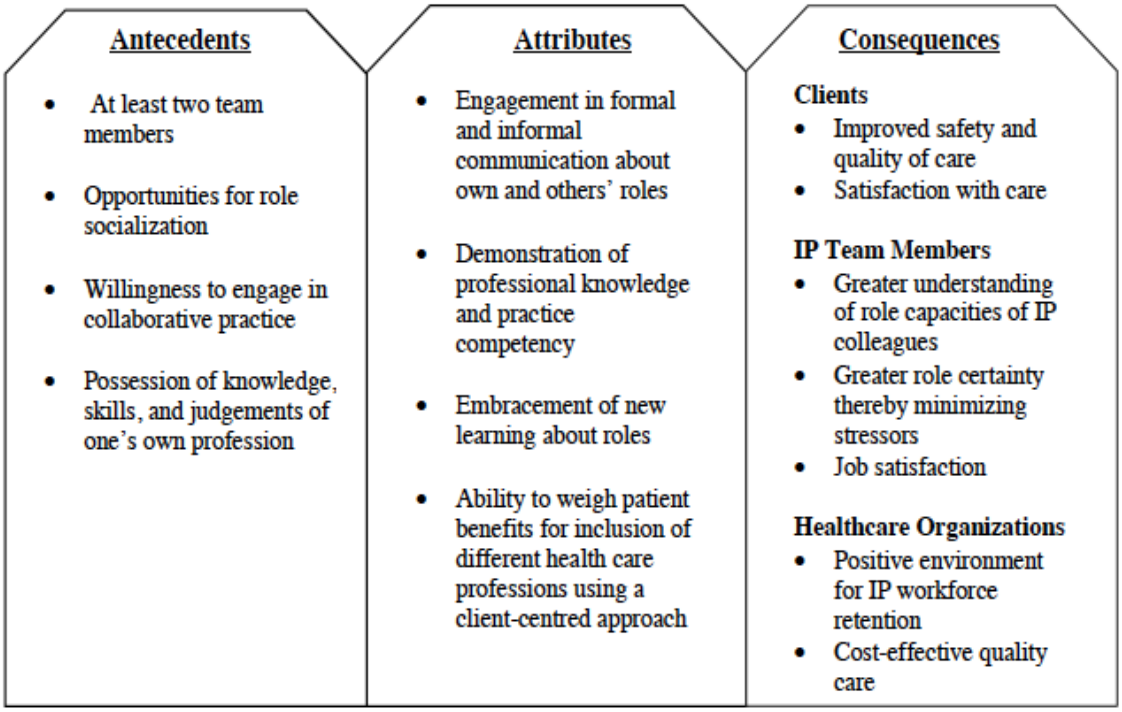
When roles are clarified, this can help to alleviate role issues such as role ambiguity and uncertainty (Pryor, Walker, O'Connell & Worrall-Carter, 2009), and stress and burn out (De Sutter et al., 2019 ; Tunc & Kutanis, 2009). When professional roles are clear and the IP team functions well, team members can experience feelings of job satisfaction (Deloach, 2003 ; De Sutter et al., 2019). Additionally, seeking to clarify roles helps to develop a culture that values all health care professionals' contributions and diminishes 'turf' protection of roles (Baker et al, 2011). When role clarification is a norm within IP teams, this leads to a clearer understanding of role capacities whereby role sharing is more likely and various healthcare professions can contribute to sharing in collaborative care of patients.

Overall, role clarification is a key aspect of IPC, whereby HCPs play an important part for the consequences to clients and healthcare organizations. IPRC among HCPs is instrumental in the integration of more seamless care delivery (CIHC, 2010), facilitating greater utilization of appropriate sharing of team members' expertise (Oelke et al., 2008) and leads to more efficient team performance (Klein et al., 2009). When roles are clear and work is appropriately allocated among IP team members, this can overcome role ambiguity and uncertainty and contribute to a *positive environment for an IP workforce. Positive team environments* have been associated with less absenteeism, illness, and increased retention of staff (Körner et al., 2016). Thus, IPRC offers flexible role boundaries providing opportunities to allocate and reallocate resources to optimally utilise HCPs for *cost-effective quality care* (Nancarrow, 2004; Machin, Machin & Pearson,

2011). In summary, role clarification can facilitate positive consequences for clients, when IP team members share their understanding of each other's role during formulation of care plans, and for healthcare organizations there is a likelihood of shorter lengths of stay and fewer safety issues from poor communications when the role clarification antecedents and attributes are present (see Figure 1).

Figure 1

Antecedents, Attributes and Consequences of Role Clarification



2.3.7 Empirical Referents Defined (Step 8)

Empirical referents are the measurable properties or categories that confirm the existence of the concept (Walker & Avant, 2005). When a concept is not well studied, as is the case for interprofessional role clarification, empirical referents and attributes help to

illustrate more concrete conditions with the concluding part of a concept analysis considering how that concept is measured (Walker & Avant, 2005, p. 73).

The importance of role clarification is notable in various aspects of the literature. CIHC (2010) has identified role clarification as one domain in its National IP Competency Framework while researchers and scholars have identified the need for IPRC in many health professions (Brault et al., 2014; Bainbridge, Nasmith, Orchard & Wood, 2010; Oelke et al, 2008; Booth & Hewison, 2002; Lyons, 1971).

Although IPRC has been identified as a necessary component of IP collaborative teamwork (Suter et al., 2009; Undre, Sevdalis, Healey Darzi, & Vincent, 2006), and supported provincially (HealthForceOntario, 2007), nationally (CIHC, 2010) and internationally, (WHO, 2010), only one recent research article was found that studied the IP role clarification process (Brault et. al, 2014). This Canadian multi-case study (n = 6 cases) included 34 interviews with key informants involved in the integration of one or two primary healthcare nurse practitioners into their teams in three-rural and two urban walk-in settings (Brault et. al, 2014). Brault et al. (2014) found that the best performing teams used a variety of organizational and individual strategies to carry out IPRC within the team, supporting the need for role clarification as a requirement for effective IP teamwork.

Interestingly, while regulatory professional colleges stipulate that their registrants must carry out their roles in collaboration with other healthcare professions, the requirement to articulate their roles within IP team members is absent from practice guidelines (College of Nurses of Ontario, 2016; College of Physicians and Surgeons of Ontario, 2007; College of Physiotherapists of Ontario, 2017; National Association of

Pharmacy Regulatory Association, 2014; Ontario College of Social Workers and Social Service Workers, 2015). If collaborative practice is a professional requirement within standards for practice, it follows that guidance to understand what role clarification entails and how it can be assessed is a needed aspect of regulatory practice.

Some research has reported measurement of role clarity, role ambiguity or role conflict (Kahn, 1964; Rizzo, House, & Lirtzman, 1970; Lyons, 1971; Jaskyte & Lee, 2009; Tunc & Kutanis, 2009) but specificity to role clarification was limited. Hudson et al. (2017) carried out a study of role clarification in an IPE activity and measured role clarification using a roles and responsibility subscale of the Readiness for IP Learning Scale (RIPLS), however the focus was on healthcare students rather than HCPs, using a small sample size, and reported poor psychometric properties (Mahler, Berger, & Reeves, 2015). Items in the scale did not strongly match with the findings for this analysis summarized in Figure 1.

Lyons developed the *Role Clarity Index* and the *Need-for-Clarity Index* to report on correlations with voluntary turnover, propensity to leave a nursing job, job tension and work satisfaction (1971). Rizzo, House, and Litzman (1970) developed the Role Ambiguity and Role Conflict Scales, which have been used in organizational research and health research (Kelloway & Barling, 1990; Tunc & Kutanis; Jaskyte & Lee). Thus, although aspects such as role ambiguity and role conflict have been quantified and will be useful in its exploration, there is an absence of measurement instruments to specifically assess an individual's perception of IP role clarification.

Given that IPC and IPE are viewed as national and international healthcare priorities, it is imperative to carry forward the work around role clarification (CIHC,

2010; Barr, 2010). CIHC's (2010) descriptors and related aspects of role clarification offer a representation of role clarification for HCPs that will be useful in further developing an understanding of IPC in both clinical practice and healthcare education. At present there is a small body of research focused on role clarification, and even less pertaining to interprofessional role clarification. While the literature strongly supports IP role clarification as a necessary step that must be undertaken by all practitioners to ensure competence for IP collaborative practice in health and social care, the absence of empirical referents necessitate development and testing of a psychometrically sound instrument to measure this concept.

2.4 Operational Definition for Role Clarification

Employing a conceptual analysis of role clarification - its attributes, antecedents, and consequences – provided a means to define role clarification as "a dynamic process that requires at least two healthcare team members who have the knowledge, skills, clinical decision-making, and competence to engage in formal and informal communication based on understanding their own and others' roles to arrive at a shared client-centred approach to care" (Allen, Orchard, Evans, Gorman, & Kerr, 2019). In summary, this concept analysis highlighted role clarification literature as important in healthcare, but also provided new information on a set of antecedents, attributes, and consequences to the concept. This contributed to the formation of a definition of what comprises role clarification in the context of IPCP.

2.5 Discussion and Application in Practice

The findings in the concept analysis of IPRC in healthcare team members fits with Hardy and Conway's (1988) framework for role socialization which incorporates

structural theory and symbolic interaction (Appendix B). Specifically, structural theory describes a role system of *role occupants* and *role partners*, the smallest unit being a dyad, and each with role expectations, role behaviours, and role competence, matching the first antecedent that it requires at least two team members to engage in IPRC.

The other three antecedents align more closely with symbolic interactionism, for example, the opportunities for role socialization rely on aspects of the *social setting* such as the *culture* and *values* of the practice setting. IP team members' willingness to engage in collaborative practice can rely on their sense of *self* and if they relate to the IP team as their reference groups. The final antecedent, the possession of knowledge, skills and judgements of one's own profession exemplifies some of the *personal resources* that enable team members to participate in IPRC utilizing the attributes identified in this concept analysis.

Furthermore, the CIHC (2010) IP competencies required for role clarification build upon the antecedents described above, and more notably, they align and overlap with the attributes identified in this concept analysis. For example, CIHC's (2010) "*recognize and respect… the diversity of other health and social care roles"* draws similarities to the attribute ability to weigh client benefits for inclusion of different healthcare professions using a client-centred approach (Appendix C).

Finally, the concept analysis revealed a number of consequences for clients, IP team members and healthcare organizations. CIHC (2010) identified the need for HCPs to be able to *integrat[e] their own competencies/roles seamlessly into models of service delivery* accompanies improved safety and quality of care (e.g. client consequence) and cost-effective quality care (healthcare organization consequence). Hardy and Conway's

(1988) framework affiliates most closely with IP team member consequences. For example, if the *social setting* (i.e. practice setting) *culture* encourages formal opportunities for IP interactions with *value* being placed on all HCP roles, this could promote greater understanding of role capacities as well as more role certainty among IP colleagues and more job satisfaction (IP team member consequences).

In summary, the findings of this concept analysis integrate what is known about IPRC to begin to critically investigate its importance in practice. Role theory was used as a theoretical underpinning that offered a beginning point to a concept that is not yet well studied, however, as investigation of IPRC evolves, it is likely that its guiding theory will likewise advance.

2.6 Conclusion

Although IPRC is viewed as important in the healthcare literature given its association with IPCP, at this point in time, there is a lack of empirical investigation focused on its conceptualization and measurement. This concept analysis strove to systematically integrate what is known about IPRC by gathering its antecedents, attributes, and consequences, all crucial to the construction of its operational definition.

IPRC must begin with at least two team members who possess the knowledge, skills and judgements of their own professions, and who with opportunities for role socialization are willing to engage in collaborative practice (antecedents). HCPs who engage in formal and informal communication about own and others' roles while demonstrating professional knowledge and practice competence must embrace new learning about roles and weigh the benefits to include different health professionals in achieving a client-centred approach (attributes). IPRC could be significant for patients,

including their satisfaction with care and improved safety and quality of care, IP team members through greater understanding of colleagues', greater role certainty and job satisfaction, while health organizations could benefit positive environment for IP workforce retention and cost-effective quality care (consequences).

This article proposed an operational definition based on the analysis of IPRC using Walker and Avant's (2005) methodology which can be utilized in future research to provide future consistency in its meaning. Completing these steps provided the frame to proceed in the instrument development for effective IPRC and to help pinpoint key concepts that could influence IPRC. Accepting IPRC as a relevant concept requires a philosophical and scientific foundation and insights into its applications to both practice and theory.

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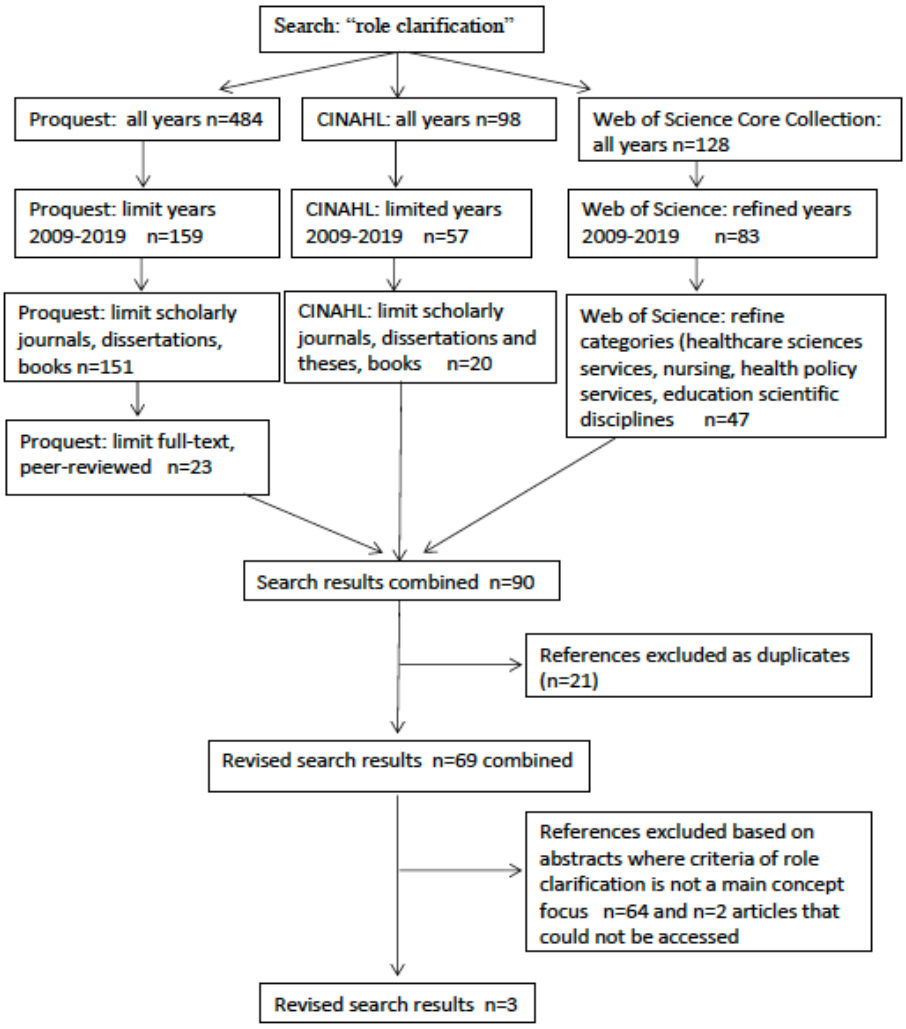
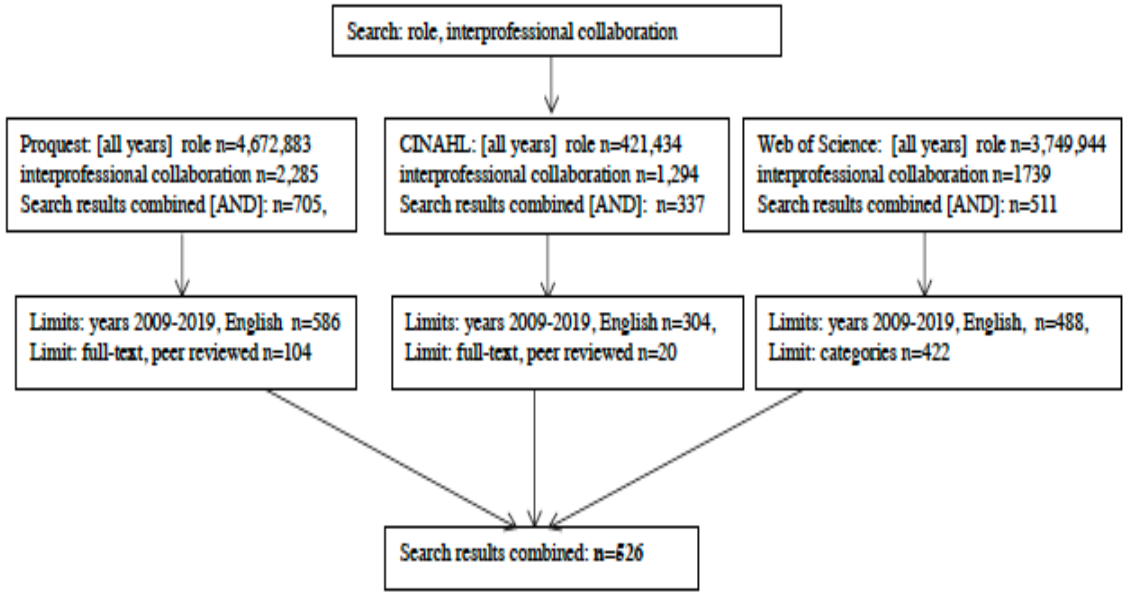
Appendix A
Figure Depictions of Literature Review Processes (A1-A5)

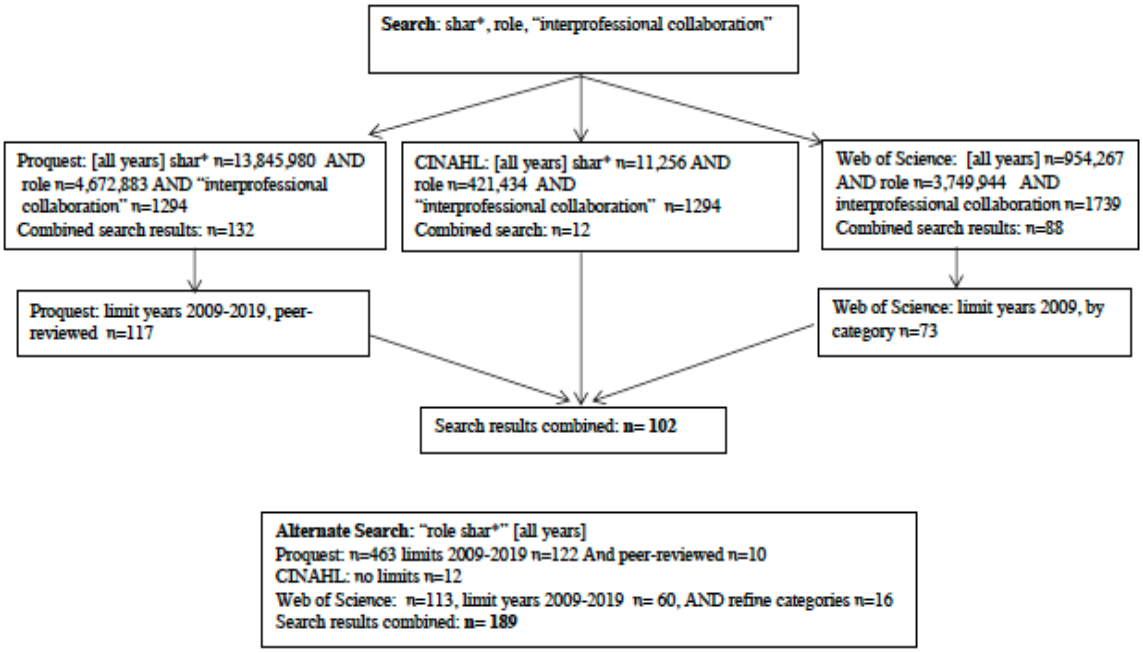
A1 Role Clarification



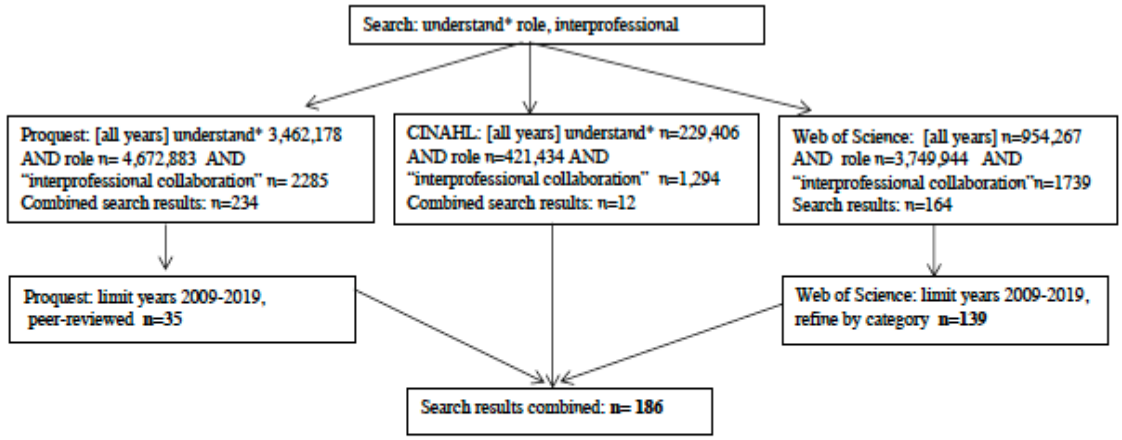
A2 Role: Further Literature Search



A3 Role Sharing: Further Literature Search and Alternate Search



A4 Role Understanding: Further Literature Search and Alternate Search



Alternate Search: "role understand*" [all years]
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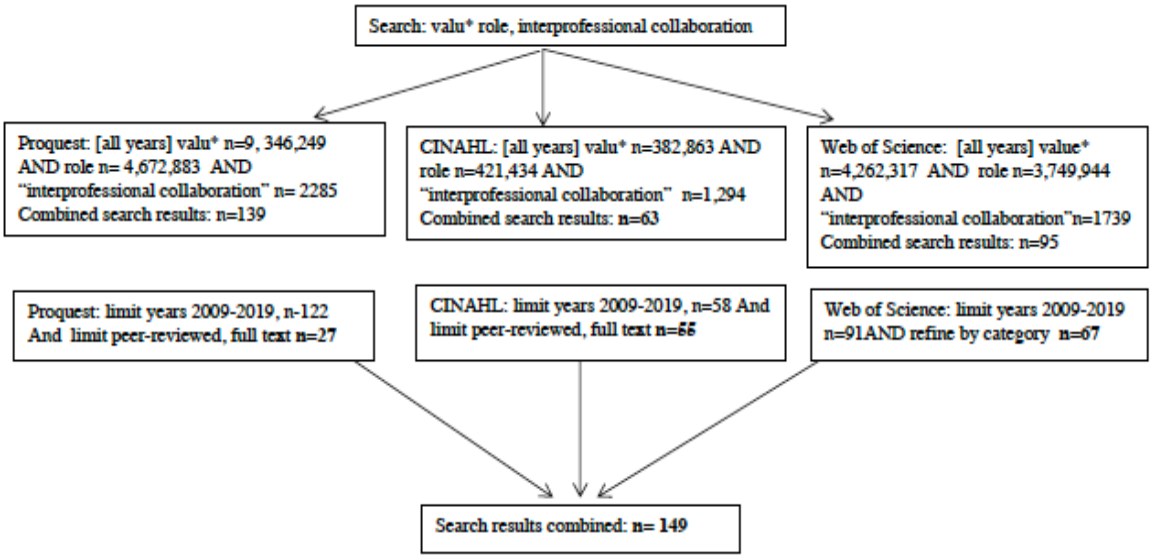
CINAHL: no limits n=64, limit 2009-2019, abstract available n=54
Web of Science: n=116, limit years 2009-2019 n= 84, AND refine categories **n=33**
Search results combined: n= 103

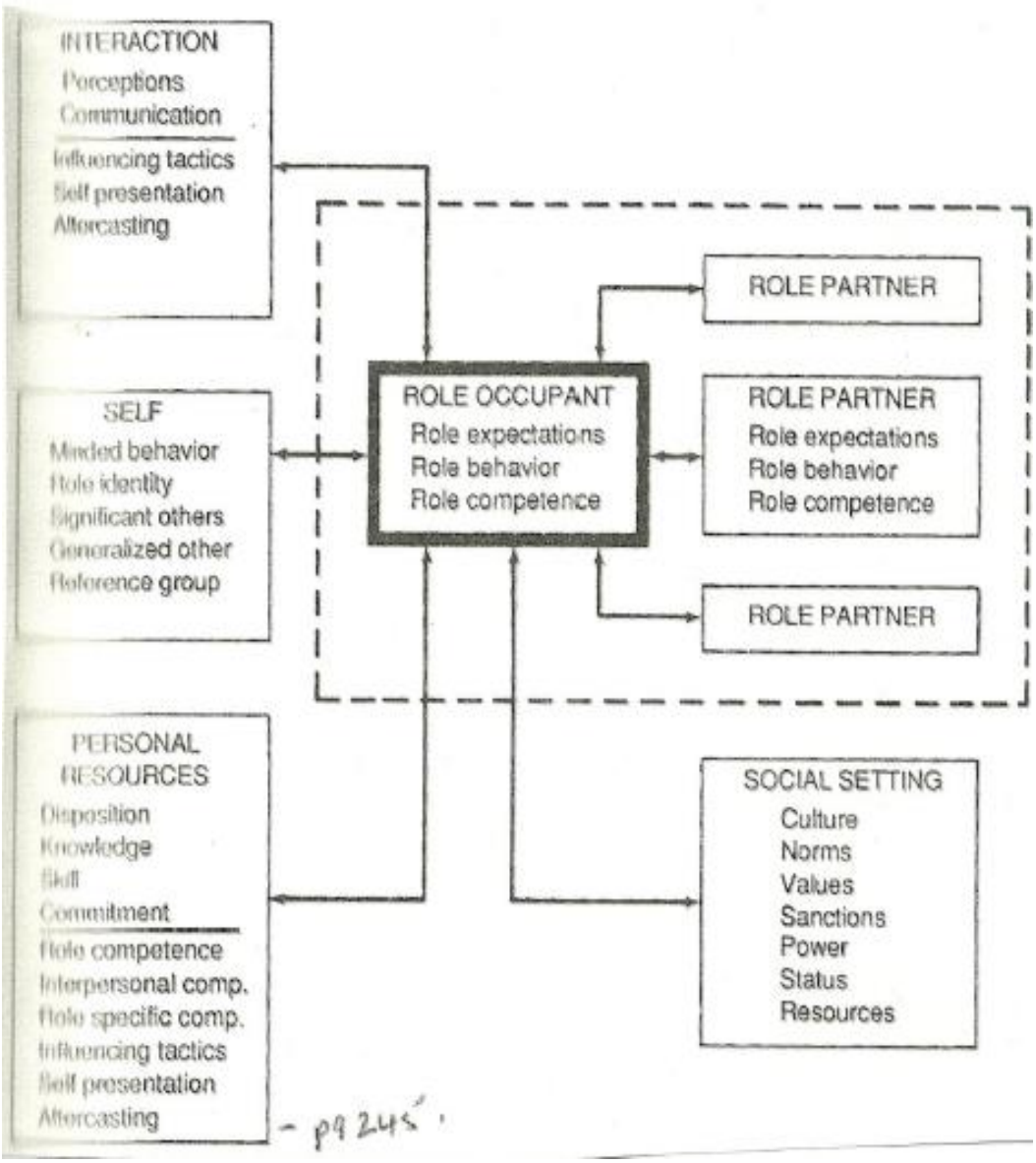
A5 Role Valuing: Further Literature Search and Alternate Search



Alternate Search: "role valu*" [all years]
Proquest: n=620, limits 2009-2019 n=183, AND peer-reviewed n=20
CINAHL: no limits n=64, limit 2009-2019 AND abstract available n=35
Web of Science: n=115, limit years 2009-2019 n= 65, AND refine categories **n=17**
Search results combined: n= 72

Appendix B

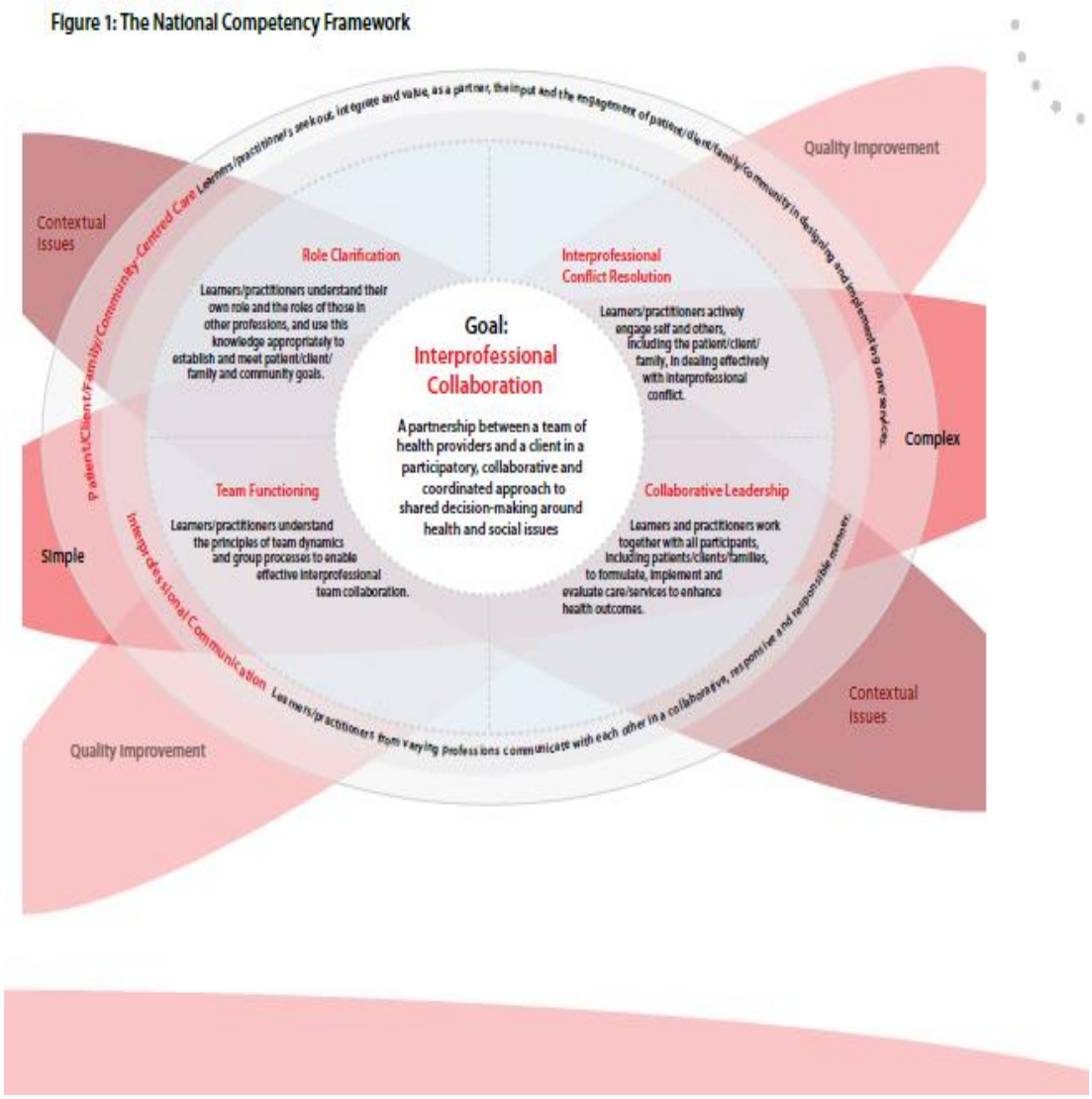
Hardy and Conway's Inter-related Symbolic Interactionsm and Structural Theories



Note: The broken line enclosure respresents structural-functional theory and the remainder represent symbolic interaction concepts (Hardy & Conway, 1988, p. 167).

Appendix C

CIHC's National Interprofessional Competency Framework



Canadian Interprofessional Healthcare Collaborative (2010). National Interprofessional Competencies Framework. Retrieved from http://www.cihc.ca/files/CIHC_IPCompetencies_Feb1210.pdf

Chapter 3 - Exploring Interprofessional Role Clarification: A Review of the Literature

3.1 Abstract

Refinement of healthcare systems has increased the demand for healthcare practitioners (HCPs) to share client care by functioning in a variety of roles within IP teams. Moreover, complexities of patients' comorbidities and social issues have increased the demand for HCPs to function collaboratively in a variety of team roles. Interprofessional role clarification (IPRC) among HCPs is theorized as a way to develop IP collaborative practice whereby a complement of profession-based viewpoints can collectively address clients' complex needs, however, this assumes that the team functions well together, which is not always the case. To date, research about IPRC is scant, and little is known about what IPRC entails or the factors that contribute to its effectiveness. To achieve IPRC, members of the interprofessional (IP) team must be able to engage in discourses to ascertain an understanding of what each member brings to client-centered care including their own contribution. There is a need to examine the factors and conditions that might influence HCPs' capacity to achieve IPRC when engaging with IP team members, and furthermore, how they may reciprocate in sharing their role knowledge, skills, and expertise as part of their client care planning. This article outlines a conceptual framework that proposes links between antecedents, (conscientiousness, general self-efficacy, work engagement) as well as the interaction of reciprocity between work engagement and IPRC. Further, this article describes each of the aforementioned concepts in detail by reviewing the research literature and seminal work to support the links between the variables and to provide additional understanding about IPRC.

Keywords: conceptual framework, interprofessional role clarification, conscientiousness, general self-efficacy, work engagement, reciprocity, healthcare

3.2 Introduction

As the Canadian healthcare system continues to evolve, delivery of interprofessional collaborative care (IPCC) is considered a key element of professional practice intended to ensure safe, quality healthcare and optimize management of costly resources in national and international communities (Canadian Interprofessional Healthcare Collaborative (CIHC), 2010; Interprofessional Education Collaborative (IPEC), 2011; World Health Organization, 2013). Role clarification is one of the interprofessional (IP) competencies believed to help achieve these goals (CIHC, 2010; Orchard, Curran & Kabene, 2005; Suter et al., 2009), however, research focussing on this topic is still limited.

Individuals from different professions have varying profession-based viewpoints that collectively can more fully address the complex healthcare needs of clients. In response to these healthcare challenges, professional licensing bodies have followed suit by setting the expectation that their members will competently engage in IP collaborative healthcare practice (College of Nurses of Ontario (CNO), 2016; College of Occupational Therapists of Ontario, 2017; College of Physicians and Surgeons of Ontario (CPSO), 2007; College of Physiotherapists of Ontario, 2017; Ontario College of Social Workers and Social Service Workers, 2015). This transformation of healthcare service has increased the demand for HCPs to function in a variety of team roles and can be a source of dissention among health care professions.

HCPs from different professions bring unique profession-based perspectives to the IP team and client care and can contribute to IP teamwork that is collaborative with an outcome of shared client care responsibilities and decision-making (Di Renna et al.,

2016, Orchard, 2010; World Health Organization, 2013). The reality is, however, that role issues can lead HCPs to experience uncertainty as to what their contribution to the IP team and client care should entail (Adams, Orchard, Houghton & Ogrin, 2012), and can therefore undermine teamwork (Körner et al., 2016), and collaboration, (Brown et al., 2011) and lead to fragmented care (Fitzgerald & Davison, 2008).

While an abundance of healthcare literature suggests that role clarity across health professions is needed, research that focusses specifically on interprofessional role clarification (IPRC) and how it can be achieved is lacking (Allen, Orchard, Evans, Gorman, & Kerr, 2019). Further exploration into the claims that successful collaboration relies partly on IP team members clarifying their roles could facilitate the optimal use of all health professionals' expertise and skills in planning and providing patient care.

3.3 Literature Review

The aim of this review was to ascertain what is currently known about IPRC as a means to identify attributes that could contribute to effective IPRC among licensed HCPs. At this juncture, while role clarification is identified as a necessary component for IP teams to effectively deliver collaborative care, recommendations indicate the need for research to focus on processes to help adopt competency to clarify roles (Canadian Interprofessional Health Collaborative (CIHC), 2010; Interprofessional Education Collaborative (IPEC), 2011; World Health Organization, 2013). First, an overview of the findings from a concept analysis of role clarification that provided insight into the factors that influence development and use of role clarification will be presented. Specifically, HCPs personal resources conscientiousness and general self-efficacy to share and learn

about others' roles, the reciprocal way that HCPs work with IP team members and engagement in work with other health professionals will be explored in relation to IPRC.

3.3.1 Interprofessional Role Clarification

In the absence of description of IPRC in the literature, a concept analysis was conducted using Walker and Avant's (2005) eight-step framework. This provided the definition for role clarification as "a dynamic process that requires at least two healthcare teammembers who have the knowledge, skills, clinical judgment, and competence to engage in formal and informal communication to ascertain understanding about their own and others' roles for a shared client-centred approach to care" (Allen, Orchard, Evans, Gorman, Kerr &, 2019).

The concept analysis provided a systematic means to identify plausible attributes, antecedents, and consequences of IPRC. Four attributes of IPRC include HCPs' engagement in formal and informal communication about own and others' roles, demonstration of professional knowledge and practice competency, embracement of new learning about roles and the ability to weigh client benefits for inclusion of different healthcare professions using a client-centred approach (Allen et al., 2019). Antecedents include the need for at least two team members for IPRC, opportunities for role socialization, HCPs' willingness to engage in collaborative practice, and possession of knowledge, skills, and judgements of their own professions.

A further in-depth synthesis of the literature assisted to identify other concepts that can be theorized as influencing the processes used to influence attention to role IP and its impact on HCPs. These concepts are discussed in the next section.

3.3.2 Personal Resources

HCPs bring personal resources based on both professional role preparation and personal experiential learning that together shapes knowledge, skills, and expertise to their IP team work (Hardy & Conway, 1988). These resources influence how HCPs are prepared to engage in IP work interactions with fellow IP team members. How health professionals choose to learn about other's similar or different perspectives arising from their professional backgrounds and experience could impact role clarification processes. Personal resources, particularly *conscientiousness* and *general self-efficacy* may have a direct relationship with how they contribute to the process of IP role clarification within their team.

3.3.2.1 Conscientiousness. Conscientiousness is one of the "Big Five" measures of personality traits, along with extraversion, agreeableness, neuroticism, and openness (John, Donahue, & Kentle, 1991; John, Naumann, & Soto, 2008) and it will be considered as a personal resource contributing to IPRC. Personality traits influence how individuals construe the meaning of a situation (John, Naumann & Soto. 2008), and tend to remain fairly constant (Allport, 1961). Conscientiousness is the "socially prescribed impulse control that facilitates task-and goal-directed behavior" (John & Srivastava, 1999, p. 30). It has been identified as a consistent predictor of work performance across a number of occupations, while the other four traits of the 'Big Five' measurement instrument exhibited more variability (Barrick, Mount & Judge, 2001).

Conscientiousness is a key personality factor studied in occupational and educational research (Barrick et al., 2001; Barrick, Mount, & Strauss, 1993; Hurtz & Donovan, 2000; Judge & Ilies, 2002; McKenzie, Gow & Schweitzer, 2004; Phillips,

Abraham, & Bond, 2003; Salgado, 2002). In addition to influencing job performance, conscientiousness is associated with careful planning, goal setting and persistence in one's role (Barrick, Mount, & Strauss, 1993; Hurtz & Donovan, 2000). Moreover, conscientious individuals have been found to have a capacity to organize and direct behaviour (Costa & McCrae, 1988; Costa, McCrae & Dye, 1991). However, only a few studies were found that focused on conscientiousness within healthcare professionals (Del Giudice, 2010; Hunsader, 2008; Wilson-Soga, 2009).

In a study of conscientiousness, employee development and subsequent job fit in a variety of industries, Simmering et al., (2003) found the strongest correlation between conscientiousness and development in participants who reported that they had too little autonomy in their roles. These results demonstrated that job fit improved for those employees who undertook professional development, since these activities led to more autonomy in their jobs. In the context of healthcare, this could mean that conscientiousness is an important personal resource to encourage HCPs to navigate the process of role learning and the IP discussions required for IPRC.

Conscientiousness has been associated with role clarity (clearness of roles). Miller et al. (1999) studied public sector employees and found that conscientiousness has a moderating effect on well-being, however, because it reduced the impact of role clarity on both psychological distress and job satisfaction. The measurement of role clarity in this study was limited and not representative of IPRC with only four items that explored the expectations, responsibility, and authority in one's job based on Hart, Wearing, Conn, Carter and Dingle's (1999) organizational climate scale. The higher a person's conscientiousness, the more positive was role clarity and job satisfaction and the lower

their psychological distress (Miller et al., 1999). Those participants with high conscientiousness also demonstrated greater job satisfaction and found less impact on their well-being from role ambiguity (Miller et al, 1999).

Hunsader (2008) found a significant difference in the levels of conscientiousness in nurses satisfied with their jobs compared to those who were unsatisfied, $t(39) = .02$, $p < .05$ with nurses with higher conscientiousness level reporting higher levels of job satisfaction. In a study of nursing students, Wilson-Soga (2009) found conscientiousness to be significantly and positively correlated with self-efficacy and negatively correlated with stress susceptibility. If conscientiousness reduces distress and job dissatisfaction, this could mean that IP team members with a higher degree of conscientiousness will be better equipped to be more persistent in enacting their roles (Judge & Ilies, 2002; Kelly and Johnson, 2005). In a meta-analysis study, Christian, Garza & Slaughter (2011) found conscientiousness to be positively related to work engagement, building on Hirschfeld and Thomas's (2008) proposition that personality traits (e.g. conscientiousness) likely lead to engagement with others. In addition to conscientiousness, how one engages with others or clarifies role contributions could be attributed to that individual's self-perception of his/her ability or general self-efficacy across situations.

3.3.2.2 General Self-efficacy. Self-efficacy originates from social cognitive theory and is defined as an individual's personal judgment of "how well [he or she] can execute courses of action required to deal with prospective situations" (Bandura, 1982, p. 122). Individuals' self-efficacy can affect how they feel, think, behave, and ultimately influence their willingness to take action (Bandura, 1982, 1977). It can be affected by how capable one feels in performing a task, and this belief may be generalized across

tasks and situations (Bandura & Cervone,1983; 1986; Bandura, 1997).

Individuals' perceptions of their ability to perform across a variety of situations reflects attitudinal aspects within their own general self-efficacy (GSE) and can be defined as a stable and trait-like generalized competence belief that captures motivational belief or a judgment regarding task capabilities (Chen et al., 2004; Chen, Gully, & Eden, 2001). Individuals with high GSE will likely be more motivated and persistent in sustained efforts related to work issues including task completion, thereby making them more effective workers (Chen et al., 2004).

In order for individuals to perform their roles in practice they must know what comprises that role and which learned professional behaviours shape how they enact that role in practice. When individuals perform their professional role and experience a successful outcome (e.g. addressing a client need), role success is gained (e.g. safe, effective client care). Spitulnik, (2019) found that relationships between physicians and allied health practitioners' (AHPs), were significantly correlated between structural empowerment and GSE and between psychological empowerment and GSE and further, AHPs' perceived structural empowerment in their relationship with physicians predicted patient safety. Alternately, when team members lack confidence in carrying out their roles, this can create a reduced feeling of self-efficacy, diminishing competency in their practice (Bandura, 1982).

Furthermore, IPRC begins when individuals are able to articulate the knowledge, skills, and expertise associated with their professional role to another IP team member. Consequently, individuals with greater self-efficacy who understand and can explain how their role leads to effective care outcomes are more likely to feel a sense of belonging

within their practice area and are more likely to create the desire to engage in further application of their role in care situations (Stasser & Titus, 2003).

On the other hand, individuals with low self-efficacy may have a poor perception of their competence in role performance (Bandura, 1977; 1982); hence, the level of self-efficacy held by individuals may affect their feelings of competence (Stasser & Titus, 2003). Self-efficacy has been found to promote persistency in workers to pursue goals despite difficulties or stressful situations that they encounter (Consiglioni, Di Tecco, & Schaufeli, 2016). The perception of one's self-efficacy could then influence how one clarifies his/her roles while engaging with others. Individuals with high self-efficacy are more likely to sustain the effort needed for optimal role performance within the work setting (Bandura, 1977; 1982).

3.3.3 Work Engagement

Work engagement is "the simultaneous employment and expression of a person's 'preferred self' in task behaviors that promote connections to work and to others," (Kahn, 1990, p. 700). *Work engagement* expresses how individuals experience their work and is defined as "a positive, fulfilling, affective motivational state of work-related well-being that is characterized by *vigour*, *dedication*, and *absorption*" (Bakker, Schaufeli, Leiter & Taris, 2008, p. 187).

Vigour is defined by the "high levels of energy and mental resilience while working, [with] the willingness to invest effort into one's work, and persistence even in the face of difficulties" (Bakker, Schaufeli, Leiter, & Taris, 2008, p. 188). The uncertainty and complexity of patients' needs along with the variety of practitioners in their care creates an environment requiring negotiation and adaptation between all parties. When

positive interchanges in a collaborative atmosphere occur, a high level of positive energy (vigour) is emitted. Vigour has been recognised as the polar opposite of exhaustion, a condition that plays a part in burnout (Gonzales-Roma, Schaufeli, Bakker, & Lloret, 2006). Exhaustion in the workplace contributes to a litany of issues including disenchantment with one's work leading to a loss of motivation (Baldwin, Royer, Edinberg (2007). Such a decline in healthcare professionals' motivation would likely interfere with willingness to engage in communication about their own role and the roles of others and could influence how team members carry out their care roles.

The second aspect of work engagement is *dedication*, defined as "being strongly involved in one's work …" with feelings of "significance, enthusiasm, inspiration, pride, and challenge" (Bakker et al., 2008, p. 188). In healthcare, care providers must maintain awareness that the knowledge, skills and expertise required through role enactment in care delivery is rarely done in isolation from other HCPs. Thus, a cross-sharing of information and interventions from each of their role perspectives is a necessary working phenomenon. When dedication to one's work is impeded, this, along with feelings that one's contributions are not significant can lead to a state of cynicism, (Bakker et al., 2008; Schaufeli, Martinez, Pinto, Salanova, & Bakker, 2002) and could possibly impair an individual's inclination to clarify their own and other's roles.

Absorption occurs when one is "fully concentrated and happily engrossed in one's work, whereby time passes quickly …" and HCPs may find it difficult to detach from work (Bakker et al., 2008, p. 188). When HCPs experience positive connections with each other they may become engaged in the processes needed to clarify roles. Christian et al. (2011) found that engaged individuals are highly connected to their work tasks and

strive to complete related goals associated with their roles. While these individuals are likely to work effectively and accomplish their goals, being absorbed in work may enable them to pursue broader goals held by their coworkers and organizations (Christian et al., 2011).

As part of IP collaborative practice, HCPs must engage with others in the delivery of client-centred care. Determining whom they should engage with relates in part to the understanding they have of each other's roles. Role clarity has an impact on how roles are perceived and how care should be distributed and shared within a team (Hardy& Conway, 1988). Thus, the level of work engagement health providers achieve is likely to influence levels of team performance and collaboration. Engaged individuals have the capacity to make connections with others and their work commitment enables them to meet the demands of their job requirements (Bakker, Schaufeli, Leiter & Taris, 2008). Consiglio, Borgogni, Di Tecco and Schaufeli (2016) found individual work engagement is important for an employee's well-being and job performance. They further found that an employee's self-efficacy significantly predicted work engagement three years later, strengthening what is known about this link (Consiglio et all, 2016).

When HCPs are more engaged in their work, this may influence their ability to clarify their roles within the IP team to achieve more effective sharing of patient care responsibilities. Additionally, this may also encourage HCPs to be more open to consider others' perspectives and shift their role boundaries to best share client care. Thus, when teamwork facilitates members voicing their shared viewpoints and clarifying their roles with each other, shared decision-making for client-centred care is more likely to occur. Therefore, it was proposed in this study that HCPs' require personal resources

(conscientiousness and self-efficacy) to strongly engage in work as an IP team member. It may also be the case that work engagement partially mediates the relationship between team members' personal resources and their role clarification. Additionally, the capacity to engage in work may be impacted by the reciprocity that exists between team members.

3.3.4 Reciprocity

Reciprocity is defined as an interdependent exchange, involving bi-directional transactions within social exchanges (Cropanzano & Mitchell, 2005) that supports or helps one another to achieve a shared goal (Biddle, 1979), which in healthcare implies the delivery of quality and safe care in collaboration with clients. Reciprocity plays an important function when team members cooperatively work together when they have a clear understanding and use of each other's roles (Teng et al., 2012).

Roles requiring reciprocity (such as IP team member roles) are often specialized and performed by "non-overlapping sets of persons" (Biddle, 1979, p. 78) however, in IP healthcare teams, reciprocity may also be noted in situations where the boundaries of roles overlap. For example, it is appropriate for physiotherapists and nurses to assist a patient to regain strength following a stroke, but through the use of reciprocity, there can be a clear decision about how each profession will contribute to patient goals. Reciprocity between team members can moderate their role clarity through preferences of how and when one chooses to reciprocate. Reciprocity can then be influenced by socialization and cultural differences (Perugini et al., 2003). Similarly, Orchard, Curran and Kabene, (2005) proposed IPCP as shaped by role socialization into health disciplines and power imbalances that can lead to a lack of sharing in decision-making.

Reciprocal exchanges among healthcare team members require negotiation as part

of their work distribution (Waring & Bishop, 2010; D'Amour et al., 2008) and role construction (MacNaughton, Chreim, & Bourgeault, 2013). This negotiation, or *reciprocity with coworkers* is defined as the "actual engagement in reciprocal acts with other workers on the job" (Gilliam & Rayburn, 2016, p. 294). In a study of frontline service and retail workers, Gilliam and Rayburn (2016) found that varying desires to engage in work exchanges with each other led to differing amounts of *reciprocity with coworkers* ($\beta = 0.62$; $p < 0.01$).

Moreover, absence of reciprocity between co-workers could potentially impair the quality of exchanges, impeding positive teamwork and perhaps undermining collaboration. In a systematic review, Jones (2005) reported on 14 relevant qualitative studies, identifying that following the introduction of advanced practice nursing roles in a hospital setting, other healthcare providers responded with active opposition (negative reciprocity) to their perceived professional role encroachment. Croker, Trede and Higgs (2012) studied IPC within 66 hospital-based rehabilitation team members and found a pattern where reciprocity was a contributor in circumstances where HCPs sought mutual understandings and shared goals. When HCPs worked independently, and in the absence of a formal communication system, shared approaches to patient care were not always negotiated (absence of reciprocity). Therefore, it appears that HCPs who engage in positive exchanges may experience reciprocity with their team members. When HCPs are reciprocally engaged in their IP work, the effectiveness of their role clarification could be influenced. Thus, reciprocity may act as a moderator of role clarification.

3.4 Summary of the Literature

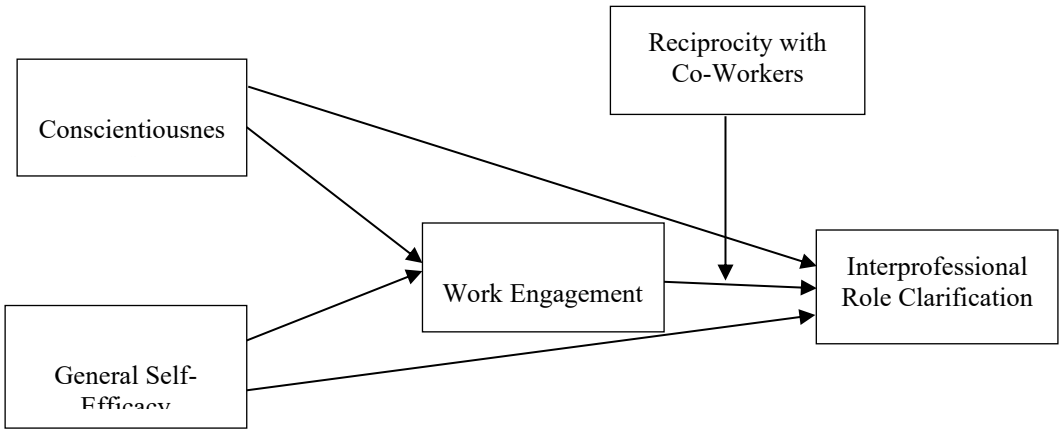
IPRC has been upheld as an important competency as part of collaborative practice for the provision of healthcare during the last two decades, however, there is a paucity of research that specifically focuses on IPRC as a concept or regarding its contribution to IPCP. Based on this literature review, it is theorized that the effectiveness of HCPs to participate in IP role clarification may be influenced by their personal resources including the-personality trait of conscientiousness and general self-efficacy. When HCPs are both conscientious and self-efficacious, it is proposed that they are more likely to be engaged in the planning and delivery of client care with IP team members. This work engagement results in effective role clarification. However, work engagement may also be dependent on the willingness to negotiate reciprocally with IP team members in sharing clients' care.

3.5 Conceptual Framework

The propositions outlined in the above section are depicted in Figure 2 as a proposed conceptual framework.

Figure 2

Proposed Conceptual Framework



Based on this literature review, this study theorized that HCPs' personal resources including conscientiousness and general self-efficacy will influence IPRC. HCPs' engagement in IP work is proposed to influence IPRC and to partially mediate the relationship between the personal resources and IP role clarification. Lastly, it is hypothesized that reciprocity with coworkers will moderate the relationship between HCPs' work engagement and IPRC.

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Chapter Four - Development and Testing of the Interprofessional Role Clarification Scale

4.1 Abstract

The evolution of healthcare practice has increased the demand for healthcare providers (HCPs) to function in a variety of collaborative team roles. Interprofessional role clarification (IPRC) is lauded as necessary for collaborative practice, but there is a paucity of research and measurement instruments that address its nature and processes. This article describes the development and psychometric testing of a instrument designed to measure the effectiveness of IPRC. The *Interprofessional Role Clarification Scale* (IPRCS) development was informed by a concept analysis of IPRC to define its associated antecedents, attributes and consequences using Walker and Avant's (2005) method. The preliminary version of the IPRC (27 statements) was reviewed by six interprofessional (IP) healthcare experts for clarity, comprehensiveness, and content validity (Lynn, 1986). The 27-item IPRCS was revised and administered to 238 HCPs from 15 licenced professions providing client care in small community and rural hospitals in southwestern Ontario. Principal axis factoring with a forced 3 factor solution resulted in 15 items loading onto 3 factors explaining a total variance of 44.33%. A CFA using AMOS version 25 followed using maximum likelihood fit on the 15-item IPRCS theorized model. The final model provided a good model fit [X^2 (40) = 76.81, p<.001, SRMR= .06, GFI=.95, CFI = .95, RMSEA = .06]. The internal consistency estimates for reliability of the subscales ranged from .72 to .82, with an overall reliability of .80. This study expands the current knowledge regarding the conceptualization and enactment of IPRC and provides an instrument with reasonably good psychometric properties but more testing is needed to strengthen these properties further. The IPRCS consists of 11 items

and 3 subscales (*knowing role, articulating role,* and *sharing role*) representing discrete elements of IPRC with the potential to evaluate effectiveness of role clarification of individual practitioners in various practice settings. It has limitations to the settings where the participants practiced. Further testing on a larger population as well as testing in various healthcare settings is needed for test and retest reliability and further revision.

Key Terms: Interprofessional Role Clarification Scale (IPRCS), Knowing Roles, Articulating Roles, Sharing Roles, Healthcare, instrument development,

4.2 Introduction

Interprofessional role clarification (IPRC) is identified as a crucial competency to ensure that healthcare providers (HCPs) can function within a variety of roles across a team (CIHC, 2010) and is reported to be a key aspect of a well-functioning team (Adams, Orchard, Houghton & Ogrin, 2012; Hudson et al., 2017). Interactions between HCPs are required to ascertain an understanding of what contributions each member brings to the care of clients. Interprofessional (IP) interactions that clarify shared knowledge, skills and expertise can shed light on aspects of roles that are autonomous or collaborative and interchangeable or differentiated (McNaughton, Chreim, Borgeault, 2013). When these health provider roles are integrated into team practice, the outcome can be cooperative sharing of client care responsibilities. However, without sharing, team members can experience uncertainty as to their contribution to client care. Research focusing on IPRC is limited, and although existing literature suggests that HCPs report clarifying their roles as part of IP work, an absence of validated instruments challenges objective measurement of role clarification. The purpose of this paper is to report on the development of an instrument that measures IPRC.

4.3 Current Measures of IPRC

For decades, researchers and scholars have identified the need for IPRC in the healthcare team collaboration, but measurement instruments related to IPRC are lacking. Rizzo, House, and Lirtzman's (1970) Role Conflict and Ambiguity Scales have been widely used in organizational and healthcare settings to assess roles. While these scales show good construct validity and psychometric properties (Booth & Hewison, 2002; Oelke et al, 2008) they were neither designed to specifically measure overall IPRC, nor

are their items reflective of antecedents, consequences and attributes of IPRC reported in a previous paper (Allen, Orchard, Evans, Gorman, & Kerr, & 2019).

Lyons (1971) developed the Role Clarity Index with general questions about how clear a person's role was, which measured the value placed on the need for clarity. But similar to Rizzo et al.'s instrument, the Role Clarity Index is limited in its assessment of IPRC because it neither captures the concepts of IP collaboration and communication, nor uses a client-centred approach, which are key components of IPRC (CIHC, 2010). Only one study was found (Saxe, et al., 2017) that measured perceptions of role clarity between advanced practice nursing and pharmacy students following a workshop, however, the instrument did not contribute to measurement of IPRC as either a competency or process.

Of the instruments identified, none focused on the essential attributes that comprise IPRC including assessing the shared collaborative approach required of HCPs to clarify their own roles, and addressing role clarity of other members within an IP team. Role clarification associated with IP collaborative practice must focus on measurement of the process and outcome of role clarification (Allen, Orchard, Evans, Gorman, & Kerr, 2019; Brault et al., 2014) and take the client into consideration to ensure IP client-centred collaborative care (CIHC, 2010). Since IPRC has been identified as a necessary component of IP collaborative teamwork (Suter et al., 2009; Undre, Sevdalis, Healey Darzi, & Vincent, 2006), and supported provincially (HealthForceOntario, 2007), nationally (CIHC, 2010) and internationally, (WHO, 2010) an instrument to study IPRC was needed.

4.4 Framework Guiding Instrument Development

Interprofessional role clarification is defined as "a dynamic process that requires at least two healthcare team members who have the knowledge, skills, clinical judgment and competence, to engage in formal and informal communication to ascertain understanding about their own and others' roles for a shared client-centred approach to care" (Allen, et al., 2019, p. 25). This definition was guided by a comprehensive literature review to understand the constructs that underpin IPRC using Walker and Avant's (2005) concept analysis approach (described in chapter 2).

The concept analysis laid the foundation for construction of a valid instrument by identifying IP role clarification *attributes, antecedents,* and *consequences* (Walker & Avant, 2005). *Attributes* that contribute to successfully implementing IPRC into practice include: (a) engagement in formal and informal communication about own and others' roles, (b) valuing new learning about roles, (c) demonstration of professional knowledge and practice competence and (d) ability to weigh client benefits for inclusion of different healthcare professions (within the client's team) using a client-centred approach. *Antecedents* associated with IPRC attributes, include: (a) interaction between at least two IP team members; (b) opportunities for IP role socialization; (c) willingness to engage in collaborative practice; and (d) possession of knowledge, skills, and judgments of one's own profession. *Consequences* of role clarification include benefits for: clients — improved safety and quality of care and satisfaction with care; IP team members — greater understanding of role capacities of IP colleagues, greater role certainty, and job satisfaction; and healthcare organizations — to realize a positive environment for IP workforce retention, and cost-effective quality care. Findings from the

concept analysis were used to develop the Interprofessional Role Clarification Scale (IPRCS) designed to measure HCPs' perceptions of their IPRC.

4.5 Methods for Instrument Development

The initial version of the IPRCS, contained 25 statements that described facets of IPRC generated from the *attributes* of IP role clarification. In addition, the CIHC (2010) National IP Competency Framework provided guidance to ensure that client-involvement as part of HCP' role clarification process was addressed in a number of the statements. These statements were transformed into three proposed subscales including General Role (9 items), Focused Role (6 items) and Developing Shared Meanings (12 items) (see the "Initial Items" section in Appendix D).

4.5.1 Instrument Testing

Two phases of testing for the generated IPRCS were undertaken. First a content validity assessment was completed and followed by a full instrument testing with healthcare practitioners.

4.5.2 Content Validity

Nine IP healthcare experts were contacted with a request to review all the IPRC items for their content using Lynn's (1986) modified content validity index (CVI). The CVI assessment included a 4-point rating scale: 1 = not relevant, 2 = unable to assess relevance without item revision, 3 = relevant but needs minor attention, and 4 = very relevant succinct (Lynn, 1985). The IP healthcare experts were also asked to respond to two open-ended questions:

1. Is the language clear and appropriate for the target population? (i.e. licensed clinical practitioners in community and rural hospitals)

2. Are any critical components / items regarding interprofessional role clarification missing from the scale?

The questions were meant to determine the instrument's appropriateness, clarity, organization, and to identify of any item omissions (Lynn, 1985; Portney & Walkins, 2000). In total, six experts returned completed questionnaires to the researcher. The CVI score for each item was calculated by the number of experts giving an item rating of 3 or 4, divided by total number of experts (n=6). (Lynn, 1985). A CVI score over .60 was considered acceptable for an item (Lynn, 1986). All 25 items achieved CVI scores of .60 or higher (See Appendix D). Responses to the open ended questions are are noted in Appendix E. Respondents suggested wording changes in a number of the items, removal of two items (original item # 9 and original item #22), and addition of four items (items #5, #11, #19 and #23) as a result of the experts' feedback (see 'final items' in Appendix D). The outcome from the CVI was a revised IPRCS comprised of 27 items and thought to fall within three dimensions – general role (9-items), focused role (6-items), and shared meanings (12-items) (See Table 2).

Table 2

Proposed IPRC Dimensions with Items

Item #	Dimension #1 General Role
1	I understand what my health and social care provider role entails.
2	I articulate to patients/clients what my health and social care provider role is.
3	I articulate to other health and social care providers what my role is.
4	I am certain about what I am permitted to do within my care role.
5	It is not necessary for me to understand the roles of other health and social careproviders.

6	I have a good understanding of the knowledge and skills of other health and social care providers.
7	I am certain about what other health and social care providers are permitted to do within their roles.
8	Clear workplace policies/guidelines assist me to define my role.
9	When a patient/client asks me about another health and social care provider role, I can generally describe that role to the patient/client.
	Dimension #2 Focused Role
10	When I work with patients/clients, I articulate my role.
11	The roles of various health and social care providers seldom vary and therefore require little discussion.
12	When I work with other health and social care providers as a member of the care team for a specific patient/client, I articulate what I can contribute to his or her care.
13	I never assume that I understand all of what another care team member's role entails.
14	I am able to determine the health and social care provider who is able to provide various aspects of a patient's/ client's care.
15	If my understanding is unclear of what other health or social care providers are able to offer to meeting a patient's/ client's needs, I will ask.
	Dimension #3 Shared Meanings
16	I am comfortable negotiating with other health and social care providers as to who should provide care to a patient/client.
17	The roles of various health and social care providers seldom vary and therefore require little discussion.
18	When I feel competent in my patient/client care role, I am likely to contribute to care discussions with other health and social care providers.
19	When there is overlap with the role of another health and social care provider, I work to establish a shared understanding.
20	If I mistrust the competence of another health and social care provider in carrying out patient/client care that is within both of our regulated roles, I will provide patient/client care myself.
21	When I view another health and social care provider as less competent than me, I will not ask them for their contribution to a patient's/client's care.
22	When I perceive that another health and social care provider has more power than I have, I am less likely to engage in discussions about care.
23	When I perceive that another health and social care provider has more power than I have, I wait for that person to tell me what care to provide.
24	I am open to adjusting my role responsibilities when our health and social care provider roles overlap.
25	I am more likely to engage in discussions about role responsibilities when I perceive trust within the team.
26	I am more likely to interact with IP team members regarding our roles in providing patient/client care when I perceive my competence is valued.
27	When I understand how IP team members' roles fit together, I am more open to sharing care.

4.6 Testing of the IPRCS with Healthcare Practitioners

Testing of the IPRCS was implemented using a convenience sample of 238 licensed HCPs from five rural and smaller community hospitals and alliances[1] in communities of less than a population of 75,000. The total target population was approximately 3702 licensed practitioners based on statistics provided from the hospitals and alliances. All full-time and part-time licensed HCPs who were hospital staff or had hospital privileges[2] and provided direct care to patients were eligible to participate. Ethics approval was obtained from the University of Western Ontario (UWO) and from some of the hospital ethics review committees as required through their hospital policies.

4.7 Recruitment

The recruitment procedures included five strategies that were tailored and implemented according to each setting's ethics approvals and recommendations.

4.7.1 Strategy #1: Identification of Study Champions

Individual hospital employees who would serve as role clarification champions assisted in offering insight and suggestions to enhance HCPs participation based on their understanding of site politics, culture and systems (Chlan, Guttormson, Tracy, & Bremer, 2009). A champion had the following characteristics: (a) associated with the hospital site; (b) identified as an informal or formal leader at the site; (c) willing to assist in informing staff about the study and its importance.

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[1] Alliances are groupings of hospitals administered under a single elected board of directors and are generally within an accessible geographic region in Ontario, Canada.

[2] Hospital privileges are associated with both physicians and midwives who are not directly hospital employees but are given the right to admit and care for their patients within the Hospital Act of Ontario, Canada

4.7.2 Strategy #2: Central Distribution of Study Invitation

Working with the hospital contacts, the manager of Human Resources/ Communication Officer or alternative appointed leader from each participating hospital (or hospital alliance) was asked to distribute a prepared Letter of Information and Invitation to all HCPs affiliated with the hospital (or hospitals within an alliance) encouraging them to access the link to the online questionnaire delivered using Qualtrics, a forum that allows researcher to create and disperse surveys confidentially and anonymously.

4.7.3 Strategy #3: Notices in Hospital Newsletters and Information Blasts.

The communications officer or person responsible for the hospital's newsletter at each participating hospital (or alliance) was asked to include a short note about the study, and its value in one to two hospital newsletters with the Qualtrics website link to the survey.

4.7.4 Strategy #4: Researcher Attendance at Meetings

Attendance at meetings/ events suggested by hospital leaders and role clarification champions to briefly discuss the study and to invite HCPs to participate in the study.

4.7.5 Strategy #5: Second Invitation

A second electronic reminder email with the website link to the survey was sent to all HCPs affiliated with the hospital (or hospital alliance) two weeks after the initial invitation using the same process as for Strategy #2. The letter of information, invitation and URL link to an online version of the IPRCS hosted by the university on its Qualtrics platform was sent to all HCPs affiliated with participating hospitals (or hospitals within alliances).

4.8 Respondent Characteristics

A total of 238 licensed HCPs completed the IPRCS. The majority 89.9% (*n* = 214) were female, 9.66 % (*n* = 23) were male, and less than 1% identified as "other". Table 3 summarizes the number and frequency of survey respondents who were represented by 15 different healthcare professions. Nurses included registered nurses (RNs), registered practical nurses (RPNs) and nurse practitioners (NPs) represented the majority of responders. To ensure confidentiality for participants in professional groups with less than five respondents, *n* has been identified as <5.

Table 3

Number and Frequency of Healthcare Providers by Groups and Professions (N=238)

Healthcare Provider Group	***n***	**Sample %rounded**
Registered Nurse	106	44.5
Registered Practical Nurse	42	17.6
Nurse Practitioner	<5 [a]	<2.10 [a]
Physician	13	5.46
Medical Laboratory Technologist	15	6.3
Medical Radiation Technologist	12	5.04
Midwife	9	3.78
Social Worker	8	3.36
Physiotherapist	7	2.94
Dietitian	7	2.94
Occupational Therapist	7	2.94
Respiratory Therapist	5	2.10
Registered Psychotherapist	<5[a]	<2.10 [a]
Speech Language Pathologist	<5 [a]	<2.10 [a]
Spiritual Care Provider	<5 [a]	<2.10 [a]
Totals	238	100

Note [a] Number and percentage of participants are less than 5, therefore the exact number is not recorded to maintain confidentiality of participants.

Table 4 describes the demographics which pertain to age, years in profession and years in current role. Respondents mean age was 42.15 (SD 11.84) with a range between 22 and 68 years of age. The College of Nurses of Ontario's (CNO) 2017 membership statistics were compared to the study data since the majority of participants represented the nursing profession with CNO (2017) reporting slightly higher average ages of 44.8 (RNs), 44 (NPs), and 40.8 (RPNs).

Respondents reported a range of between 1.0 and 44.0 years in their chosen profession with a mean of 18.05(12.37) whereas the amount of time in their current health care role ranged from less a year to 40 years, with a mean of 10.33 (9.75). The largest proportion of respondents identified themselves to be diploma-prepared (*n* = 110, 46.2%) followed by respondents who held undergraduate degrees (*n* = 76, 32.1%) in a variety of disciplines such as nursing, psychology, and health science. Some HCPs held graduate degrees (*n* = 40, 16.8%) in a variety of disciplines such as medicine, and master's degrees in social work, nursing, occupational therapy, communication disorders, healthcare quality, physiotherapy and nutrition. One participant did not indicate the level of education completed. The majority of respondents identified their employment as full-time (*n* = 164*,* 68.5%) while 28.5% (n = 68) were employed part-time. Only 2.5% (n = 6) respondents reported their employment to be on a casual basis, while one individual not indicating any employment status.

Table 4

Numbers, Percentages, Mean(M), Standard Deviation (SD) of Year Range Demographics

Number of Years	*n*	Sample % (rounded)	*M(SD)*	Range
Age	238	100.0	42.15 (11.84)	22.0– 68.0
30 and under	55	23.1		
31 to 40	57	23.9		
41 to 50	50	21.0		
50 and over	76	31.9		
Working in profession	238	100.0	18.05(12.37)	1.0 – 44.0
5 or less years	50	21.0		
6 to 10 years	45	18.9		
11 to 19 years	36	15.1		
20 or more years	107	44.9		
Working in current role	238	100.0	10.33 (9.75)	0.3 – 40.0
5 or less years	104	43.7		
6 to 10 years	49	20.5		
11 to 19 years	40	16.8		
20 years or more	45	18.9		

Demographic comparisons were conducted with the IPRC, using an independent t-test to compare by gender and one-way ANOVA procedures to compare them by age groups, level of education, years in profession, and years in current role. No significant differences were noted.

4.9 Data Collection

Participating healthcare providers were asked to complete the online IPRCS which was developed for this study and comprised of 27 items. The final IPRCS consists of 11 items distributed across three factors including knowing roles (5 items), articulating roles (3 items) and sharing roles (3 items) with a 5-point scale (1= strongly disagree to 5 = strongly agree). For this study, the items for each of the three subscales were summed and an overall IPRCS score was obtained by summing the three subscale scores with higher scores reflecting more effective IPRC. Cronbach's α for the total IPRCS (.76)

and the subscales, knowing roles (.74), articulating roles (.82) and sharing roles (.72) were satisfactory. Demographic data included gender, age, professional educational preparation, participant's licensed profession of practice, full or part-time employment, length of time since entry into provider practice.

4.10 Data Analysis

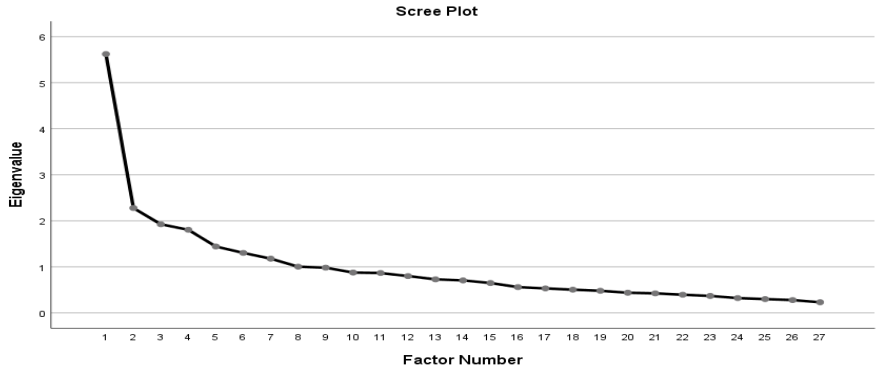
Data were analysed using SPSS v.25 (IBM.com) to assess for both the validity and reliability of the IPRCS. Initially descriptive statistics (M, SD, and , Cronbach'sα) were carried out on all 27 items. This was followed by an exploratory factor analysis (EFA) using principal axis factoring (PAF) and covariance assessment with orthogonal varimax rotation to identify the IPRCS' dimensions underlying relationships among the variables (Pedhazur & Schmelkin, 1999). Varimax rotation was used to minimize "the number of variables that have high loading on each factor" (Pallant, 2013, p. 192).

4.10.1 Exploratory Factor Analysis

Initially all the IPRCS items were assessed for sampling adequacy and sphericity. The Kaiser-Meyer-Olkin (KMO) was .79 which is above the recommended value of .6 (Kaiser 1970,1974) and Bartlett's Test of Sphericity was significant ($X^2 = 1904.90$ $df = 351$ $p < 0.001$) further supporting appropriateness of data for a factor analysis. PAF using covariance with varimax rotation and Kaiser normalization revealed seven factors with eigenvalues exceeding 1, explaining 44.1% of the total variance (factor 1 = 8.6%; factor 2 = 8.5%; factor 3 = 7.44%; factor 4 =7.21%; factor 5 = 5.22%; factor 6 = 4.64%; and factor 7 = 2.49%). An inspection of the scree plot noted poor demarcation of a clear break after the first component, with a gradual leveling off between the third and seventh factors (figure 3).

Figure 3

Scree Plot of Seven-Factor Loadings (IPRCS Version 1)



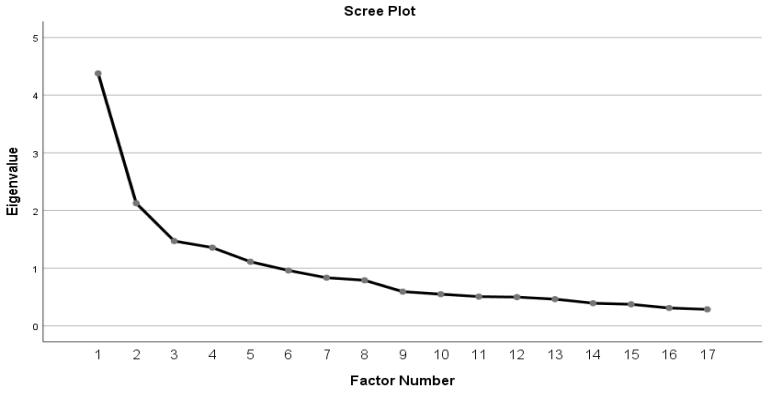
Given these ambiguous results, a parallel analysis (PA) was undertaken to address the tendency for Kaiser's criterion to overestimate and for Catell's Scree Test perhaps not providing clear demarcations between the eigenvalues for major and unimportant factors as has been reported (O'Connor, 2000). This analysis included the 27 variables times 238 item ratings of respondents using 1000 randomly generated datasets, and resulted in seven factors with eigenvalues exceeding the corresponding criterion values, thus offering no new information to the PAF results.

The original EFA (without use of a parallel analysis results) was reviewed and 10 of the items were noted to have a factor cross-loading of less than .3. These items were removed resulting in a 17-item IPRCS version 2. The IPRCS version 2 was then subjected to a similar EFA (using a PAF and covariance with a varimax rotation) resulting in a five-factor solution that explained 53.1% of the variance (factor 1 = 12.12%, factor 2 = 11.92%, factor 3 = 11.03%, factor 4 = 10.39%, factor 5 = 7.59%). In this analysis the criterion for 0.4 was used as the factor loading cut-off with a minimum difference of 0.3 between the item on one factor and its loading onto the other factors. Two further items did not meet these criteria and were removed resulting in a 15-item IPRCS version 3. The EFA was again run on the 15-item IPRCS version 3. The scree

plot (figure 4) showed a marked break at eigenvalue one with smaller demarcations at two and three shown in Figure 4.

Figure 4

Scree Plot for Three-Factor Loadings (IPRCS version 3)



A three-factor analysis explained a total variance of 44.33% (factor 1 = 17.6%; factor 2 = 14.7%; factor 3 = 12.03%). Factor 1 is a 7-item factor, labeled as *Knowing Roles* (KR*)*, factor 2, a 4-item factor, labeled as *Articulating Roles* (AR), and factor 3 contains 4 items and is labeled *Sharing Roles* (SR). Three items closely approached the 0.3 cutoff and a decision was made to retain these for the next step of confirmatory factor analysis (see Table 5).

Table 5

Factor Loadings for the 15 Items of the IPRCS Version 3

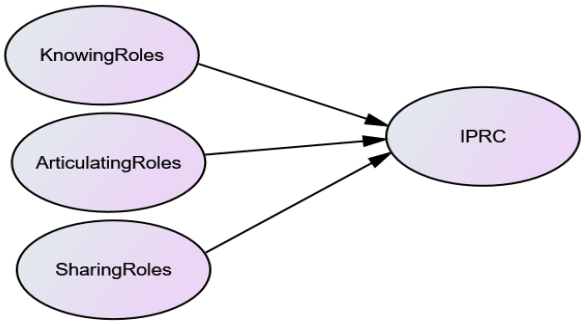
Item and Item #	Factor 1 (KR)	Factor 2 (AR)	Factor 3 (SR)
2. I articulate to patients/clients what my health or social care provider role is.	.22	**.79**	.06
3. I articulate to other health and social care providers what my role is.	.16	**.73**	.06
4. I am certain about what I am permitted to do within my care role.	.18	**.40**	.03

6. I have a good understanding of the knowledge and skills of other health and social care providers.	**.60**	.27	.03
7. I am certain about what other health and social care providers are permitted to do within their roles	**.59**	.29	-.09
9. When a patient/client asks me about another health or social care provider role, I can generally describe that role to the patient.	**.66**	.15	.05
10. When I work with patients, I articulate my role.	.17	**.76**	.19
14. I am able to determine the health or social care provider who is able to provide various aspects of a patient's/ client's care.	**.65**	.02	.06
16. I am comfortable negotiating with other health and social care providers as to who should provide care to a patient/client.	**.59**	.23	.19
18. When I feel competent in my patient/client care role, I am likely to contribute to care discussions with other health and social care providers.	**.50**	.09	.21
19. When there is overlap with the role of another health or social care provider, I work to establish a shared understanding.	**.50**	.21	.19
24. I am open to adjusting my role responsibilities when my role overlaps with another health or social care provider's role.	.23	.07	**.50**
25. I am more likely to interact with IP team members regarding our roles in providing patient/ client care when I perceive my competence is valued.	.01	.004	**.69**
26. I am more likely to engage in discussions about role responsibilities when I perceive trust within the team.	-.07	.14	**.72**
27. I am open to adjusting my role responsibilities when my role overlaps with another health or social care provider's role.	.19	.07	**.60**

Figure 5 theorizes IPRC to be comprised of knowing roles, articulating roles and sharing roles.

Figure 5

Theorized Model for EFA/CFA of IPRCS Version 3



4.10.2 Methods for Confirmatory Factor Analysis (CFA)

A CFA using AMOS v.25 was carried out using maximum likelihood fit on the 15-item IPRCS theorized model to evaluate and determine the best model fit for the three-factor model. Initially the theorized three dimensions were entered into the path model as three latent variables, KR, AR, and SR, followed by items within each latent variable added as observed variables to their respective latent variable. This path model was then subjected to a maximum likelihood fit estimation analysis to determine model fit estimates for: Chi-square test (X^2), goodness-of-fit index (GFI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR) (Arbuckle, 2017; Weston, 2006). Both X^2 and GFI are absolute fit indices,meaning that they assess model fit for the observed data by measuring the proposed model's covariance structure compared to the observed covariance matrix (Weston, 2006). Since X^2 is sensitive to sample size, it is recommended to report the GFI to further support specification (Weston, 2006). The GFI

ranges from zero to 1.00 with values of .90 or greater indicating a well-fitting model.

SRMR is the square root of the difference between the residuals of the sample covariance matrix and the hypothesized covariance model and solves interpretation issues caused when scales have varying scale points (e.g. 1 to 5 and 1 to 7) (Kline 2016). And as a measure of absolute fit, zero indicates a perfect model fit and a value of less than 0.08 is considered to be acceptable (Hu & Bentler, 1999) and less than .05 is well-fitting (Byrne, 2016)

The comparative fit index (CFI) is an incremental fit index that compares the improvement of the fit of the proposed model to the null model and ranges from 0 to 1.0 with a better fit closer to 1.0. A value greater than .90 is an acceptable model fit and greater than .95 indicates an excellent fit (Kline, 2016).

The RMSEA examines the extent to which the model fits the population covariance matrix and chooses the model with lesser parameters. A value of less than .05 indicates an excellent fit to the data while .05 to .07 is acceptable (Kline, 2016; Byrne, 2016)). Five models were run to determine the best model fit and are shown in Table 6.

Table 6

Fit Indices of Confirmatory Factor Models for IPRCS

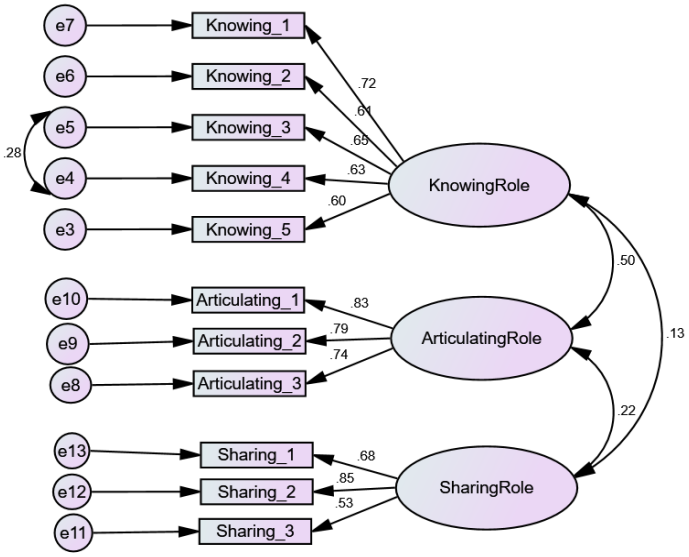
Model	X^2 (df)	GFI	SRMR	CFI	RMSEA
Model 1	254.99 (87) **	.87	.08	.85	.09
Model 2	212.82 (85) **	.90	.08	.89	.08
Model 3	148.63 (60)**	.92	.07	.91	.08
Model 4	109.13 (50)**	.93	.06	.93	.07
Model 5	76.81 (40)**	.95	.06	.95	.06

Note ** $p<.001$

The initial model (model 1) demonstrated a poor fit with X^2 (87), 254.99 p<.001 SRMR .08, GFI.87, CFI .85, and RMSEA .09. In contrast, the final model (model 5) provided a good model fit based on the fit criteria previously described. Model 5 provided an improved model fit (X^2 (40) = 76.81, p<.001, SRMR= .06, GFI=.95, CFI = .95, RMSEA = .06) and was deemed the best fitting model (Figure 6) (see Appendices F, G, H and I for depictions of Models 1, 2, 3 and 4).

Figure 6

IPRCS CFA Model Fit



The final IPRCS consists of 11 items (observed variables) within 3 dimensions (latent variables) including knowing roles, (5-items), articulating roles (3-items) and sharing roles (3-items).

4.10.3 Descriptive Summary of the IPRCS and its Dimensions

Each item was rated using a 5-point Likert scale (ranging from 1= Strongly Disagree, to 5 = Strongly Agree. The mean item scores and standard deviations of the

IPRCS subscale are shown in Table 7. Using Cronbach's α, the overall reliability for the IPRCS was .80 and ranged from .72 and .82 for the dimensions.

The testing of the IPRCS resulted in a reasonably sound preliminary measure devised of 11 items within three dimensions that represent discrete elements of IPRC including Knowing Roles (5 items), Articulating Roles (3 items), and Sharing Roles (3 items). The results provide beginning evidence of reliability and construct validity of the IPRCS.

Table 7

IPRCS Dimensions, Total Scale Means, Standard Deviations, Mean Item Scores and Reliabilities

Dimension and Total Scale	Number of Items	Mean	SD	Mean Item Score	Cronbach's α
Knowing Roles	5	15.64	2.04	3.89	.82
Articulating Roles	3	12.31	1.99	4.1	82
Sharing Roles	3	12.71	1. 47	4.24	.72
Total Scale	11	44.52	4.52	4.05	.80

4.11 Discussion

Knowing roles is defined as clearly understanding both one's own profession-specific responsibilities and those of other professions including insight into what can and cannot be shared between IP team members (Barret & Hafferty, 2015; CIHC, 2010). The presence of this understanding requires HCPs to possess a set of expectations for themselves and others and to use this knowledge to adeptly perform within their roles (Hardy & Conway, 1988). Knowing roles is a key component of IPRC that is essential to

the engagement in discussions and to negotiate the division of responsibilities for client care.

Articulating roles is defined as a social exchange that occur between IP team members to provide one another with explicit information about their own roles and their perceptions of the other's role (Hardy & Conway, 1988) and further share this information with clients (CIHC, 2010). When knowledge is limited about how other HCPs can contribute or when skills and competencies overlap, role conflict can ensue (Dahl & Crawford, 2017; Nancarrow, 2004) undermining client safety and care quality (Agency for Healthcare Research and Quality. 2014; Lo, 2011).

Sharing roles is defined as the response whereby IP team members cooperate using open communication to negotiate the most effective division of tasks and use of resources to establish and achieve client-centred goals and safe quality care (CIHC, 2010; Orchard et. al, 2012). While evolving healthcare policy increases the demand for role flexibility, boundary disputes among health professions continue to exist (King, Nancarrow, Borthwick & Grace, 2015) emphasizing the need for HCPs to carry out IPRC by integrating knowing, articulating and sharing roles.

4.12 Implications

The IPRCS has practical application to evaluate individual HCPs' perceived effectiveness of their role clarification within the IP team members as part of institutional-based practice. Currently, there is an absence of instruments that can assist HCPs to consider their competence to clarify roles with others and it can potentially have a variety of applications. For example, it can be used by continuing healthcare educators as a means to assess the impact of educational activities and programs that highlight IPRC

or it could be helpful to IP teams wishing to focus on their competence in IPRC. The IPRCS has potential to guide HCPs and healthcare organizations to understand IPRC as an outcome, and may also provide a framework to begin to understand role clarification as an ongoing process in teamwork.

4.13 Study Limitations

A number of limitations must be acknowledged in this study. Since a convenience sample was obtained from rural and smaller hospitals located in one geographical area of Ontario, it may not be representative of all healthcare practitioners and may have limited application provincially, nationally and internationally.

Due to a sample size smaller than was originally projected, the sample could not be divided for instrument testing, meaning that further psychometric testing is needed to establish the IPRCS's evidence of validity in measuring IPRC. Since this study invited all licensed HCPs, the imbalance of professions represented in this study are notable. While, the number of various HCPs who participated may be reflective of the number of individuals in that profession compared to the other professions, control group interventional studies using cluster sampling are needed.

It is important for additional studies using IPRCS to further provide confirmation, validation of the instrument and test-retest reliability. It also needs to be used in a pre- and post-team development intervention study to determine its effectiveness in continuing education of health providers' IPRC. Additionally, studying a variety of samples from different geographical regions, and involving IP teams from specific care settings could help to increase the instrument's dimensional validity and reliability.

4.14 Conclusion

This chapter has outlined the steps in development and initial testing of a measure to assess interprofessional role clarification. The instrument includes items that attend to the importance of addressing role clarification of all team members. This is the first known instrument that measures IPRC and its brevity means it can be completed in less than five minutes. The IPRCS consists of 11 items within three dimensions of IPRC. The results provide beginning evidence of the instrument's validity and reliability.

4.15 References

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Appendix D

Content Validity Index IP Expert Feedback

*CVI score = number of experts giving an item rating of 3 or 4 divided by total number of experts (N=6).

INITIAL ITEM #	**INITIAL ITEM AND IP EXPERT FEEDBACK**	Not Relevant	Unable to assess relevance without item revision	Relevant but needs minor attention	Very relevant and succinct
	(General Role) *In the context of my general role in clinical practice*				
1.	I understand what my professional/provider role entails.	**1**	**2**	**3**	**4**
	CVI-1 Choose professional or provider (ENTIRE QUESTIONNAIRE)			X	
	CVI-2				X
	CVI-3				X
	CVI-4				X
	CVI-5 Insert “health”				X
	CVI-6				X
	Total # of experts per grading			**1**	**5**
	CVI score = 6/6 = 1				
Revised Item # and Item	***1. I understand what my health and social care provider role entails.**				
2.	I am able to articulate to patients/clients what my professional/provider role is.	**1**	**2**	**3**	**4**

	CVI-1 Choose professional or provider (ENTIRE QUESTIONNAIRE)			X	
	CVI-2				X
	CVI-3				X
	CVI-4				X
	CVI-5 Insert "health" as above				X
	CVI-6				X
	Total			**1**	**5**
	CVI = 6/6 = 1				
Revised Item # and Item	*****2. I articulate to patients/clients what my health and social care provider role is.				
3.	I am able to articulate to those in other professional/providers what my role is.	**1**	**2**	**3**	**4**
	CVI-1 CHOOSE one- SAME AS ABOVE			X	
	CVI-2				X
	CVI-3				X
	CVI-4				X
	CVI-5				X
	CVI-6				X
	Total			**1**	**5**
	CVI = 6/6 = 1				
Revised Item # and Item	*****3. I articulate to other health and social care providers what my role is.				
4.	I feel certain about how much authority I have within my role.	**1**	**2**	**3**	**4**
	CVI-1 I "AM" CERTAIN			X	
	CVI-2				X

	CVI-3				X
	CVI-4				X
	CVI-5 (add "in health and healthcare") This items meaning to the respondent is hard to assess without rewording, "authority" is the issue. The term is often confused with "power". What you mean by authority here is unclear. Do you mean legislature authority related to scope of practice?		X		
	CVI-6				X
	Total		**1**	**1**	**4**
	CVI = 5/6 = .83				
Revised Item # and Item *#4. I am certain about what I am permitted to do within my care role.					
5.	I have a good understanding of the knowledge and skills of other healthcare professions/providers with whom I work.	**1**	**2**	**3**	**4**
	CVI-1				X
	CVI-2				X
	CVI-3				X
	CVI-4				X
	CVI-5				X
	CVI-6				X
	Total				**6**
	CVI = 6/6 = 1				
Revised Item # and Item * #6. I have a good understanding of the knowledge and skills of other health and social care providers.					

6.	I feel certain about how much authority other IP team members have within their roles.	**1**	**2**	**3**	**4**
	CVI-1 I "AM" Certain			X	
	CVI-2				X
	CVI-3				X
	CVI-4				X
	CVI-5 Same comment as #4, what do you mean by authority		X		
	CVI-6				X
	Total		**1**	**1**	**4**
	CVI = 5/6 = .83				
Revised Item # and Item *#7. I am certain about what other health and social care providers are permitted to do within their roles.					
7.	Clear policies/guidelines assist me to define my role.	**1**	**2**	**3**	**4**
	CVI-1				X
	CVI-2				X
	CVI-3 Is it policies/guidelines or practice standards			X	
	CVI-4				X
	CVI-5 What about legislation and scope of practice regulations-would all respondents think of these as "policies/guidelines"? I hope so.			X	
	CVI-6				X
	Total			**2**	**4**
	CVI = 6/6 = 1				
Revised Item # and Item *#8. Clear workplace policies/guidelines assist me to define my role.					

8.	When a patient/client asks me about another IP team member's role, I can generally describe that role to the patient/client.	**1**	**2**	**3**	**4**
	CVI-1 to him/her			X	
	CVI-2				X
	CVI-3				X
	CVI-4				X
	CVI-5 "IP" abbreviation not previously defined? Do you need			X	
	CVI-6				X
	Total			**2**	**4**
	CVI = 6/6 = 1				
Revised Item # and Item *#9. When a patient/client asks me about another health and social care provider role, I can generally describe that role to the patient/client.					
9.	I have a clear understanding of how much authority that other IP team members with whom I work have within their roles.				
	CVI-1				X
	CVI-2				X
	CVI-3				X
	CVI-4				X
	CVI-5 remove word "that" , "IP" as above –this seems to belong to the focused items. "With whom I work"—same problems of clarity as with other "authority" items.		X		
	CVI-6				X
	Total		**1**		**5**
	CVI = 5/6 = .83				

Revised Item # and Item - Decision to discard above item					
	In the context of my focussed role in clinical practice				
10.	When I work with patients/clients, I articulate what my role is as a member of their IP care team.	**1**	**2**	**3**	**4**
	CVI-1 (team work?) When I work with patient/client as a member of the care team, I articulate my role.			X	
	CVI-2				X
	CVI-3				X
	CVI-4				X
	CVI-5 See previous comments re. IP abbreviation			X	
	CVI-6				X
	Total			**2**	**4**
	CVI = 6/6 = 1				
Revised Item # and Item *#10. When I work with patients/clients, I articulate my role.					
11.	When I work with other professional/providers, I am able to articulate what my role can entail as a member of the patient's/client's IP care team.	**1**	**2**	**3**	**4**
	CVI-1 same as 10 *When I work with other professional/providers as a member of the care team, I articulate my role*			**X**	
	CVI-2				**X**
	CVI-3				**X**
	CVI-4				**X**
	CVI-5 See previous IP comments			**X**	

	CVI-6				X
	Total			**2**	**4**
	CVI = 6/6 = 1				
Revised Item # and Item	***#** 12. When I work with other health and social care providers as a member of the care team for a specific patient/client, I articulate what I can contribute to his or her care.				
12.	I never assume that I understand all of what another IP team member's role entails.	**1**	**2**	**3**	**4**
	CVI-1				X
	CVI-2				X
	CVI-3				X
	CVI-4				X
	CVI-5 DITTO				X
	CVI-6				X
	Total				**6**
	CVI = 6/6 = 1				
Revised Item # and Item	***#** 13. I never assume that I understand all of what another care team member's role entails.				
13.	Because I have a good understanding of the general roles of others, I am able to determine who can provide various aspects of a patient's/ client's care.	**1**	**2**	**3**	**4**
	CVI-1 Too complex—start at "I am able …"			X	
	CVI-2			X	
	CVI-3				X

	CVI-4				X
	CVI-5 “is most likely to be able to” provide … Do you want to make this item contextual to the care situation			X	
	CVI-6				X
	Total			**3**	**3**
	CVI = 6/6 = 1				
Revised Item # and Item *#14 I am able to determine the health and social care provider who is able to provide various aspects of a patient’s/client’s care.					
14.	If my understanding is unclear of when or how IP team members can contribute to a patient’s/ client’s care, I will ask how their role fits with the patients’/clients’ needs.	**1**	**2**	**3**	**4**
	CVI-1—not answered	**-**	**-**	**-**	**-**
	CVI-2				X
	CVI-3				X
	CVI-4				X
	CVI-5 IP as previous, singular or plural for patient, “what they can (are able) to offer to meeting the patient’s/client’s needs			X	
	CVI-6				X
	Total			**0**	**5**
	CVI = 5/5 = 1				
Revised Item # and Item *# 15 If my understanding is unclear of what other health or social care providers are able to offer to meeting a patient’s/ client’s needs, I will ask.					
	In the context of interprofessional collaboration				

15.	I feel comfortable negotiating with other IP team members as to who can provide care to a patient/client.	**1**	**2**	**3**	**4**
	CVI-1				X
	CVI-2			X	
	CVI-3				X
	CVI-4				X
	CVI-5 IP as previous, will? Sounds like a situation of overlap if negotiation is required—another word other than "negotiation"?			X	
	CVI-6				X
	Total			**2**	**4**
	CVI = 6/6 = 1				
Revised Item # and Item *# 16 I feel comfortable negotiating with other health and social care providers as to who should provide care to a patient/client.					
16.	When an IP team member carries out patient/client care that I believe to be within my role, I will engage in a discussion to understand why this is happening.	**1**	**2**	**3**	**4**
	CVI-1 You are disregarding overlap between who-what may be routine.		X		
	CVI-2			X	
	CVI-3				X
	CVI-4				X
	CVI-5 another overlap item? You could understand overlap but you need more than understanding to resolve an overlap situation and develop shared meaning.			X	

	CVI-6				X
	Total		**1**	**2**	**3**
	CVI = 5/6 = .83				
Revised Item # and Item *#17 When another health and social care provider carries out patient/client care that I believe is an overlap with my role, I will engage in a discussion about this. *#19. When there is overlap with the role of another health and social care provider, I work to establish a shared understanding.					
17	When I feel competent in my patient/client care role, I am more likely to make suggestions to other IP team members.	**1**	**2**	**3**	**4**
	CVI-1—no comment—wonder if comment above fit here too.	X			
	CVI-2			X	
	CVI-3				X
	CVI-4				X
	CVI-5 make suggestion (add “about what I can contribute”) , IP as previously			X	
	CVI-6				X
	Total	**1**		**2**	**3**
	CVI = 5/6 = .83				
Revised Item # and Item ***#** 18 When I feel competent in my patient/client care role, I am likely to contribute to care discussions with other health and social care providers.					
18.	If I mistrust the competence of another IP team member in carrying out patient/client care that is within both of our authorities, I am likely to go ahead and provide that care by myself.	**1**	**2**	**3**	**4**
	CVI-1				X

	CVI-2 Not clear as providing such care may be inappropriate/outside scope		X		
	CVI-3				X
	CVI-4				X
	CVI-5 What you mean by authorities is unclear. This might test "self-efficacy, but is not good team practice (test?-can't read word). It does not get at shared meaning, which would involve working out one concern with the other team member and coming to a shared understanding of who would do what and why, also potentially an "overlap" item –how many of these do you need? Are there other aspects to developing shared meaning that ought to be included in items here?		X		
	CVI-6				X
	Total		**2**		**4**
	CVI = 4/6 = .67				
Revised Item # and Item *# 20. If I mistrust the competence of another health and social care provider in carrying out patient/client care that is within both of our regulated roles, I will provide patient/client care myself.					
19	When I view an IP team member as less competent than myself, I will not ask them for their help.	**1**	**2**	**3**	**4**
	CVI-1				X
	CVI-2		X		
	CVI-3				X
	CVI-4				X
	CVI-5 Again does not get at shared meaning. Is this a reverse scored item? It might be relevant to this kind of		X		

	testing the expectation as a reverse scoring. Unsure of relevance in scale.				
	CVI-6				X
	Total		**2**		**4**
	CVI = 4/6 = .67				
Revised Item # and Item *#21 When I view another health and social care provider as less competent than me, I will not ask them for their contribution to a patient's/client's care.					
20	When I perceive that another IP team member has more power than I have, I am less likely to discuss my own, or how the other member can help take on care responsibilities.	**1**	**2**	**3**	**4**
	CVI-1 Too complex. Delete from "or"			X	
	CVI-2		X		
	CVI-3				X
	CVI-4				X
	CVI-5 Discuss their what? Here you use the word "power" instead of "authority" which speaks to my comment of potential confusion between the two words without some clarity about their meaning.		X		
	CVI-6				X
	Total		**2**	**1**	**3**
	CVI = 4/6 = .67				
Revised Item # and Item *#22. When I perceive that another health and social care provider has more power than I have, I am less likely to engage in discussions about care.					
21	I am open to adjusting my role responsibilities when our professional/provider roles overlap.	**1**	**2**	**3**	**4**
	CVI -1				X

	CVI-2				X
	CVI-3				X
	CVI-4				X
	CVI-5 Clear overlap item and action needed to develop shared understanding and action deriving from it.				X
	CVI-6				X
	Total				**6**
	CVI = 6/6 = 1				
Revised Item # and Item *# 24. I am open to adjusting my role responsibilities when our health and social care provider roles overlap.					
22	I feel comfortable in negotiating with IP team members to assume the leadership role in patient/client care	**1**	**2**	**3**	**4**
	CVI-1				X
	CVI-2				X
	CVI-3				X
	CVI-4				X
	CVI-5 change to “role in a patient/client care situation”. Leadership in high performing teams is flexible and depends on care situation.			X	
	CVI-6				X
	Total			**1**	**5**
	CVI = 6/6 = 1				
Revised Item # and Item - Decision to discard above item					

23	When I believe there is trust within the IP team, I am more likely to engage in discussions about role responsibilities.	**1**	**2**	**3**	**4**
	CVI-1 the word “believe” was circled. See #24				**X**
	CVI-2		**X**		
	CVI-3				**X**
	CVI-4				**X**
	CVI-5 This can also be a means to build trust! How is the concept of trust related to shared meanings-not clear from item.			**X**	
	CVI-6				X
	Total		**1**	**1**	**4**
	CVI = 6/6 = 1				
Revised Item # and Item *#25 I am more likely to engage in discussions about role responsibilities when I perceive trust within the team.					
24	When I feel that others value my competence, I am more likely to interact more frequently with IP team members regarding our roles in providing patient/client care.	**1**	**2**	**3**	**4**
	CVI-1 You have switched to believing from feeling. Which?			X	
	CVI-2			X	
	CVI-3				X
	CVI-4				X

	CVI-5 remove first “more” –too many mores. IP-same as previous items				X
	CVI-6				X
	Total			**2**	**4**
	CVI = 6/6 = 1				
Revised Item # and Item *#26 I am more likely to interact with other health and social care team members regarding our roles in providing patient/client care when I perceive my competence is valued.					
25	I have a greater openness about sharing care when I understand how IP team members’ roles fit together.	**1**	**2**	**3**	**4**
	CVI-1 Openness or readiness? More concrete?			X	
	CVI-2			X	
	CVI-3				X
	CVI-4				X
	CVI-5 IP-same as previous				X
	CVI-6				X
	Total			**2**	**4**
	CVI = 6/6 = 1				
Revised Item # and Item *#27 When I understand how other health and social care team members’ roles fit together I am more open to sharing care.					

Appendix E

CVI Questions Proposed to Experts

D1) *Is the language clear and appropriate for the target population? (licensed clinical practitioners in community and rural hospitals)*

CVI- 1 Yes is a UK context I think.
CVI-2 Sometimes the intentional power, personal areas & assumptions have some ambiguity in leading how someone would answer
CVI-3 Language is clear for this higher level target population—practicing practitioners
CVI-4 This is great - I can see the links back to the Framework and the questions are clearly expressed. I could go through each item,
but would give all a score of 4 i.e. Very Relevant and Succinct.
CVI-5 There are a number of issues with language in the items, -see specific comments-Have you or will you pretest this in the
population of providers you have identified? I cannot assess relevance of working for this particular target population.

D2) *Are any critical components/items regarding interprofessional role clarification missing from the scale?*

CVI-1 None that I can come up with immediately.
CVI-2 Showing how one works with, learns from and about is not clearly evident.
CVI-3 Feel it is comprehensive and explores all relevant items.
CVI-4 My chief concern would be having enough null items so that you can be sure that respondents are being "truthful" in their responses i.e. that you can cross-check that they are not simply giving you what they think you want to hear.

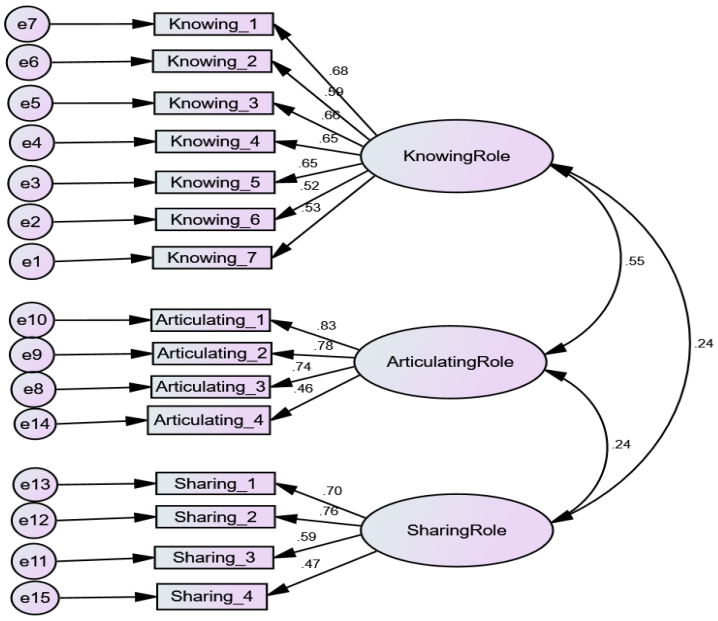
Based on CVI-4, additional items were added in revised version including: *It is not necessary for me to understand the roles of other health and social care providers* (#5 in revised IPRCS version), and *The roles of various health and social care providers seldom vary and therefore require little discussion*(11 in revised IPRCS version)

CVI-5 The most difficulty is with the items in your shared meaning subscale. All items assume a clear understanding of who my "IP" team is. How will you know all respondents interpret this similarly? What are the implications if they do not?
***Instructions for completion of IPRCS must include definition of IP team to address concern of CVI-5 comment.**

CVI-6 With respect to "attitudes" - I view attitudes as closely bound up with values, which then affect behaviour. I am not sure how to tease this apart from your general scheme, but maybe it would be good to have a chat with an ethicist about this matter? In any event, thank you for asking my opinion, I am honoured to be asked. Good luck with this very important work - we sure need role clarification! The Canadian Academy of Health Sciences is releasing its report on Scopes of Practice this month - it will be worth your time to look at

Appendix F

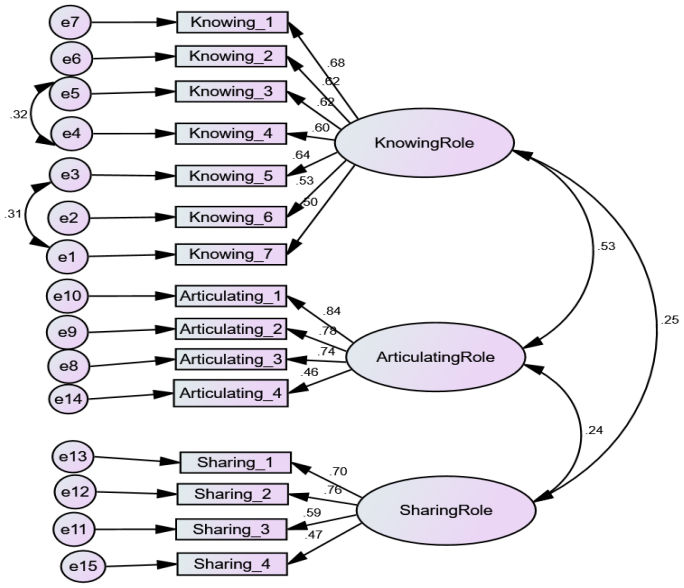
IPRCS CFA Model One



Model 1 did not show a good model fit (X^2 (87) = 254.99, p<.001, SRMR .08, GFI=.87, TLI =.82, CFI = .85, RMSEA = .09). The modification indices were examined to identify constraints affecting the fit of the observed covariance structure (Kline, 2016). A covariance between error terms of the observed variables for KnowingRoles (e4 and e5, e1 and e3) may suggest some content overlap.

Appendix G

IPRCS CFA Model Two



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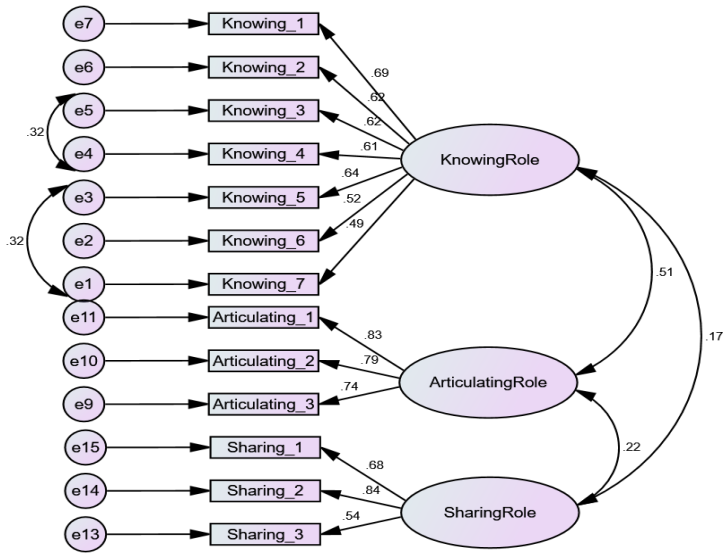
Model 2 with the added covariances showed slight improvement (X^2 (85) =212.82, p<.001, SRMR .08, GFI=.90, TLI =.86, CFI = .89, RMSEA = .08) but it was noted that regression-related issues of the observed variables, *Knowing_3* onto *Articulating_4, and Knowing*_5 and *Knowing*_7 on to *Sharing_4* were present. Review of the standardized regression weights indicated that *Articulating_4* and *Sharing_4* both are below the .5 cut-off point *(β* = .46 and .48 respectively). Thus, both items were removed, and the revised path model was rerun.

Appendix H

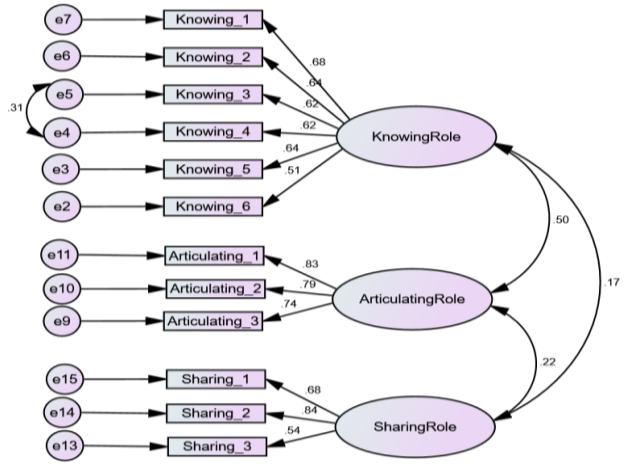
IPRCS CFA Model Three



Model 3 had a slightly better fit (X^2 (60) =148.63, p<.001, SRMR= .07, GFI=.92, TLI =.88, CFI = .91, RMSEA = .08). No further modifications were suggested, but it was noted *Knowing_7* had dropped to β = .49 leading to removal of this item.

Appendix I

IPRCS CFA Model Four



Model 4 approached a good fit (X^2 (50) =109.13, p<.001, SRMR= .06, GFI=.93, TLI =.91, CFI = .93, RMSEA = .07). However standardized regression coefficient for *Knowing-6* barely met the above .50 cut-off value (β = .509). A review of the item meaning (i.e. pertaining to one's own competence) did not seem to relate to the other observed variables in the latent and was removed.

Chapter Five - Methodology for Examining Interprofessional Role Clarification for Licensed Healthcare Practitioners in Rural and Smaller Community Hospitals

5.1 Abstract

The purpose of this article is to provide a description of the process taken to investigate interprofessional role clarification (IPRC) among licences healthcare practitioners (HCPs) in smaller community and rural hospital settings. IPRC has been identified nationally and internationally as a key part of interprofessional collaborative practice (IPCP) to ensure safe quality healthcare while optimizing the use of costly resources. While assertions about the importance of IPRC are evident in the literature, little research about the concept has been undertaken and is therefore the focus of this research. The overall research questions included: (1) *What are the relationships between HCPs' personal resources (conscientiousness, general self-efficacy), work engagement and IP role clarification?* (2) *Does work engagement mediate the relationship between conscientiousness and IPRC?* (3) *Does reciprocity moderate the relationship between work engagement and IP role clarification?* This paper presents a methodology for testing a theoretically-derived model, linking predicted antecedent variables (conscientiousness, general self-efficacy, work engagement) to IPRC, the mediating effect of work engagement between the personal resources and IPRC, and the moderating effect of *reciprocity* between work engagement and IPRC. By conducting a comprehensive review of the literature, a theoretical model linking Conscientiousness, General Self-Efficacy, Work engagement, Reciprocity with Coworkers and IPRC was developed. The analysis and hypothesis testing were conducted using structural equation modelling.

Keywords: interprofessional role clarification, healthcare practitioners, healthcare providers, conceptual model, theoretical framework

5.2 Introduction

Interprofessional role clarification (IPRC) is identified as a crucial competency to ensure that HCPs can function within a variety of roles across a team (CIHC, 2010). When teams work collaboratively, sharing of roles and client care responsibilities can occur but without this collaborative distribution, interprofessional (IP) team members can experience uncertainty as to what their contribution to client care should be (Adams, Orchard, Houghton & Ogrin, 2014). Interactions between IP team members can provide a means to clarify roles to shed light on aspects of roles that should be carried out by a particular HCP or might be shared or interchanged within the team (MacNaughton, Chreim, Borgeault, 2013). In this way, IPRC can be a key aspect of a well-functioning team (Adams et al., 2014, Hudson et. al, 2017).

If lack of role clarity is a source of conflict between IP team members, this can undermine team members' sharing and collaboration (Brown et al., 2011) with consequences such as fragmented care (Fitzgerald & Davison, 2008), threats to patient safety (WHO, 2010), or reduced patient satisfaction (Zwarenstein, Goldman & Reeves, 2009). Varying viewpoints can impede reaching a shared understanding of IP healthcare roles, thus clear articulation of role contributions by all IP team members must occur as an early step in collaborative practice. While literature maintains that effective, safe client-centred care necessitates examination of factors and conditions influencing HCPs' capacity to achieve IPRC, at the same time, research is needed to strengthen support for these assertions (CIHC, 2010).

The purpose of this study was to examine the impact of conscientiousness, general-self-efficacy, work engagement and reciprocity with co-workers on HCPs' perceived IPRC effectiveness.

5.3 Literature Review

Role clarification is a competency thought to be a key element of IP collaborative practice, however, the impact of this competency has not as yet been well studied (CIHC, 2010). For this study, IPRC is operationally defined as "a dynamic process and outcome that requires at least two healthcare members who have the knowledge, skills, clinical judgment, and competence to engage in formal and informal communication to ascertain understanding about their own and others' roles for a shared client-centred approach to care" (Allen, Orchard, Evans, Gorman, & Kerr, 2019). While IPRC is emphasized as a strategy to improve healthcare, role understanding among healthcare professionals continues to be a barrier to effective patient outcomes (Donato, 2015). IP literature points to various role issues, (e.g. ambiguity, blurring, knowledge, conflict) that can interfere with clear role delineation. If IPRC is a component of IP collaborative practice, it requires research attention (Adams, Orchard, Houghton & Ogrin, 2014; Hudson, et al., 2017; Orchard, Bursey, Peterson & Verrilli, 2016).

Mañas, et al., (2018) suggested that absence of role clarity leading to role ambiguity can contribute to a negative teamwork environment. Thus, the ability of team members to have personal capacity to explain their professional roles provides key elements that may assist HCPs to clarify each other's roles. Personal resources, in particular conscientiousness could support this personal capacity to encourage HCPs to discuss their role with others and general self-efficacy to feel confident to contribute to the role clarification process within the healthcare team.

In an organizational health study of public employees, Miller, Griffin and Hart (1999) found significant interactions between conscientiousness and role clarification

with the negative relationship between role clarity and psychological distress weaker for individuals with higher conscientiousness. They also found that the positive relationship between role clarity and job satisfaction was weaker in conscientious individuals, which Miller et al. (1999) suggested may be less influenced by unclear roles than it might be for less conscientious individuals. Conscientious individuals are more persistent to enact roles, and to engage with others (Christian, Garza & Slaughter, 2011) but it has also been linked to lower job satisfaction (Judge & Ilies, 2002; Kelly & Johnson, 2005) A person's self-efficacy has been found to lead to sustained motivation and persistence to maintain efforts on work issues and completion of tasks (Chen et al., 2004; Consiglioni, Di Tecco, & Schaufeli, 2016). Thus, attention to HCPs' personal resources may better prepare HCPs to engage in role clarification with IP team members to ensure appropriate allocation of team member's roles for delivery of client-centred collaborative care.

Knowledge, skills and expertise required for role enactment in care delivery is rarely done in isolation and engagement with other team members involved in a client's care is needed to promote cross-sharing of information and interventions from various IP role perspectives. Work engagement expresses how individuals experience their work (Bakker, Schaufeli, Leiter & Taris, 2008, p. 187) and lack of work engagement can contribute to a litany of issues such as burnout (González -Roma, Schaufeli, Bakker, & Lloret, 2006) and disenchantment with one's work (Baldwin, Royer, Edinberg, 2007). When team members engage in their IP work, reciprocal exchanges among health care team members is needed for effective client care.

Reciprocal exchanges are believed to require negotiation between IP team members as part of teamwork distribution and role bargaining (Waring & Bishop, 2010; D'Amour

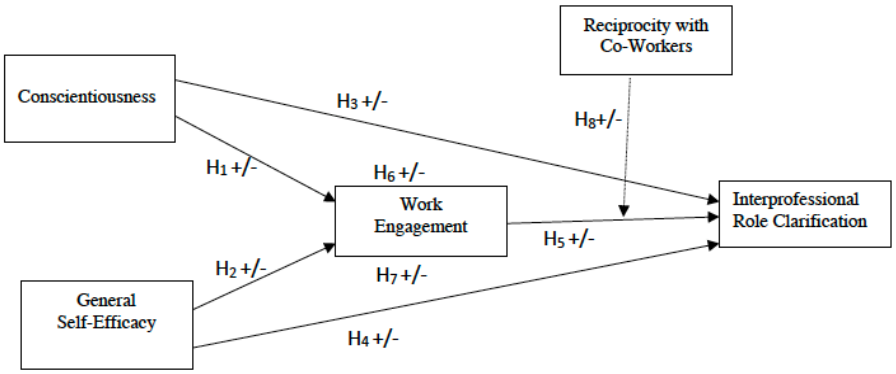
et al., 2008). Roles requiring reciprocity (such as IP team member roles) are often associated when specialized contributions by more than one person and often with non-overlapping sets of roles (Biddle, 1979). In IP healthcare teams, care members must be aware of boundaries and overlaps between one another's roles, thus reciprocity is believed to be required in client-care scenarios. Thus, when HCPs are engaged in their IP work, there is a need for them to participate in reciprocal sharing of their roles as needed within a client care situation. As such, reciprocity is being theorized as a moderator to IPRC.

5.4 Theoretical Framework

The theoretical model used in this study was underpinned by Hardy and Conway's (1988) role theory, positing that personal resources (conscientiousness and general self-efficacy) can contribute to one's role preparation for interactions between HCPs and their IP team members to clarify roles (i.e. effective IPRC). Specifically, this study proposed that relationships exist between HCPs' conscientiousness and general self-efficacy, work engagement, and reciprocity and IPRC. Furthermore, it proposed that work engagement partially mediates the relationships between conscientiousness and general self-efficacy with IPRC and that reciprocity with co-workers moderates the relationship between work engagement and IPRC. Figure 7 depicts this theoretical model.

Figure 7

Theoretical Model



5.5 Research Design

This study employed a non-experimental cross-sectional design to address the following research questions and hypotheses:

(1) What are the relationships between HCPs' personal resources (conscientiousness, self-efficacy), work engagement and IP role clarification?

H1 Conscientiousness positively relates to work engagement.

H2 General self-efficacy positively relates to work engagement.

H3 Conscientiousness positively correlates to IPRC.

H4 General self-efficacy positively relates to IPRC.

H5 Work engagement positively correlates to IPRC.

(2) Does work engagement mediate the relationship between conscientiousness and IPRC?

H6 The relationship between conscientiousness and IP role clarification is partially mediated by work engagement.

H7 The relationship between general self-efficacy and IP role clarification is

partially mediated by work engagement.

(3) Does reciprocity moderate the relationship between work engagement and IPRC?

H_8 Reciprocity moderates the relationship between work engagement and IPRC

5.6 Sample and Sample Size Calculation

The sample was drawn from licensed HCPs from five smaller community and rural hospitals and alliances in Ontario, Canada. In the literature review, it was noted that a vast amount of research originates from academia-affiliated healthcare settings thereby leaving a gap about similar practices in smaller community and rural hospital hospitals. In addition, HCPs in these smaller community and rural hospitals are thought to work closely in consistent teams due to smaller numbers of employed staff. Thus the perspectives on IPRC among this group of HCPs could uniquely inform this research (Gaudet, Kelley, & Williams, 2014; Parker, McNeil, Higgins et al., 2013). The total target population was approximately 3702 licensed practitioners based on employee statistics provided from the hospitals and alliances. All full-time and part-time licensed HCPs who were hospital staff or had hospital privileges and provided direct care to patients were eligible to participate. As per Kline's (2016) recommendation, an a-priori sample size calculator for Statistical Equation Modeling (SEM) was used with the minimum sample size determined to be 538 participants (effect size = 0.4, statistical power level 0.8, and probability level = 0.05).

The sample size was set to split the total sample into two randomly assigned and separate groups. The first group data was planned for an exploratory factor analysis (EFA), and the other group for a confirmatory factor analysis (CFA). Hence, the projected sample size was 200 for each group based on Kline's (2016) recommendation. A-priori

calculations for CFA using Soper (2017) identified recommended minimum sample sizes ranging from 241 to 341 (depending on the number of observed variables analyzed) with anticipated effect size = 0.4, statistical power level = 0.8 and probability level = 0.05. Thus, the projected sample size was 541 participants (EFA = 200 and CFA = 341).

Several authors have reported that HCPs generally have low response rates with varying percentages ranging from 14 and 52% (Cook, Dickinson, & Eccles, 2009; Hill, Fahrney, Wheeless, & Carson, 2006; VanGeest & Johnson, 2011; Wiebe, Kaczorowski, & MacKay, 2012; Matteson et al., 2011). The lowest percentage range for HCP responses based on the literature (14%) for the possible 3702 participants was 518 participants, and the projected sample size of 541 participants reasonable.

5.7 Recruitment

Ethics approval was secured from Western University's Human Ethics Office, and those hospitals and hospital alliances that required additional institutional ethics. The administrative leaders or alternate contacts designated by them in all participating hospitals were notified and guidance was sought for study recruitment. Five strategies were tailored to each setting and implemented. The choices of the strategies used by each setting varied.

5.7.1 Strategy #1: Identification of Study Champions

Individual hospital employees who would serve as role clarification champions to assist in offering insight and suggestions to enhance HCPs participation based on their understanding of site politics, culture and systems (Chlan, Guttormson, Tracy, & Bremer, 2009). A champion had the following characteristics: (a) associated with the hospital site;

(b) identified as an informal or formal leader at the site; (c) willing to assist in informing staff about the study and its importance.

5.7.2 Strategy #2: Central Distribution of Study Invitation

Working with the hospital contacts, the appointed leaders (e.g. manager of human resources, communication officer or alternative leaders) from participating hospitals (or hospital alliances) were asked to distribute a prepared Letter of Information and Invitation to all HCPs affiliated with the hospital (or hospitals within an alliance) encouraging them to access the link to the online questionnaire delivered using Qualtrics, a forum that allows researcher to create and disperse surveys confidentially and anonymously.

5.7.3 Strategy #3: Notices in Hospital Newsletters and Information Blasts

Communications Officer or person responsible for the hospital's newsletter at each participating hospital (or alliance) was asked to include a short note about the study and its value in one to two hospital newsletters with the Qualtrics website link to the survey.

5.7.4 Strategy #4: Researcher Attendance at Meetings

Attendance at meetings/ events suggested by hospital leaders and role clarification champions to briefly discuss the study and to invite HCPs to participate in the study.

5.7.5 Strategy #5: Second Invitation

A second electronic reminder email with the website link to the survey was sent to all HCPs affiliated with the hospital or alliance two weeks after the initial invitation using the same process as for Strategy #2.

5.8 Data Collection

A letter of information, the survey instruments including the demographic questionnaire were created as a single online survey using Qualtrics. The URL for the

survey was placed into the invitation email, the newsletter notices, and distributed electronically through the hospitals' intranets to all HCPs. Informed consent was assumed if individuals completed and submitted the electronic version or returned the paper version to the researcher.

Participants had the option to be entered into a draw for an IPAD after completion of the study as a thank-you for their time. At the end of the survey, respondents provided a contact phone number or email address for the draw separately from the survey itself. Participant contact information for entry into the draw was recorded using a password protected electronic file. The draw was carried after data collection was completed.

5.8.1 Data Collection Instruments

The data collection survey was comprised of demographic questions, four existing instruments to measure conscientiousness, general self-efficacy, work engagement, and reciprocity with co-workers and the newly developed instrument to measure IPRC for this study (Appendix J). Permission was obtained from the developers to use their scales for this study.

5.8.1.1 Demographic Data. The survey items included gender, age, professional educational preparation, participant's licensed profession of practice, full or part-time employment, length of time since entry into practice and IP experience.

5.8.1.2 Conscientiousness. HCPs' conscientiousness was measured with the Big Five Inventory (BFI) conscientiousness subscale containing 9-items (John, Naumann, & Soto, 2008; John, Donahue & Kentle, 1991). Only the single factor, (conscientiousness subscale) was used in this study. The BFI's conscientiousness dimension uses a 5-point rating scale ranges from 1= disagree strongly to 5 = agree strongly with four of its items

requiring reverse scoring. In this study, participants' ratings for the nine items were summed to determine their overall conscientiousness score. Higher scores reflect greater perceived conscientiousness of individual HCPs. The Cronbach's α for the total BFI dimensions ranged from .79 to .88, with an α = .82 for the conscientiousness dimension (John & Srivastava, 1999).

5.8.1.3 General Self-Efficacy (GSE). The New General Self-Efficacy (NGSE) Scale (Chen et al., 2001) was used to measure HCPs' perceptions of their general self-efficacy (GSE) and is a single dimension 8-item self-report measure that uses a five-point scale (1= strongly disagree to 5 = strongly agree), where higher scores reflect greater GSE. This shortened version of Sherer et al.'s (1982) 17-item General Self-Efficacy Scale (SGSE) was created to overcome issues about test-retest reliability and validity of the SGSE. In this study, participants' ratings for all 8-items were summed to determine their overall GSE scores. The GSE demonstrates predictive validity with CFI = .90 and has a reported reliability of Cronbach's α from .87 to .95 in three samples of the first study and .86 and .90 in two samples of a second study (Chen et al.).

5.8.1.4 Work Engagement. The Utrecht Work Engagement Scale-9 (UWES-9) (Schaufeli, Bakker, & Salanova, 2006) was used to measure HCPs' work engagement. This self-report questionnaire is a shortened 9-item version of the 17-item UWES and measures three factors including vigor (VI) (3 items), dedication (DE), (3 items) and absorption (AB) (3 items with a 7-point rating scale (1 = never to 7= always) with higher scores indicating more work engagement. For this study, the three items for each of the three subscales were summed and the subscales was summed to arrive at an overall engagement score. Cronbach's α for the three item scales were reported to be satisfactory.

Across 10 countries, the Cronbach's α for VI scale varied between .60 and .88 (median .77) with 2 countries rating lower than .70 –Finland (α = .65) and France (α = .60). DE varied between .75 and .90 (median= .92). AB scale between .66 and .86 (median .78) with Spain (.66) the only country lower than .70). Finally, Cronbach's α for the total 9 item scale varied between .85 and .92 (median = .92) across all 10 countries.

5.8.1.5 Reciprocity with Co-workers. Reciprocity with IP team members was measured using the Reciprocity with Coworkers (RECOW) scale (Gilliam & Rayburn, 2016). The RECOW a contains 3 items and a 9-point rating scale ranging from 1 = strongly disagree to 9 =strongly agree with a higher score representing great reciprocation with a co-worker. Gilliam and Rayburn (2016) reported a satisfactory Cronbach's α (0.91).

5.8.1.6 Interprofessional Role Clarification (IPRC). The IPRCS was developed for this study to measure IPRC by completing exploratory factor analysis with principal axis factoring. Due to limited sample size, the same data was used to conduct a confirmatory factor analysis using maximum likelihood estimate. Fit indices were used to assess the goodness of fit including X^2/df, GFI, SRMR, CFI, and RMSEA. The final IPRCS consists of 11 items distributed across three factors including Knowing Roles (5 items), Articulating Roles (3 items) and Sharing Roles (3 items) with a 5-point scale (1= strongly disagree to 5 = strongly agree). For this study, the items for each of the three subscales were summed and an overall IPRCS score was obtained by summing the three subscales scores with higher scores reflecting more effective IPRC. Cronbach's α for the total IPRCS (.76) and the subscales, knowing roles (.74), articulating roles .82) and sharing roles (.72) were satisfactory.

5.8.1.7 Global IP Role Clarification Indicators (GIPRCI). A global measure of IP role clarification was used comprised of two items: (1) *overall, my current work environment provides opportunities to clarify roles with other members of the IP healthcare team,* and *Overall, IP team members are clear about their roles*. These were rated using the same 5-point ratings as the IPRCS with scores obtained by summing and averaging the two items. Higher scores represent stronger perceptions of working in an environment where team members clarify roles and provided evidence of IPRCS construct validity.

5.9 Data Analysis

All data were either downloaded from Qualtrics and entered into SPSS Version 25 to form a data set. Initially descriptive analyses of collected data was undertaken. AMOS 25 was used to conduct additional inferential analyses related to path models using SEM methods.

5.9.1 Descriptive Analysis

Descriptive statistics were calculated for demographic and study data as a means to describe the study respondents (Polit & Beck, 2008). Means, standard deviations, medians, sums and the ranges of maximum and minimum values were calculated for frequencies and percentages for categorical demographic and study variables (i.e. instrument measures).

5.9.2 Data Screening and Imputation

All data were assessed for missing data, outliers, linearity, normality and reliability (Kline, 2016; Tabachnick & Fidell, 2013). All reversed scored items were transformed. A case process summary was reviewed for missing data, with variable items missing less

than 5% of the total sample. Malhalanobis and Cook's Distances were calculated to determine any outliers with an anomaly index greater than 3 and standard deviation scores above 3 or below -3 (Pallant, 2013). The Shapiro-Wilk Test was used to assess for normality of data with a significance level of 0.05 used for all analyses.

Upon completion of case and variable screening, Little's MCAR was carried out with non-significant (.322) findings, suggesting the missing values were random across the cases with no notable patterns and no clusters at the construct level. Imputation using the mean substitution score was selected to address the missing data since it is appropriate to replace the missing score with the overall sample mean (Kline, 2016; Tabachnick & Fidell, 2013). In total, 3 missing values were replaced for the items in conscientiousness, 8 items were replaced in general self-efficacy, 10 items were replaced in work engagement, and 8 items were missing for interprofessional role clarification.

5.9.3 Theorized Model Testing

To determine if the hypothesized relationships for research questions #1 and #2 were supported, three types of analyses for construct psychometric properties were carried out: (1) construct reliability, (2) construct validity and (3) measurement model fit indices (Schumacker & Lomax, 2010). A CFA was used to establish construct validity and reliability on all study instruments together as means to further report on their validity.

Testing of the theorized model (shown earlier in figure 7) used SEM analysis to specify and estimate the study model's linear relationships among variables and their directional influences (Kline, 2016). Since conscientiousness and GSE were observed variables, each was transformed to a latent variable using factorial algorithm parcelling to

minimize the number of parameters to estimate and prevent estimation bias by building multiple parcels (Matsunaga, 2008). Finally, analysis of the moderator, *reciprocity* and the mediator *work engagement* were completed.

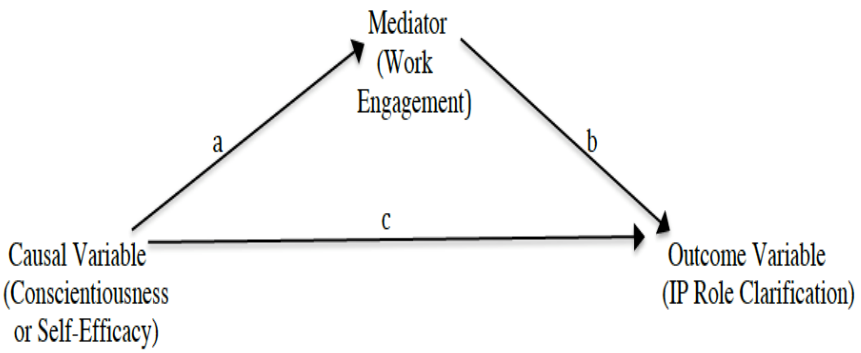
5.9.3.1 Analysis of Moderator. *Reciprocity* (Z) was theorized to moderate the relationship between *work engagement* (X) and *IP role clarification* (Y). It was proposed that HCPs who are engaged in their work, and share with each other the comprehensive care required by clients occurs through their IP role clarification. When this work engagement includes enacting reciprocal work with each other, this strengthens their *IP role clarification*. Therefore, if reciprocity is a moderator the strength or direction of *work engagement* (X as predictor) and *IP role clarification* (Y as outcome) would change the relationship between (X) and (Y) when (Z) (Baron & Kenny, 1986). Thus, the moderating effects of *reciprocity* will be tested with the predictor variable (X) on (Y) to determines improvement in regression coefficients (Baron & Kenny, 1986).

5.9.3.2 Analysis of Mediator. *Work engagement* is theorized to partially mediate the relationship between *personal resources* -- *conscientiousness* and *self-efficacy* --and *IP role clarification* (Kenny, 2011). SEM was used to estimate three paths:

1) Path ‘a’ tested *conscientiousness* and *self-efficacy*) separately as predictors to *work engagement*.
2) Path ‘b’ tested *conscientiousness* and *self-efficacy*) separately and *work engagement* as predictor to *IP role clarification*.
3) Path ‘c’ tested *conscientiousness* and *self-efficacy* separately as predictors to *IP role clarification* (see Figure 8).

Figure 8

Work Engagement as a Mediator and Proposed Paths



A four-step approach was used to determine the theorized model fit: model specification, model identification, estimation of model parameters and estimate of model fit (Plitchka & Kelvin, 2013).

5.9.3.2 Model Specification. *Work engagement*, *reciprocity*, and *IP role clarification* were assigned the value of '1' to allow determination of associated variance coefficients of error terms.

5.9.3.3 Model Identification. AMOS Version 25 was used to identify relationships between all the estimated model parameters (Kline, 2016) and, assess the variance-covariance matrix and its equality to the number of parameters in consideration of the number of degrees of freedom for the model's chi-square (Pehauzer & Schmelkin, 1991; Weston, 2006).

5.9.3.4 Estimation of Model Parameters. Estimates of the model parameters and the value of unknown parameters in the model was calculated using Maximum Likelihood (ML) (Weston, 2006; Kline, 2016). Next the full structural model was tested by estimating the expected directional associations among the variables (Weston, 2006).

5.9.3.5 Estimate of Model Fit. The model fit was estimated using SEM for three models: saturated, independence, and default to determine the most parsimonious model that is not significantly different from the saturated model fit indices of X^2 /df, GFI, SRMR, CFI and RMSEA. (Hoe, 2008; Kline, 2016).

Chi-square/Degrees of Freedom (X^2 /df) measured the proposed model's covariance structure (actual) against the observed covariance matrix (predicted), in other matrices (Hoe, 2008). A X^2 /df ratio of 3 or less will be a reasonable indicator of model fit (Kline, 2016).

Goodness of fit index (GFI) is the proportion of variance to the estimated population covariance that is greater than or equal to 0.95 determines a good fit.

Standardized Root Mean Square Residual (SRMR) provided an estimate of the difference between the sample covariance matrix and the hypothesized model residuals were calculated and if less than 0.08 will determine a good fit (Kline, 2016).

Comparative fit index (CFI) assesses the data fit. If greater than .95 is considered an excellent fit.

Root mean square error of approximation (RMSEA) measures the discrepancy between observed and estimated covariance matrices per degree of freedom. Values of less than 0.05 suggest a good fit, while values up to 0.08 are considered a reasonable fit (Hoe, 2008).

5.10 Protection of Human Rights

Ethical approval was obtained from the Western University (UWO) Research Ethics Board (Appendix K) and as required from each of the hospitals or hospital alliances that have agreed to allow this research to be conducted in their facilities. Some of these

facilities required only UWO's ethics approval. Individuals were assured that their participation has no bearing on their jobs and that steps would be taken to provide confidentiality of the raw data that they have contributed. Furthermore, that information was not be shared with employers or other employees in their workplace. All identifying information was kept confidential to protect privacy. Only computers with firewalls and security (i.e. password protection) were used and access to the research material was limited to the research team, consisting of researcher (PhD candidate) and the PhD supervisory committee members. All electronic data was partitioned and encrypted in the hard drive of the researcher's password-protected computer and on a USB drive to be used at Western as needed. Participants were informed that if they chose to enter the IPAD draw, the email address or phone number that they provided to the researcher would be kept separate from the data.

5.11 Risks and Benefits

Participation in this study was voluntary and participants were made aware that they could withdraw at any point in time during the study. It was anticipated that some of the healthcare professions would have a small representation, and as such, dissemination of results will ensure that these participants remain anonymous. Otherwise, there were no known risks related to participation. The primary benefit was for participants to become aware of the concept of IPRC through this study, but beyond this, no real benefits to participating existed. In the broader sense, the findings of this study highlighted some of the factors associated with IPRC in licensed HCPs and contributes to the research to support the CIHC (2010) IP Competency Framework.

5.12 Limitations of the Study

This study had a number of limitations. Firstly, the use of a cross-sectional design to explore the relationships among the variables provided an efficient and economical way to attain a large sample size required for this study, however, causality for observed relationships cannot be considered (Pedhazur, Pedhazur & Schmelkin, 1991). Additionally, interpretion of the results must be done with caution (Polit & Beck, 2008).

Secondly, the use of convenience sampling is a weaker method of sampling and is vulnerable to selection bias (LoBiondo-Wood and Haber, 2005), which can lead to a heterogenous sampling which might affect the ability to interpret the findings. Thus, caution needs to be taken in the interpretation of results.

Thirdly, while the inclusion criteria and collection of demographic data assisted in considering subsets of the sample, there was a disproportion of numbers for various HCPs by profession. The number RNs and RPNs are much higher than all other licensed HCPs, not surprising given the differences in the numbers of each profession practicing in the study setting. This made some subsets (e.g. professional designation) not appropriate to analyse.

Fourthly, self-report questionnaires are often more cost-effective and less time-consuming, but the potential for common method variance biases exists, meaning that measurement error is ascribed to the measurement methods used to gather the data instead of to the constructs of interest (Podsakoff, MacKenzie & Podsakoff, 2012). Some techniques that attended to these possible biases included use of different response formats, scale endpoints and clear scale labels for anchoring. Although some reverse

scored items were included, items were neither negatively worded nor were items ambiguous or double-barreled leading to multiple meanings (Podsakoff et al.).

Additionally, bias related to social desirability was attempted to be controlled by not obtaining any identifiable information in the survey (Polit & Beck, 2008). The use of an online survey allowed respondents to complete questions away from their place of employment should they so choose, and at a time that best suited them, thereby minimizing influences of the work environment (Polit & Beck, 2008). To mimimize the potential of responder fatigue, the number and content of questions were carefully considered to ensure the questionnaire was as succinct as possible to address only concepts directly related to the research and completing the survey in the place and time of the respondant's choosing to curb fatigue and influences from the work environment (Polit & Beck, 2008). To minimize ambiguity of items, the selection of instruments that have reported strong psychometric properties and rigorous instrument development were selected and clear instructions related to each variable being measured was provided. To counteract potential low response rates, a number of rural and community hospitals were targeted to participate in this study since these are settings that are less often used in research. In addition, a number of recruitment strategies were implemented to encourage participation from a number of licensed HCPs from a variety of healthcare professions.

5.13 Summary

IPRC has been promoted as a necessary component of client-centred collaborative practice, and while empirical evidence supports the need to clarify roles, there is a paucity of research that investigates it. This article presented the methodology and

methods used to test a theoretically-derived model that explored conscientiousness, general self-efficacy, work engagement and reciprocity with co-workers and their relationship to effective IPRC.

5.14 References

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Appendix J

Data Collection Instruments

Interprofessional Role Clarification in Licensed Health Care Practitioners

Thank you for agreeing to participate in this study about interprofessional role clarification.
Please note that your responses will saved if you are unable to complete the survey in one session and you may reenter the website to complete later.

Demographic Information

Are you part of a licensed health or social care profession?

- ○ Yes
- ○ No

What is your health or social care profession?

Within your professional role, do you have contact with patients?

- ○ Yes
- ○ No

Within your professional role, do you have contact with other health or social care practitioners?

- ○ Yes
- ○ No

What is your age in years?

Which gender do you identify with?

- Male
- Female
- Other (please specify)

Please choose all that describe your education.

- Diploma (Please specify)
- Undergraduate degree (Please specify)
- Graduate degree (Please specify)
- Other (Please specify)

Which of the following best describes your employment status?

- Full-time
- Part-time
- Casual part-time

How many years have you practiced in your profession?

How many years have you worked in your current role?

Does your current role require you to work with team members from other health care professions?

- Yes
- No

Choose the response that best describes your previous interprofessional experience.

- None
- Very little
- Some
- Quite a bit
- Alot

Have you taken part in interprofessional education or training?

- ○ Yes (please briefly describe)
- ○ No

At which hospital(s) do you provide care?

How would you describe your overall previous experience working with other professions?

- ○ Positive
- ○ Negative
- ○ Both positive and negative
- ○ Neither positive or negative
- ○ I have not worked with other health or social care professions

Conscientiousness

Please choose the response for the extent to which you agree or disagree with the following statements.

In general, I am someone who does a thorough job.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

In general, I am someone who can be somewhat careless.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

In general, I am someone who is a reliable worker.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

In general, I am someone who tends to be disorganized.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

In general, I am someone who tends to be lazy.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

In general, I am someone who perseveres until the task is finished.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

In general, I am someone who does things efficiently.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

In general, I am someone who makes plans and follows through with them.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

In general, I am someone who is easily distracted.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

New General Self-Efficacy Scale

The next set of questions pertain to how you view your ability to perform in a wide variety of situations and tasks.

Please choose the response for the extent to which you agree or disagree with the following statements.

I will be able to achieve most of the goals that I have set for myself.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

When facing difficult tasks, I am certain that I will accomplish them.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

In general, I think that I can obtain outcomes that are important to me.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

I believe I can succeed at most any endeavor to which I set my mind.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

I will be able to successfully overcome many challenges.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

I am confident that I can perform effectively on many different tasks.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

Compared to other people, I can do most tasks very well.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

Even when things are tough, I can perform quite well.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

Reciprocity (IP team members)

In the next 6 questions, *co-workers* refer to members of other health care professions (interprofessional team members) who also provide care to your patients.

Please choose the response for the extent to which you agree or disagree with the following statements.

In the past three months, I have exchanged favors with most of my co-workers.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

In the past three months, I have engaged frequently in reciprocity with coworkers at work.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

In the past three months, I have often freely given and received help from coworkers.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

Work Engagement

For the next set of questions, select the responses that best represent how you feel about your work as part of an interprofessional team member caring for patients.

At my work, I feel bursting with energy.

- ○ Never
- ○ Seldom
- ○ Sometimes
- ○ Half the time
- ○ A little more than half the time
- ○ Most of the time
- ○ Always

At my job, I feel strong and vigorous.

- ○ Never
- ○ Seldom
- ○ Sometimes
- ○ Half the time
- ○ A little more than half the time
- ○ Most of the time
- ○ Always

I am enthusiastic about my job.

- ○ Never
- ○ Seldom
- ○ Sometimes
- ○ Half the time
- ○ A little more than half the time
- ○ Most of the time
- ○ Always

My job inspires me.

- ○ Never
- ○ Seldom
- ○ Sometimes
- ○ Half the time
- ○ A little more than half the time
- ○ Most of the time
- ○ Always

When I get up in the morning, I feel like going to work.

- ○ Never
- ○ Seldom
- ○ Sometimes
- ○ Half the time
- ○ A little more than half the time
- ○ Most of the time
- ○ Always

I feel happy when I am working intensely.

- ○ Never
- ○ Seldom
- ○ Sometimes
- ○ Half the time
- ○ A little more than half the time
- ○ Most of the time
- ○ Always

I am proud of the work that I do.

- ○ Never
- ○ Seldom
- ○ Sometimes
- ○ Half the time
- ○ A little more than half the time
- ○ Most of the time
- ○ Always

I am immersed in my work.

- ○ Never
- ○ Seldom
- ○ Sometimes
- ○ Half the time
- ○ A little more than half the time
- ○ Most of the time
- ○ Always

I get carried away when I am working.

- ○ Never
- ○ Seldom
- ○ Sometimes
- ○ Half the time
- ○ A little more than half the time
- ○ Most of the time
- ○ Always

Interprofessional Role Clarification

Definition: *Other health or social care providers* refers to the interprofessional (IP) team members outside of your profession who provide care to your patients/clients.

Please indicate the degree to which you hold each of the beliefs and behaviours that are described in the following statements.

I understand what my care provider role entails.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

I articulate to patients/clients what my health or social care provider role is.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

I articulate to other health and social care providers what my role is.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

I am certain about what I am permitted to do within my care role.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

It is not necessary for me to understand the roles of other health and social care providers.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

I have a good understanding of the knowledge and skills of other health and social care providers.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

I am certain about what other health and social care providers are permitted to do within their roles.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

Clear workplace policies/guidelines assist me to define my role.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

When a patient/client asks me about another health or social care provider role, I can generally describe that role to the patient/client.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

When I work with patients/clients, I articulate my role.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

The roles of various health and social care providers seldom vary and therefore require little discussion.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

When I work with other health and social care providers as a care team member for a specific patient/client, I articulate what I can contribute to his or her care.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

I never assume that I understand all of what another IP team member's role entails.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

I am able to determine the health or social care provider who is able to provide various aspects of a patient's/client's care.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

If my understanding is unclear of what other health or social care providers are able to offer to meeting a patient's/ client's needs, I will ask.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

I am comfortable negotiating with other health and social care providers as to who should provide care to a patient/client.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

When another health or social care provider carries out patient/client care that I believe is an overlap with my role, I will engage in a discussion about this.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

When I feel competent in my patient/client care role, I am likely to contribute to care discussions with other health and social care providers.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

When there is overlap with the role of another health or social care provider, I work to establish a shared understanding.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

If I mistrust the competence of another health or social care provider in carrying out patient/ client care that is within both of our regulated roles, I will provide patient/client care myself.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

When I view another health or social care provider as less competent than me, I will not ask them for their contribution to a patient's/client's care.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

When I perceive that another health or social care provider has more power than I have, I am less likely to engage in discussions about care.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

When I perceive that another health and social care provider has more power than I have, I wait for that person to tell me what care to provide.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

I am open to adjusting my role responsibilities when my role overlaps with another health or social care provider's role.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

I am more likely to engage in discussions about role responsibilities when I perceive trust within the team.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

I am more likely to interact with IP team members regarding our roles in providing patient/ client care when I perceive my competence is valued.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

When I understand how IP team members' roles fit together I am more open to sharing care.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

Overall, my current work environment provides opportunities to clarify roles with other members of the IP health care team.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

Overall, the IP team members that I work with are clear about their roles.

- ○ Strongly disagree
- ○ Disagree
- ○ Neither agree nor disagree
- ○ Agree
- ○ Strongly agree

Appendix K

HSREB Letter of Approval

Western Research

Date: 31 October 2017

To: Dr. Carole Orchard

Project ID: 110021

Study Title: Interprofessional Role Clarification

Application Type: HSREB Initial Application

Review Type: Delegated Level 2 - Prospective data collection

Full Board Reporting Date: 21NOV17

Date Approval Issued: 31/Oct/2017 14:46

REB Approval Expiry Date: 31/Oct/2018

Dear Dr. Carole Orchard

The Western University Health Science Research Ethics Board (HSREB) has reviewed and approved the above mentioned study, as of the HSREB Initial Approval Date noted above. This research study is to be conducted by the investigator noted above. All other required institutional approvals must also be obtained prior to the conduct of the study.

Documents Approved:

Document Name	Document Date	Document Version
V2CleanAppendixC	23/Oct/2017	2
V2CleanAppendixD	23/Oct/2017	2
V2CleanAppendixE	23/Oct/2017	2
V2CleanAppendixF	23/Oct/2017	2
Version4CleanLetter of Information and Consent	27/Oct/2017	4
Version4CleanOCT27LOIPaperSurveyEthics	27/Oct/2017	4
Version4QualtricsSurvey	27/Oct/2017	4
Version4URLOnlineVersion	27/Oct/2017	4

Documents Acknowledged:

Document Name	Document Date	Document Version
2.6References	08/Sep/2017	1
RESEARCHProposalforREB	10/Sep/2017	2

No deviations from, or changes to, the protocol or WREM application should be initiated without prior written approval of an appropriate amendment from [Committee Name], except when necessary to eliminate immediate hazard(s) to study participants or when the change(s) involves only administrative or logistical aspects of the trial.

REB members involved in the research project do not participate in the review, discussion or decision.

The Western University HSREB operates in compliance with, and is constituted in accordance with, the requirements of the TriCouncil Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2); the International Conference on Harmonisation Good Clinical Practice Consolidated Guideline (ICH GCP); Part C, Division 5 of the Food and Drug Regulations; Part 4 of the Natural Health Products Regulations; Part 3 of the Medical Devices Regulations and the provisions of the Ontario Personal Health Information Protection Act (PHIPA 2004) and its applicable regulations. The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000940.

Please do not hesitate to contact us if you have any questions.

Sincerely,

Nicola Geoghegan-Morphet, Ethics Officer on behalf of Dr. Marcelo Kremenchutzky, HSREB Vice-Chair

Chapter 6 - Effective IP Role Clarification in Healthcare Providers in Rural and Smaller Community Hospitals

6.1 Abstract

The Canadian healthcare system continues to evolve with the overall goal to provide Canadians with safe, quality care for optimal health outcomes, a mandate that requires healthcare providers (HCPs) to develop and maintain collaborative interprofessional (IP) relationships. Individuals from different professions have varying profession-based viewpoints that collectively can more fully address the complex healthcare needs of clients, however, the potential flaw in this approach is the assumption that these teams function well. Instead, not all IP team members have practiced or been educated in environments that encourage them to draw on others' professional roles to achieve the shared goal of effective IP collaborative client-centred care. Interprofessional role clarification (IPRC) is thought to be necessary for collaborative practice, but there is a paucity of research literature that focuses on IPRC to addresses its nature and processes, resulting in gaps that limit our knowledge. The purpose of this study was to examine the use of a theoretically derived model, linking contributory factors to IPRC in licensed HCPs providing client care. Research questions included: (1)*What are the relationships between HCPs' personal resources (conscientiousness, general self-efficacy), work engagement and IP role clarification?* (2) Does work engagement mediate the relationship between conscientiousness and IPRC? (3) *Does reciprocity moderate the relationship between work engagement and IP role clarification?* The proposed theoretically-based model was only partially supported by the findings of this study. The results showed a statistically significant relationship between general-self efficacy and IPRC ($\beta = .41$, $p < .001$). No statistically significant relationships exists between

conscientiousness or work engagement with IPRC. Further, work engagement did not significantly mediate the relationship between the personal resources nor did reciprocity moderate the relationship between work engagement and IPRC. Lastly, the IPRCS extends the IP work about role clarification, but more studies using this instrument are needed to refine it and to strengthen its rigour.

Key words: Interprofessional role clarification, healthcare practitioners, healthcare providers, structural equation model, IPRCS, Interprofessional Role Clarification Scale

6.2 Introduction

Interprofessional collaborative practice (IPCP) is based on the recognition that individuals from different professions have varying profession-based viewpoints that together can more fully address the complex healthcare needs of clients (Adams, Orchard, Houghton & Ogrin, 2014; Orchard, King, Khalili, & Bezzina, 2012). This change in practice has increased the demand for healthcare practitioners (HCPs) to function in a variety of team roles and to collaboratively share in client care (Adams, et al., 2014). Lack of role clarity with a healthcare team can undermine information transfers and collaboration (Brown et al., 2011), threaten patient safety (WHO, 2010), lead to fragmented care (Fitzgerald & Davison, 2008), and reduce patient satisfaction (Zwarenstein, Goldman & Reeves, 2009). Varying viewpoints about client care needs within a healthcare team can impede the shared understanding of team members' roles. Thus, all IP team members must be able to clearly articulate role contributions as an early step in collaborative practice.

This study examined the impact of HCPs conscientiousness, general self-efficacy, work engagement and reciprocity with co-workers on HCPs' perceived IPRC effectiveness. A theoretically-based model was tested linking antecedents (conscientiousness and general self-efficacy), a mediator (work engagement) and a moderator (reciprocity with coworkers) to IPRC among licensed HCPs in rural and smaller community hospital settings.

6.3 Literature Review

Although IPRC has been touted as a key element of professional healthcare practice for more than a decade, the function that roles play in the importance of delivery

of collaborative care is just beginning to emerge in the interprofessional literature (Bittner, 2018) and in research studies (Hudson et al., 2017; MacNaughton, Chreim & Bourgeault, 2013; Morris & Matthews, 2014). It is proposed that IP role clarification is "a dynamic process that requires at least two healthcare members who have the knowledge, skills, clinical decision-making, and competence to engage in formal and informal communication based on understanding their own and others' roles to arrive at a shared client-centred approach to care" (Allen, Orchard, Evans, Gorman, Kerr &, 2019).

To enact IPRC, it is believed that each healthcare team member is equipped with personal resources and these can be instrumental in HCPs sharing of knowledge, skills, and expertise to ensure their role contributions within the healthcare team are clear to all (Hardy & Conway, 1988). Miller, Griffin, & Hart (1999) found that team members' personality trait of conscientiousness was reported to have a moderating effect on role clarity and job satisfaction and psychological distress, while others have found conscientiousness is also related with persistence to enact roles (Judge & Ilies, 2002; Kelly and Johnson, 2005).

As with highly conscientious individuals, those team members with a high level of general self-efficacy (GSE) have also been reported to possess the motivation to maintain efforts towards dealing with work issues and task completion (Chen et al., 2004; Consiglioni, Di Tecco, & Schaufeli, 2016). In the case, however, if team members experience role ambiguity, effectiveness of teamwork may be undermined (Mañas, et al., 2018). It is therefore theorized that team members' level of consciousness and GSE can assist HCPs to stay engaged with their IP team members (Adams et al., 2014).

For HCPs to engage with others in the delivery of client-centred care, they

must engage with IP team members to promote cross-sharing of information and potential treatment options from various IP role perspectives as a way to arrive at a shared team plan of care (Adams et al., 2014). This capacity for work engagement can contribute to job satisfaction and empowerment. However, when work engagement is not present there is a greater potential for team member burnout (Gonzales-Roma, Schaufeli,Bakker, & Lloret, 2006) and disenchantment with one's work (Baldwin, Royer, Edinberg, 2007). Thus if a team member feels highly engaged in their work, they may remain focused to ensure that roles are clear as an IP team member jointly delivering client care.

Clarification then of each member's role is theorized to support shared work distribution but still necessitates using reciprocal exchanges of information to negotiate among the team in order to achieve shared goals (Waring & Bishop, 2010). In healthcare teams, each professional contributes his/her knowledge, skills and expertise to shared approaches for clients' care. This contribution requires a reciprocity between the members to respect the various professional perspectives that together can be directed to a shared set of approaches to reach care goals (Biddle, 1979, p. 78).

IP team members have some common areas of knowledge and skills, which creates overlap in their roles. These overlaps can lead to role ambiguity among the members unless efforts are made to clarify how all members can share in the care delivery, necessitating team members to have the ability to determine the boundaries around how these overlaps will be respected and handled within each specific care situation. Thus, effective healthcare teamwork is dependent on the impact of team members' personal factors (self-efficacy, and conscientiousness) that are mediated by their work engagement which may be moderated by the level of reciprocity that exists between the members on

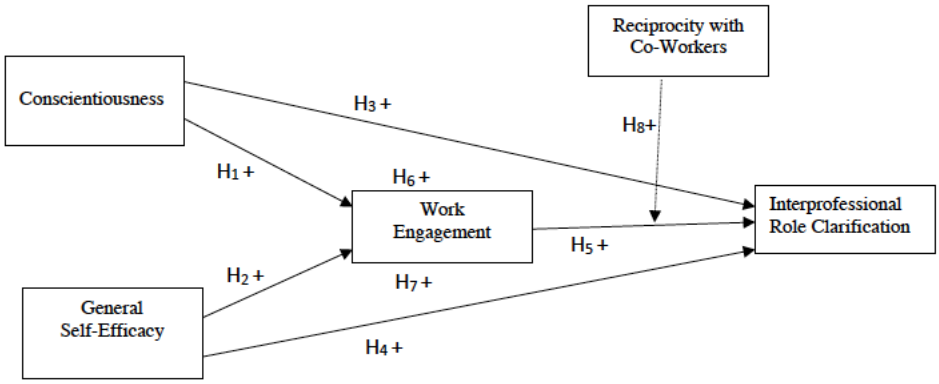
their role clarification across the team.

6.4 Theoretical Model

The theoretical model for this study was underpinned by Hardy and Conway's (1988) role theory, positing that personal resources (conscientiousness and general self-efficacy) can contribute to one's role preparation for interactions between HCPs and their IP team members to clarify roles (i.e. effective IPRC). Specifically, this study proposed that relationships exist between HCPs' conscientiousness and general self-efficacy, work engagement, and reciprocity and IPRC. Furthermore, it proposed that work engagement partially mediates the relationships between conscientiousness and general self-efficacy with IPRC and that reciprocity with co-workers moderates the relationship between work engagement and IPRC. This model is shown in Figure 9 with the three related research questions following.

Figure 9

Theoretical model of IPRC



6.5 Research Questions

This study asked three research question and included eight hypotheses. These are listed in the next sections.

Research Question 1: What are the relationships between HCPs' personal resources (conscientiousness, self-efficacy), work engagement and IP role clarification? The following hypotheses were tested to address this research question:*Hypothesis 1* (H_1) proposed that when HCPs possess a higher level of conscientiousness, they will report a high level of work engagement.

Hypothesis 2 (H_2) proposed that when HCPs possess a higher level of self-efficacy, they will report higher levels of work engagement.

Hypothesis 3 (H_3) proposed that when HCPs possess a higher level of conscientiousness,they will report higher levels of IPRC.

Hypothesis 4 (H_4) proposed that when HCPs possess a higher level of general self-efficacy, they will report higher levels of IP role clarification.

Hypothesis 5 (H_5) proposed that when HCPs report a higher level of work engagement, they will report higher levels of IPRC.

Research Question 2: Does work engagement mediate the relationship between conscientiousness and IPRC? The following hypotheses were tested to address this research question:

Hypothesis 6 (H_6) proposed that the relationship between HCPs' reported levels of conscientiousness and IPRC will be mediated by work engagement.

Hypothesis 7 (H_7) proposed that HCPs' level of work engagement mediates the relationship between HCPs' levels of self-efficacy and IPRC.

Research Question 3: Does reciprocity moderate the relationship between work engagement and IP role clarification? The following hypothesis was tested to address this research question:

Hypothesis 8 (H_8) proposed that HCPs' level of reciprocity with coworkers and IP role clarification moderates the extent of the relationship between IP role clarification and work engagement.

6.6 Methods

6.6.1 Research Design

This study employed a non-experimental cross-sectional design and was aimed to explore the interrelationship of HCPs' personal resources (conscientiousness, self-efficacy) and work engagement with their IPRC and further if reciprocity is a moderator of IPRC.

6.6.2 Participants

A convenience sample of 238 licensed healthcare practitioners from five rural and smaller community hospitals and alliances in Ontario, Canada participated in this study. All participants were either full-time or part-time licensed HCPs who provided direct care to patients and employed by hospitals or hospital alliances or had hospital privileges.

6.6.3 Sample

Participants in this study were licensed healthcare practitioners who provided direct care to patients in small community or rural hospitals. Table 8 summarizes the number and frequency of survey respondents represented. Nurses including registered nurses (RNs), registered practical nurses (RPNs) and nurse practitioners (NPs) represented the majority of responders (n=152, 63.86%).

Table 8

Number and Frequency of Healthcare Providers by Groups and professions (N=238)

Healthcare Provider Group	*n*	Sample % (rounded)
Registered Nurse	106	44.50
Registered Practical Nurse	42	17.60
Medical Laboratory Technologist	15	6.30
Physician	13	5.47
Medical Radiation Technologist	12	5.05
Midwife	9	3.79
Social Worker	8	3.36
Physiotherapist	7	2.95
Dietitian	7	2.95
Occupational Therapists	7	2.95
Respiratory Therapist	5	2.10
Speech Language Pathologist	<5[a]	<2.10 [a]
Spiritual Care Provider	<5[a]	<2.10 [a]
Registered Psychotherapist	<5[a]	<2.10 [a]
Nurse Practitioner	<5[a]	<2.10 [a]
Total	238	100.00

Note [a] Number and percentage of participants are less than 5, therefore the number is not recorded to maintain confidentiality of participants.

The majority of respondents were females (*n*=214, 89.91%) while males (*n*= 23) made up 9.66 % of the sample population. The largest proportion of respondents identified themselves to be diploma-prepared (*n* = 110, 46.2%) followed by respondents who held undergraduate degrees (*n* = 76, 32.1%) while 16.8% (n = 40) of HCPs held participant did not indicate the level of education completed. The majority of respondents identified their employment as full-time (*n* = 164*,* 68.5%) while 68 (28.5%) were employed part-time and further 2.5% (n = 6) worked on a casual basis.

Respondents were also asked about their experience working interprofessionally with other health providers. Almost 75% (n = 174) of respondents identified they work either ‘frequently’ or ‘quite a bit’ interprofessionally with other HCPs. The remaining 55 respondents indicated some experience working IP with other HCPs. Of this latter group only 16 (6.7%) had very little IP experience.

One-half of respondents (n =119, 50%) indicated that that they had encountered

positive IP working experiences, while a slightly smaller group (*n* =116, 48.7%) indicated that their IP experiences with others had been both positive and negative. Participants neither reported only negative experiences (*n* = 0, 0%) nordid any report interactions that they considered to be neither positive nor negative (see Table 9).

Table 9

Numbers and Percentages of Respondents' Demographics

Demographic Variable (N = 238)	*n*	Sample %
Male	23	9.66
Female	214	89.90
Other	1	0.4
Level of Education		
Diploma	110	46.2
Undergraduate	76	32.1
Graduate	40	16.8
Other	11	4.6
Missing	1	0.4
Employment Status		
Full-time	164	68.5
Part-time	68	28.6
Casual	6	2.5
Amount of IP experience		
None	8	3.4
Very little	16	6.7
Some	39	16.4
Quite a bit	81	34.0
Alot	93	39.1
Missing	1	.4
Experiences of IP interactions		
Positive	116	48.7
Negative	0	0
Both positive and negative	119	50.0
Neither positive or negative	0	0
Never worked with other HCPs	2	.8
Missing	1	.4

Respondents had a mean age of 42.15 (SD = 11.84) with a range between 22 and 68 years of age. They had a mean of 18.1 years of practice in their HCP role (SD = 12.37, rangefrom 1.0 to 44 years) and just over ten years of experience in their current positions (M=10.3, SD=9.75) (see Table 10).

Table 10

Numbers, Percentages, Means, Standard Deviations of Year Range Demographics

Number of Years	*n*	Sample % (rounded)	*M(SD)*	Range
Age	238	100	42.15 (11.84)	22.0– 68.0
30 and under	55	23.1		
31 to 40	57	23.9		
41 to 50	50	21.0		
50 and over	76	31.9		
Working in profession	238	100	18.05(12.37)	1.0 – 44.0
5 or less years	50	21.0		
6 to 10 years	45	18.9		
11 to 19 years	36	15.1		
20 or more years	107	44.9		
Working in current role	238	100	10.33 (9.75)	0.3 – 40.0
5 or less years	104	43.7		
6 to 10 years	49	20.5		
11 to 19 years	40	16.8		
20 years or more	45	18.9		

6.7 Data Collection

A letter of information, the survey instruments and the demographic questionnaire were created as a single online survey using the Qualtrics platform. The URL for the survey was placed into the invitation email, the newsletter notices, and distributed electronically through the hospitals' intranets to all HCP. The total approximate number of potential participants from the participating hospitals and alliances was 3702 resulting in a response rate of 6.6 %. Response rates among HCPs have been found to be low in research, for example Aitken, Power and Dwyer reported an overall response rate of 8.7% in medical practitioners, while Cook, Dickinson, and

Eccles, (2009) reported 14%.

The 73-item study questionnaire that consisted of demographic questions (15 items), and a set of instruments to measure conscientiousness (9 items), general self-efficacy (8 items), work engagement (9 items), reciprocity with co-workers (3 items) and IPRC (27 items plus 2 global items).

Conscientiousness was assessed using The Big Five Inventory (BFI) 9-item Conscientiousness subscale (John, Naumann, & Soto, 2008; John, Donahue & Kentle, 1991) rated on a 5-point Likert-style scale ranging from 1 to 5. In this study, participants' ratings for the nine items were summed to determine their overall conscientiousness score with higher scores reflecting higher levels of conscientiousness.

General self-efficacy was measured using the New General Self-Efficacy Scale (NGSE) (Chen et al., 2001) which is a single dimension eight-item measure using a five-point scale ranging from 1 to 5 with higher scores reflecting greater GSE. Work engagement was measured using the Utrecht Work Engagement Scale-9 (UWES-9)**,** a shortened version of the 17-item UWES (Schaufeli, Bakker, & Salanova, 2006). This self-report questionnaire measured three factors including *vigor* (VI) (3 items), *dedication* (DE), (3 items) and *absorption* (AB) (3 items) with a 7-point rating scale. The three items for each of the subscales were added together and the subscales were then summed to arrive at an overall engagement score with higher scores indicating more work engagement.

Reciprocity was measured using the *Reciprocity with Coworkers* (RECOW) scale

(Gilliam & Rayburn, 2016) which contains 3 items using a 5-point rating scale ranging from 1 = *strongly disagree* to 5 =*strongly agree* with a higher score representing greater reciprocation with a co-worker.

Role clarification was assessed using a new researcher-developed instrument the Interprofessional Role Clarification Scale (IPRCS) comprised of 11 items distributed across three factors including: *knowing roles* (5 items), *articulating roles* (3 items) and *sharing roles* (3 items). Items were rated with a 5-point scale (1= *strongly disagree* to 5= *strongly agree*). The items for each of the three subscales were added together and a total score was obtained by summing the three subscale scores with higher scores reflecting more effective IPRC. Content validity was established using Lynn's (1985) content validity index garnering feedback from 6 IP experts. Reliability coefficient alphas ranged from .72 to .82 with an overall scale reliability of .80.

6.8 Data Analysis

All data were either downloaded from Qualtrics and entered into SPSS Version 25 to form a data set. Initially descriptive analyses of collected data was undertaken. Prior to parametric testing, using AMOS 25 confirmatory factor analyses (CFAs) were carried out on the measurement instruments to verify their structure. In preparation for SEM, parcelling was carried out on the conscientiousness and general self-efficacy instruments, both single factor scales. This technique has been developed to aggregate items as indicators of latent constructs (Matsunaga, 2008). Finally, AMOS 25 was used to conduct additional inferential analyses related to path models using SEM methods.

Using SPSS Version 25.0, descriptive analysis of the data was carried out followed by a correlational analyses. Although 258 surveys were entered into the Qualtrics

platform, 11 surveys were blank, meaning that 11 HCPs opened the survey but chose not to complete it. These 11 uncompleted surveys were returned automatically once the month-long timeframe for completion passed and were deleted from the dataset using a Listwise deletion resulting in a dataset total of 247 respondents. Next, item-by-item review of demographic data yielded three cases that did not meet the inclusion criteria since they were not licensed HCPs and were therefore, excluded from further analysis, leaving a final data set of 244 participants. Subsequently, a case-by-case missing value analysis was carried out, revealing that six respondents did not answer questions pertaining to the main study variables, identified as non-random missing data (2.5%) and thus were removed from further analysis (Tabachnick & Fidell, 2013) leaving 238 cases remaining in the dataset.

In the remaining data set, Little's MCAR was carried out with findings that were not significant (p =.322), suggesting that the missing values were random across the cases and variables (Kline, 2106). Imputation using mean substitution scores were used for 29 missing values (conscientiousness had 3 missing values replaced; general self-efficacy, 8 were replaced; work engagement, 10 items were replaced; and interprofessional role clarification 8 items were replaced).

Normality of data was further assessed using both Mahalanobis and Cook's Distances. Multivariate outliers were checked by inspecting the Mahalanobis distances, which measures the extent of a case's distance from the means of the predictor variables (Pallant, 2013). These were produced in SPSS's linear regression program and then compared to the critical chi-square value using the number of independent variables as the degrees of freedom, using an p value of <.001 as statistically significant (Tabachnick

& Fidell, 2013). Four cases were identified as potential multivariate outliers with high (greater than 18.47) critical values and statistically significant Mahalanobis distance values (Tabachnick & Fidell, 2013 However, Cook's Distance was found to be within acceptable range (less than 1.0). Thus these four data sets were retained (Tabachnick & Fidell, 2013).

Skewness and kurtosis of data were assessed using Shapiro-Wilk Test of Normality. A fairly normal distribution was found, with the exception for Conscientiousness for item #3 with kurtosis = 9.03 (expected level = 8). (Pallant, 2013), leading to the decision to retain the item, but noting that caution needed to be taken to interpret the findings. The final useable data set contained 238 data sets. All data were then analyzed descriptively and inferentially using SPSS Version 25.

6.9 Results

Study results are reported in the following sections including a descriptive analysis of the instruments, confirmatory factor analysis for some of the instruments, parcelling of the observed variables, and results pertaining to SEM. All three research questions and the corresponding hypotheses are addressed.

6.9.1 Descriptive Analysis of Instruments

Descriptive statistics for the main study variables and subscale scores of instruments were examined. HCPs reported high levels of conscientiousness (M =38.36, SD = 4.3) and general self-efficacy (M =32.99, SD = 3.55) while their perceptions of their engagement in work was moderate (M =46.46, SD = 7.54). All three of the work engagement (WE) subscales were reported at moderate levels including vigour (M =15.43, SD = 3.20), dedication (M =15.71, SD = 3.40) and absorption (M =15.28, SD =

2.44) as was the total WE score (*M* =46.46, SD = 7.54).HCPs reported a reasonably high level of reciprocity with coworkers (*M* = 1.87, SD = 1.98). HCPs reported a midrange level of role clarification (*M* =40.66, SD = 3.92), with a high level in sharing roles (*M* =12.71, SD = 1.47), followed by articulating roles (*M* =12.31, SD = 1.99); knowing roles was quite low by comparison (*M* =15.64, SD = 2.04) (see Table 11).

Table 11

Means, standard deviations and reliability of study variables.

Variable	*M* (SD)	Range of Responses	Cronbach's Alpha
Conscientiousness	38.36 (4.30)	24.0-45.0	.73
General Self-Efficacy	32.99 (3.55)	20.0-40.0	.87
Work Engagement	46.46 (7.54)	9.0- 61.0	.85
Vigour	15.43 (3.20)	3.0-21.0	.84
Dedication	15.71 (3.40)	3.0-21.0	.79
Absorption	15.28 (2.44)	3.0-21.0	.44
Reciprocity	11.87 (1.98)	4.0-15.0	.75
Role Clarification	40.66 (3.92)	26.0-50.0	.80
Knowing Role	15.64 (2.04)	11.0-20.0	.82
Articulating Role	12.31(1.99)	5.0-15.00	.82
Sharing Role	12.71(1.47)	8.0-15.0	.72

6.9.2 Confirmatory Factor Analysis of Instruments

Prior to parametric testing of the data, using AMOS 25, a confirmatory factor analysis (CFA) was carried out on each measurement instrument to verify instrument structure in this study population. Specifically, CFAs using maximum likelihood estimates (ML) were conducted for the Big Five Inventory, Conscientiousness subscale, the NGSE Scale, UWES-9, and IPRCS independently. The data were analysed

independently, and the modification indices were examined to help identify the best fit. The results are also outlined following discussion of CFAs for each variable (Table 12).

The conscientiousness dimension could not be validated since it was the only dimension of the BFI that was used; also since no studies assessing conscientiousness as a stand-alone construct, were found, comparison to the original BFI could not be undertaken. A CFA using maximum likelihood estimates (ML) was conducted on the nine-item subscale *conscientiousness* resulted in a poor-fitting model [X^2 (*df*) =136.63 (27), p<.001, GFI = .88, RMSEA = .13, SRMR=.09, CFI =.74].

The CFA results of the general self-efficacy data indicated an acceptable model fit [X^2 (*df*) = 79.23(20), p < .001, GFI = .91, SRMR = .06, CFI = .92, RMSEA = .11 TLI =.89 and IFI = .92]. These results showed a slightly weaker fit compared to instrument developers Chen, Gully and Eden's (2004) model fit (X^2/df = 158.67/91, CFI =.93 RMSEA = 0.07, IFI = .93 and TLI=.90).

The CFA results for the work engagement data suggested the need for a covariance of two error terms to improve the fit [X^2 (*df*) = 49.19/23 = 2.14 p < .001, GFI = .95, SRMR = .04, CFI = .97, RMSEA = .07, NFI=.95, TLI = .96,]. These results showed a similar acceptable fit compared to instrument developers, Schaufeli, Bakker & Salanova (2006) model fit [X^2 (*df*) = 3227.29 (240), GFI = .95, CFI = .97, RMSEA = .03, NFI =.95, TLI = .93, TLI=.96.

The reciprocity scale (RECOW) had issues related to identification since it was just-identified, with an equal number of known and unknown values. This meant that falsibility could not be explored since there was no provision for examining fit statistics

using CFA (Kline, 2016). Since there was no provision for fit statistics, a CFA could not be conducted.

The CFA using ML estimates for the newly developed IPRCS demonstated a reasonably good fit. With the addition of one covariance, fit statistics included [X^2/df = 76.81/40 = 1.29, $p < .001$, GFI = .95, SRMR = .06, CFI = .95, RMSEA = .06] Figure 10 shows the three factor IPRCS model. This is followed by the report of fits across all of the study variables (Table 12)

Figure 10

CFA of the Three-Factor IPRCS Model

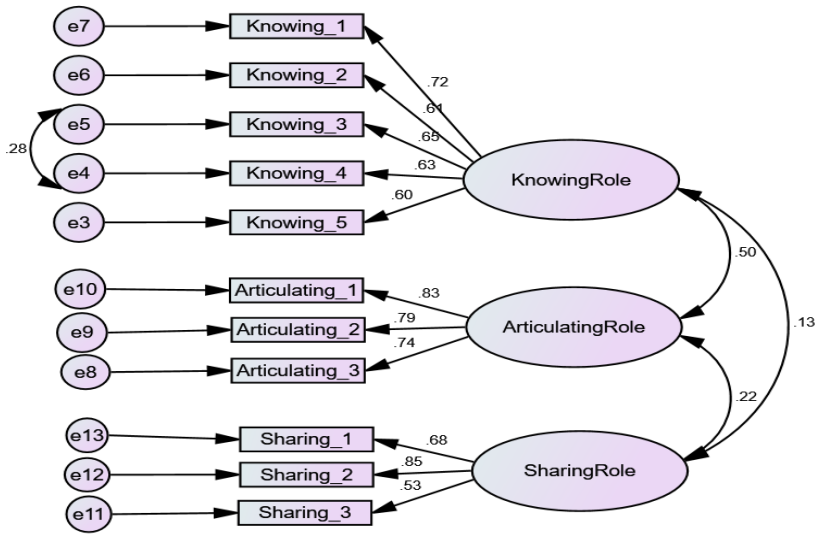


Table 12

Final confirmatory factor analyses model fits between study data and reported fits across study independent and dependent variables.

Variable	X^2 (df)	*p*	GFI	CFI	RMSEA	SRMR
Conscientiousness	136.63(27)	<.001	.88	.74	.13	.09
General Self-Efficacy	79.23(20)	<.001	.91	.92	.92	.06
Work Engagement	49.19(23)	<.001	.95	.97	.07	.04
IPRC	76.81(40)	<.001	.95	.95	.06	.06
Reciprocity	N/A					

Table 13 presents the correlations between the study's independent and dependent variables as background for the main analysis discussion that follows it. Subsequent to this, the relationships between HCPs' personal factors, specifically conscientiousness and GSE, with impact on WE, and reciprocity leading to HCPs' IPRC, the three research questions and their corresponding hypotheses are explored.

Table 13

Correlations between the study's independent and dependent variables.

	Variable	Correlations (*r*)										
		1	2	3	4	5	6	7	8	9	10	11
1	Conscientiousness	1.0										
2	General Self-Efficacy	.52**	1.0									
3	Work Engagement	.19**	.24**	1.0								
4	Vigour	.24**	.28**	.87**	1.0							
5	Dedication	.16*	.22**	.89**	.731**	1.0						
6	Absorption	.06	.11	.68*	.401**	.432**	1.0					
7	Reciprocity	.04	.09	.11	.108	.061	.152*	1.0				
8	IP Role Clarification	.31**	.35**	.16*	.210**	.148**	.080	.169**	1.0			
9	Knowing Role	.28**	.34**	.12	.149*	.117	.087	.182**	.840**	1.0		
10	Articulating Role	.14*	.12	.18**	.240**	.217	.008	.061	.742**	.404**	1.0	
11	Sharing Role	.22**	.26**	.02	.044	-.055	.074	.099	.513**	.179**	.181**	1.0

Note. Indicates correlation statistically significant $^{**}p < .01$ $^{*}p < .05$

6.9.3 Research Question 1.

What are the relationships between HCPs' personal resources (conscientiousness, general self-efficacy), work engagement and IP role clarification? To address this, research question, five hypotheses (H_1 to H_5) were analyzed and are reported in this section.

6.9.3.1 Conscientiousness. H_1 proposed that when HCPs possessed a higher level of conscientiousness, they would report a high level of work engagement. Conscientiousness showed a weak significant positive correlation with WE (r = .19) and subscales V (r = .24) and D (r =.16).

H_3 proposed that when HCPs possessed a higher level of conscientiousness, they would report higher levels of IPRC. A low-moderate significant positive correlation was found between conscientiousness and IPRC (r = .31) weak significant positive correlation with IPRC subscales, Knowing Role (r = .28), Articulating Role (r = .14) and Sharing Role (.22) (See Table 13).

6.9.3.2 General Self-Efficacy. H_2 proposed that when HCPs possessed a higher level of general self-efficacy, they would report higher levels of work engagement. GSE has a weak significant correlation with total WE (r = .24) and subscales V (r = .28), D (r = .22).

H_4 proposed that when HCPs possessed a higher level of general self-efficacy, they would report higher levels of IP role clarification. GSE has a low-moderate significant correlation with IPRC (r = .35) and subscales KR (r = .34), and SR (r = .26)

6.9.3.3 Work Engagement. H_5 proposed that when HCPs possessed a higher level of work engagement, they would report a high level of IPRC. WE had a weak significant correlation with IPRC (r = .16) and the subscale *Articulating Roles* (r = .18).

6.9.4 Parcelling of Observed Variables

To prepare data for structural equation modeling (SEM) and analysis of the theorized model, single-factored 9-item conscientiousness scale and 8-item general self-efficacy (GSE) were parcelled as a means to transform observed variables into latent variables (Matsunaga, 2008) and improve model fit (Coffman & MacCallum, 2005).

Given the poor fit statistics of the single factor conscientiousness subscale, an exploratory factor analysis (EFA) was undertaken to examine its factor dispersal, which identified three factors based on eigenvalues, a finding contrary to BFI's presentation as a single factor. Examination of the communalities suggested the removal of five items, leaving only four items from the original nine-item scale (item 3, 4, 6, 8). Before deleting the five items an EFA using a one factor forced solution was carried out and all nine indicators were retained and aggregated using the factorial algorithm method (Rogers & Schmitt, 2004) specifying three parcels of three items. Table 14 shows the allocated factor parceling of the items and the factor loadings for parcels ranging from .72 to .93.

Table 14

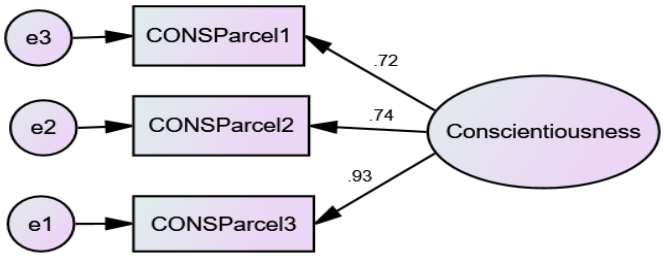
Parcelling for Conscientiousness using Factorial Algorithm

Conscientiousness Item #	Factor Loadings (*β*) Ordered Highest to Lowest	Sequenced Parcel # Allocation
8	.70	1
6	.67	2
3	.57	3
7	.56	3
2	.42	2
5	.40	1
1	.38	1
4	.38	2
9	.35	3

This respecification of conscientiousness shown below in Figure 11 is just-identified, with zero degrees of freedom. When considered as part of the full SEM model, the whole model was over-identified, thus allowing for evaluation of full model fit (Matsunaga, 2008).

Figure 11

Three-Parcel Model of 9 Items for Conscientiousness



Next, the one factor GSE's eight indicators were aggregated using the factorial algorithm method (Rogers & Schmitt, 2004). Table 15 shows the factor loadings for the allocated factor parceling of the items as well as the parcels ranging from .77 to .80.

Table 15

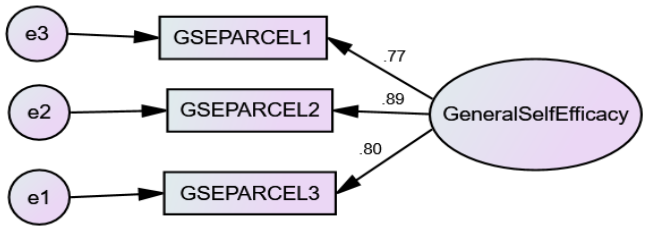
Parcelling for General Self-Efficacy using Factorial Algorithm

General Self-Efficacy Item #	Factor Loadings (*β*) Ordered Highest to Lowest	Sequenced Parcel # Allocation
5	.78	1
4	.77	2
2	.74	3
3	.71	3
6	.67	2
8	.60	1
7	.56	1
1	.56	2

This respecification of GSE (Figure 12) is just-identified, with zero degrees of freedom, but as part of the full SEM model, the whole model was over-identified, thus allowing for evaluation of full model fit (Matsunaga, 2008).

Figure 12

Three-Parcel General Self-Efficacy Model



6.9.5 Structural Equation Modelling

SEM using AMOS 25 was implemented to analyse relationships between the key study variables. The five latent variables (Conscientiousness, GSE, WE, RECOW and IPRC) were developed using composite scores of the observed variables

(Conscientiousness and GSE) from the parcelled variables and from the CFAs. An acceptable model fit was achieved and the factor correlations, and regression coefficient estimates were evaluated.

The initial Model 1 shown in Figure 13 resulted in an acceptable model fit [X^2 (df) = (111.65/48) = 2.33, p<.0001, GFI =.93, RMSEA = .08, SRMR=.07, CFI = .94]. The ratio of X^2 to df of less than 3 is considered a reasonably good indicator of model fit (Kline, 2016) when no modifications are recommended in the modification fit indices. A summary of the model fit statistics is shown in Table 16.

Figure 13

Structural Equation Model Path Diagram with Standardized Loadings

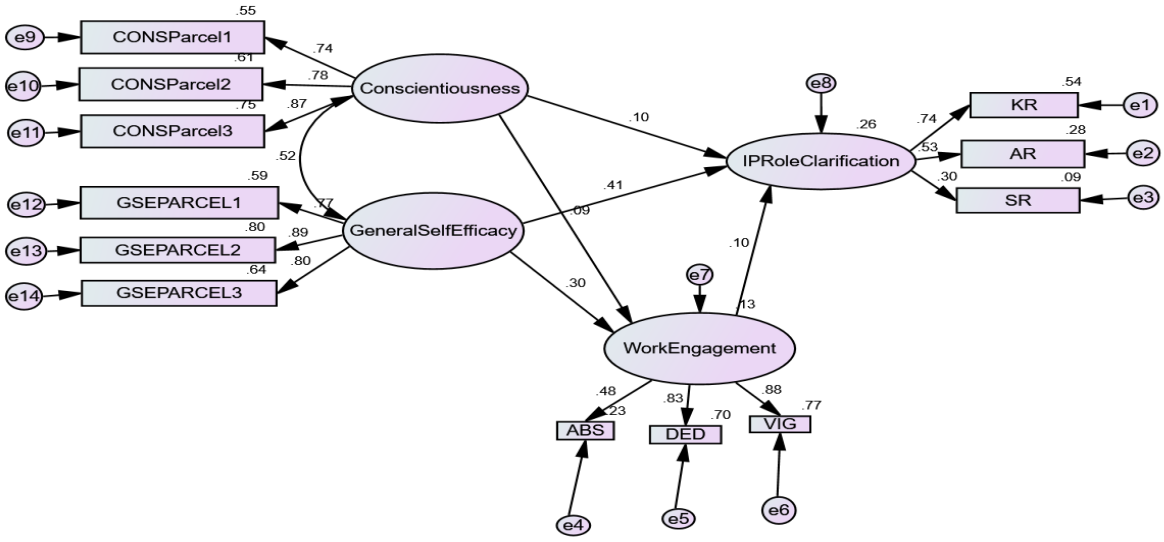


Table 16

Model Fit Statistics for the Proposed Model

Model	X^2 (df)	p	GFI	RMSEA	SRMR	CFI
Model 1	111.65 (48)		.93	.08	.07	.94

The squared multiple correlation, identified as the r^2 value, measures how well a variable can be predicted, representing the proportion of variance explained by the predictor variables. The r^2 value was calculated for endogenous variables (WE and IPRC). It is estimated that the predictors of WE (conscientiousness and GSE) account for 12.8 percent of its variance (r^2 =.13) meaning that 87.2 percent of the variance is unaccounted for. In addition, the predictors of IPRC (conscientiousness, GSE and WE) account for 26.4 percent of its variance (r^2 =.26) meaning that 73.6 percent of the variance is unaccounted for.

Direct regression paths were obtained between each of the independent and dependent variables to address H_1 to H_5. The magnitude of the path estimates were determined using Cohen's (1988) criterions for small (d < .30), medium (d=.30-.50), and large (d >.50) effect sizes for the magnitude of the estimate. Parameter estimate results for all hypothesized pathways are presented in Table 17.

H_1 proposed that when HCPs possess a higher level of conscientiousness, they will report a high level of work engagement. The standardized regression path for conscientiousness on work engagement showed no statistical significance (β = .09, p= .318) indicating no relationship between conscientiousness and work engagement. This result did not support H_1 .

H_2 proposed that when HCPs possess a higher level of general self-efficacy, they will report higher levels of work engagement. The standardized regression path for general self-efficacy on work engagement showed statistical significance (β = .30, p <.001) with a low-medium effect size. This result supported H_2 .

H_3 proposed that when HCPs possess a higher level of conscientiousness, they will report higher levels of IP role clarification. The standardized regression path for conscientiousness on IP role clarification showed no statistical significance ($\beta = .10$, $p = .304$) indicating no relationship between conscientiousness and IP role clarification. This result did not support H_3.

H_4 proposed that when HCPs possessed a higher level of general self-efficacy, they would report higher levels of IP role clarification. The standardized regression path for general self-efficacy on IP role clarification showed statistical significance ($\beta = .41$, $p < .001$) with a medium effect size. This result supported H_4 .

H_5 proposed that when HCPs reported a higher level of work engagement, they would report higher levels of IP role clarification. The standardized regression path for work engagement on IP role clarification showed no statistical significance ($\beta = .10$, $p = .272$) indicating no relationship between work engagement and IP role clarification. This result did not support H_5.

Table 17

Final Structural Model Parameter Estimate Results

Hypothesis	**Direct Paths**	***B***	***SE***	***Z***	***p***
H_1	CONS → WE	.09	.41	.99	.318
H_2	GSE→WE	.30	.60	3.40	<.001
H_3	CONS → IPRC	.10	.34	1.028.	.304
H_4	GSE→ IPRC	.41	.52	3.77	<.001
H_5	WE→ IPRC	.10	.06	1.10	.272
	CONS → CONS Parcel1	.74	.06	11.73	<.001
	CONS → CONS Parcel2	.78	.06	12.22	<.001
	CONS → CONS Parcel3	.87	-	-	-
	GSE → GSE Parcel1	.77	.07	12.41	<.001
	GSE → GSE Parcel2	.89	.07	13.97	<.001

GSE → GSE Parcel3	.80	-	-	-
WE → Vigour	.88	-	-	-
WE → Absorption	.48	.06	6.92	<.001
WE → Dedication	.83	.10	9.91	<.001
IPRC→Knowing Role	.74	-	-	-
IPRC→Articulating Role	.53	.11	4.56	<.001
IPRC→Sharing Role	.30	.06	6.93	<.001

Note. Items with " -" were restrained to 1. CONS = Conscientiousness, WE =Work Engagement, GSE = General Self Efficacy, IPRC = Interprofessional Role Clarification

6.9.6 Research Question 2

Does work engagement mediate the relationship between conscientiousness and IPRC? H_6 proposed that the relationship between HCPs' reported levels of conscientiousness and IPRC would be partially mediated by work engagement. Using the path model to analyse the indirect effect, user-defined estimands using AMOS AxB estimand were implemented (Gaskin, 2016). The path between conscientiousness and work engagement was labelled as A and the path between work engagement and IP role clarification was labelled as B. The next step in Amos 25 was to perform bootstrapping to include 2000 samples and bias-corrected 90% confidence intervals as recommended by Arbuckle (2017); this resulted in the statistics for the mediation path (AXB). The findings indicated that work engagement did not significantly mediate the effect of conscientiousness on IPRC (β =.03, p =.27), therefore H_6 was not supported (See Table 18).

H_7 proposed that HCPs' level of work engagement partially mediates the relationship between HCPs' levels of general self-efficacy and IPRC. To analyse the indirect effect, user-defined estimands using AMOS AxB estimand was implemented (Gaskin, 2016). The path between general self-efficacy and work engagement was

labelled as A and the path between work engagement and IP role clarification was labelled as B. Using Amos 25, bootstrapping was performed to include 2000 samples and bias-corrected 90% confidence intervals (Arbuckle, 2017); running this model resulted in mediation path statistics indicating that work engagement did not significantly mediate the effect of general self-efficacy on IPRC (β =.14, p =.31). This result did not support H_7 as true and was rejected (See Table 18).

Table 18

Indirect Path (Mediator) Parameters for Work Engagement

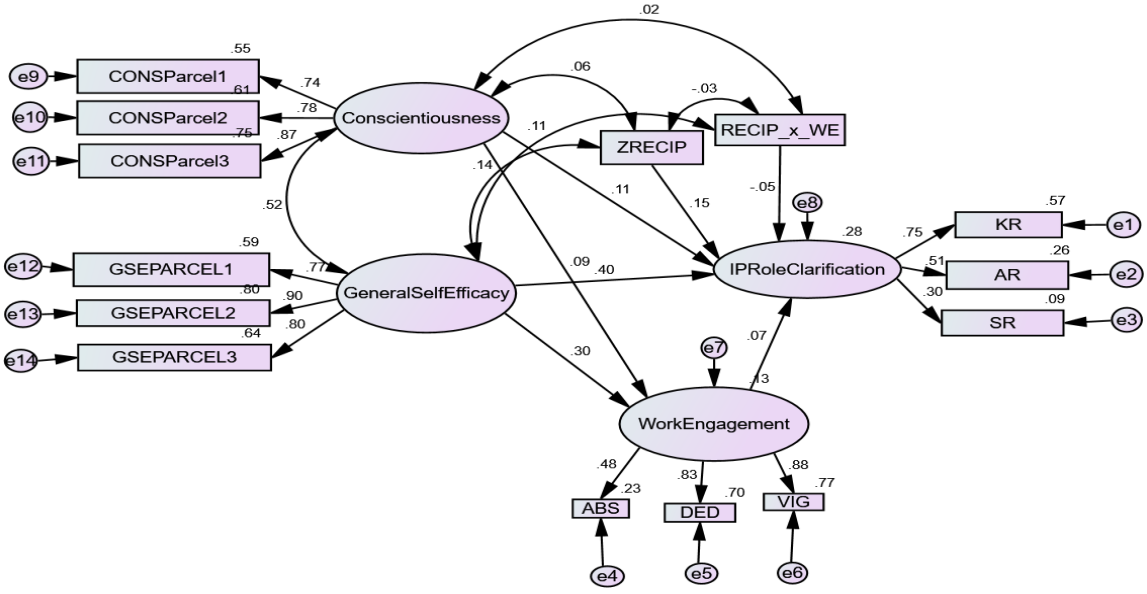
Hypothesis	Indirect Paths (mediation)	β	Upper/Lower Bounds	*p*	Bootstrap *SE*	Bias
H_6	WE (Between CONS→IPRC	.03	-.014/.197	.27	.06	-.001
H_7	WE (Between GSE→IPRC)	.14	-.072/.610	.31	.21	.03

6.9.7 Research Question 3

Does reciprocity moderate the relationship between work engagement and IP role clarification? This study hypothesized that reciprocity with co-workers moderates the relationship between work engagement and IPRC (H_8). To test this, item scores for reciprocity with coworkers, an observed variable and WE, converted to an observed variable, were averaged and saved as standardized scores (Z). Next, reciprocity was added to the structural equation model. Standardized scores for work engagement and reciprocity with co-workers were multiplied to create the interaction term and were added to the SEM model. The standardized regression weights of the full model with the moderation interactions are found in Figure 14.

Figure 14

Final SEM Testing Moderating Interaction of Reciprocity with Co-Workers



This model included the one moderating effect. It demonstrated a fairly good fit with no suggestions for modifications to improve the fit further [$\chi 2$ (df) = 132.27 (66), $p < .001$, GFI =.93, RMSEA = .07, SRMR=.06, CFI =.94]. These are shown in Table 19.

Table 19

Model Fit Indices for Reciprocity with Co-workers Moderation Model

SEM Model	X^2 (df)	*p*	GFI	RMSEA	SRMR	CFI

Model 1	132.27 (66)	<.001	.93	.06	.07	.94

Next, the regression estimate for the interaction was examined. Results indicated that reciprocity by work engagement was not significant (p =.49), therefore H_8 was not supported as true; reciprocity with co-workers did not modify the relationship between work engagement and IP role clarification (see Table 20). It was noted that the regression path between RECOW and IPRC was significant but small (β = .15, p =.05).

Table 20

Regression Estimate for Moderator Effect of Reciprocity with Co-Workers

Hypothesis	Moderator	***β***	***SE***	***Z***	***p***
H_8	Reciprocity	-.05	.14	-.69	.49

6.10 Summary of Results

This study used a theoretically-derived model to test three research questions that consisted of eight hypotheses to address the research questions using structural equation modelling. The results of the study are summarized in the following section to address the hypotheses and to answer the research questions.

Research question one asked *what are the relationships between HCPs' personal resources (conscientiousness, self-efficacy), work engagement and IP role clarification* and consisted of five hypotheses (H_1 – H_5). H_1 theorized that when HCPs possess a higher level of conscientiousness, they will report a high level of work engagement. In the study results conscientiousness demonstrated a weak significant positive correlation with overall work engagement and with the vigour and dedication subscales. The standardized regression estimate for conscientiousness on work engagement showed no significance,

further indicating that there is no relationship between them. Therefore H_1 was not supported.

H_2 theorized that when HCPs possess a higher level of general self-efficacy, they will report higher levels of work engagement. In the study general self-efficacy demonstrated a significant weak positive correlation with overall work engagement and with the vigour and dedication subscales. The standardized regression path for general self-efficacy on work engagement showed statistical significance with a low-medium effect size indicating a weak, modest relationship. Therefore regression estimates supported this hypothesis ($\beta = .30$, $p < .001$) meaning that as general self-efficacy goes up by 1 standard deviation, work engagement goes up by .30 standard deviation.

H_3 theorized that when HCPs possess a higher level of conscientiousness, they will report higher levels of IP role clarification. In the study conscientiousness demonstrated a significant low-moderate positive correlation with overall IPRC and significant weak positive correlations with the IPRC subscales. The standardized regression path for conscientiousness on IP role clarification showed no statistical significance indicating no relationship between conscientiousness and IP role clarification. Therefore H_3 was not fully supported.

H_4 theorized that when HCPs possess a higher level of general self-efficacy, they will report higher levels of IP role clarification. In the study general self-efficacy demonstrated asignificant low-moderate correlation with overall IPRC and with the knowing roles and sharing roles subscales. The standardized regression path for general self-efficacy on IP role clarification showed a significant moderate positive correlation.

Regression estimates support this hypothesis ($\beta = .41$, $p < .001$), meaning that when general self-efficacy goes up by 1 standard deviation, IPRC goes up by .41 standard deviation. Therefore, H_4 was supported and accepted.

H_5 theorized that when HCPs report a higher level of work engagement, they will report higher levels of IPRC. In the study work engagement demonstrated a significant weak correlation with overall IP role clarification and subscale articulating roles. The standardized regression path for work engagement on IP role clarification showed no statistical significance, indicating no relationship between work engagement and IP role clarification. Therefore, H_5 was not supported.

Research question 2 asked *does work engagement mediates the relationship between conscientiousness and IPRC* and consisted of two hypotheses (H_6 and H_7) to address the question. Using the path model to analyse the indirect effect, the implementation of user-defined estimands using AMOS AxB estimand was used (Gaskin, 2016). H_6 theorized that the relationship between HCPs' reported levels of conscientiousness and IPRC was partially mediated by work engagement. In the study analysis using a path Model and the indirect effect resulted in the finding that work engagement did not mediate the effect of conscientiousness on role clarification. Therefore, H_6 was not supported.

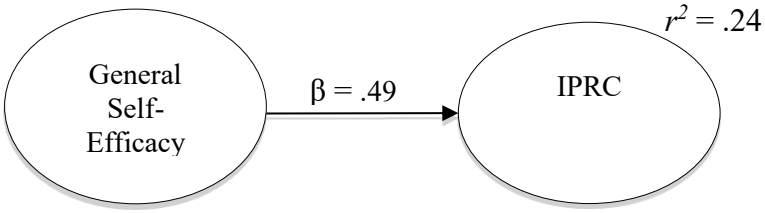
H_7 theorized that HCPs' level of work engagement partially mediates the relationship between HCPs' levels of self-efficacy and IPRC. In the study analysis using a path model and the indirect effect showing that work engagement did not significantly mediate the effect of general self-efficacy on IP role clarification. Thererfore, H_7 was not supported.

Research question 3 asked *does reciprocity moderates the relationship between work engagement and IP role clarification* and consisted of one hypothesis to address it. H_8 theorized that HCPs' level of reciprocity with coworkers moderates the relationship between work engagement and IPRC. In the study the interaction term for reciprocity with coworkers showed no significant moderating effect. Therefore, H_8 was not supported.

As outlined in the summary of the hypotheses above, the proposed theoretically-based model was only partially supported by this study's findings. Based on these results, Figure 15 shows the relationship between the latent variables, general self-efficacy and IPRC exists.

Figure 15

Final Path Model of Influence for Interprofessional Role Clarification



6.11 Discussion

This study revealed two key findings, including the impact of general self-efficacy on IPRC and the outcome of effective IPRC. First, general self-efficacy can be described as the generalized belief that one holds about one's own ability to perform in potential situations and across tasks and situations (Bandura & Cervone, 1983; Bandura, 1986, 1997). In this study, general self-efficacy showed a significant low-moderate correlation with overall IPRC and the *knowing roles* and *sharing roles* subscales. In

addition, HCPs' general self-efficacy had a significant moderate effect (β = .41, $p < .001$) on IPRC, meaning that as general self-efficacy rose by 1 standard deviation, IPRC went up by .41 standard deviation. This finding aligns with Bandura's (1982, 1977) suggestion that one's self-efficacy can affect feelings, thoughts and behaviours with influence on the action taken. In the case of this study, one's self-efficacy can influence how effectively individuals engage in IPRC with IP team members. A high level of general self-efficacy could heighten confidence and competence in practice (Bandura, 1982). This link between general self-efficacy and IPRC provides some indication of the path that can be taken to facilitate the development of role clarification as an IP competency. In a very small study of social workers' as members of the IP team in traumatic and acquired brain injury setting (N=37), self-efficacy was found to be a predictor of role clarity ($p = < .05$) (Vungkhanching & Tonsing, 2016) and is an interesting finding, although the sample size is a limitation.

Role issues such as role uncertainty and ambiguity are known to exist in some IP teamwork (Pryor, Walker, O'Connell & Worrall-Carter, 2009). A high level of general self-efficacy can promote persistency in the approach that individuals take to help to work through stressful situations, including the process of clarifying roles.

Descriptive analysis pertaining to the Interprofessional Role Clarification Scale (IPRCS) results provided some initial insights into the behaviours reflective of effective IPRC in HCPs. Overall, HCPs perceived a midrange level in overall effectiveness to clarify IP roles with a reasonably high level for both articulating roles and sharing roles. However, HCPs reported low scores for knowing roles, implying the need to enhance learning about one another's roles. Kharicha et al (2005) reported that

encouraging working together across social and primary care providers, would help to develop understanding one anothers' roles. Since not knowing about one another's roles has been described as a barrier to teamwork (Bittner, 2019, Oelke, Thurston & Arthur, 2013), the reported low scores for knowing roles must be highlighted. Delivery of client-centred care requires determining the complement of HCPs needed for each client (Chan et al., 2010; Kim et al., 2017), however, without clear knowledge about other's roles, it is difficult to confirm that delegation of care is most effectively determined.

While HCPs in this study reported that overall they felt somewhat confident with their abilities to effectively clarify their healthcare roles, when perceptions of others' roles are not clear, team function could ultimately be affected. Adams, et al. (2014) reported that eight months after formation of a diabetic foot care team, while defining and clarifying roles had evolved, it continued to challenge some HCPs. This suggests that IPRC is ongoing and iterative due to the shifting of clients' conditions and needs, and so too will team members' roles require change to address these shifts.

Further studies are needed to assess the validity and reliability of the IPRCS and to confirm the three components of IPRC that were identified in this study. Specifically, the subscale *Knowing Roles* scored considerably lower than the other two subscales. If there is a lack of fully understanding (knowing) one another's roles, this may not have been fully uncovered with the measure used. Studies that use observation to capture actual interactions to clarify understanding about others' role might strengthen the understanding about the concept of knowing roles.

An intervention study would provide educational exploration to gain a more

accurate picture of IPRC that was being practiced since both self-efficacy and role identify relate to the HCPs social interactions with each other (Bandura, 2001; Hardy & Conway, 1988). Interventions that include IPRC as a facet of team training may also assist team members to adopt role clarification as a norm in healthcare practice. This study supports previously reported contentions for the need for IPRC and IP teams needing to understand their own roles and the roles of others (Bittner, 2018; Brault et al., 2014; CIHC, 2010).

6.12 Limitations

This section addresses limitations for this study. The use of a cross-sectional survey limits the surveyed HCPs perceptions of the variables under study at a specific time. The absence of observation of HCPs interactions may not accurately reflect the reality of what is occurring in practice. The use of a convenience sample also limited representativeness of all HCPs working in similar settings and may be atypical of the population of interest and their decision to participate or not can lead to bias. The data were from voluntary participants from five different rural and community hospitals and alliances located in a small proportion of Ontario. This may have limited representativeness of healthcare professions, and could have resulted in response bias with responses more collective of the geographical area represented.

The sample size could not be divided to use one portion of the sample to conduct the EFA, and a second portion to conduct the CFA. This is a limitation for the self-developed IPRCS instrument used in this study. Although the IPRCS underwent content validity assessment of dimensions and model fit, it requires more testing to ensure its psychometric properties are replicable. Further research studies are needed combining

both survey and observations of HCPs interactions in clinical settings to strengthen these findings. Studies are needed to further test the validity and reliability of the IPRCS.

Limitations pertaining to some of the instruments used in this study were also noted. First, only the conscientiousness subscale was used from the BFI was used (John, Naumann, & Soto, 2008; John, Donahue & Kentle, 1991) which undermined the ability to perform a CFA to compare to previous findings. Finally, for the SEM process, single factored conscientiousness and general self-efficacy could not be included as latent variables, resulting in the decision to use factorial algorithm parcelling (Matsunaga, 2008). The combination of issues could have influenced the findings in this study, possibly limiting the overall study power.

6.13 Conclusion

Insights have been gained from this research study. Findings revealed that HCPs' level of general self-efficacy was positively related to their level of IP role clarification, suggesting that a higher general self-efficacy leads to more effective role clarification. Descriptive results of this study indicated that HCPs reported only a midrange total score for role clarification, with knowing roles showing the lowest scores for the three subscales.Furthermore, the influence that general self-efficacy exerts on IPRC could provide an opportunity for steps that may be taken to help build HCPs' capacity to clarify roles. At the same time, the strength needed to engage in conversations about one's own role and the roles of IP team members requires a strong belief in one's self-esteem (Bandura, 1994).

This study examined IPRC as an outcome in this study which necessitated the development of an instrument to measure it. The IPRCS extends the IP work about role

clarification, but more studies using this instrument are needed to refine and strengthen its rigour. Moreover, the importance of role clarification as a process within IP collaborative practice must also be emphasized (Allen et al., 2019; Brault et al., 2014) and proficiency in role clarification can be difficult to attain since role competencies are not always transferable (Hudson et al., 2017). While the framework of role theory was useful in the exploration of role clarification, the addition of self-efficacy could enlighten the process of role clarification since both are immersed within social interactions (Bandura, 1977; Hardy & Conway, 1988)

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Chapter 7 - Interprofessional Role Clarification Study: Summary of Key Findings, Limitations and Implications

The overall aim of this study was to examine the impact of personal factors (conscientiousness, general self-efficacy) and work engagement that impact interprofessional role clarification (IPRC). Additionally, this study tested the mediating effect of work engagement and the moderating effect of reciprocity of coworkers between work engagement and interprofessional role clarification.

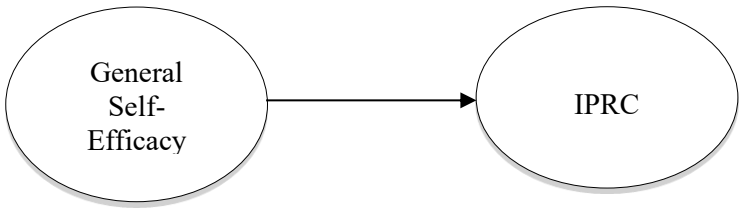
To study the above questions two preliminary steps were taken. Firstly, a concept analysis of interprofessional role clarification was undertaken to identify attributes, antecedents and consequences of the concept. The attributes identified were then used to develop a measure to test the concept – the Interprofessional Role Clarification Scale (IPRCS; Allen, Orchard, Evans, Gorman & Kerr, 2019). These actions allowed for the development and testing of a theorized model that examined IPRC, and was underpinned by role theory (Hardy & Conway, 1988) and CIHC's (2010) Interprofessional Competency Framework. The findings of this study provided insight into the process and the outcome of IPRC, and contributes to the literature that suggests that role clarification is a key element for IP collaborative practice to meet requirements for safe and competent client-centred care (CIHC, 2010; WHO, 2010).

Neither HCPs'personal resource of conscientiousness nor HCPs'engagement in their work influenced their level of effectiveness to clarify their IP roles. Additionally, work engagement did not mediate the effect between conscientiousness or general self-efficacy and HCPs' effectiveness to clarify their roles nor did HCPs' reciprocity with coworkers was interact between HCPs' engagement in their work and their effectiveness to clarify roles. A key finding that was confirmed by the study results was that general

self-efficacy impacted interprofessional role clarification in healthcare practitioners. Figure 16 shows the revised theorized model created to reflect the findings from this study.

Figure 16

Revised Model for IPRC



The significance of these key findings are discussed in two sections including the impact of general self-efficacy on IPRC and the outcome of effective IPRC.

7.1 Impact of General Self-Efficacy on Interprofessional Role Clarification

Derived from social cognitive theory, general self-efficacy is defined as the personal judgement that one holds about one's ability to perform in prospective situations and this generalized belief across tasks and situations (Bandura & Cervone, 1983; Bandura, 1986, 1997). This study proposed that when HCPs possessed a higher level of general self-efficacy, they would report a higher level of IPRC. In this study, general self-efficacy demonstrated a significant low-moderate correlation with overall IPRC and the *knowing roles* and *sharing roles* subscales. Additionally, HCPs' general self-efficacy had a significant moderate effect ($\beta = .41$, $p < .001$) on IPRC, meaning that as general self-efficacy rose by 1 standard deviation, IPRC went up by .41 standard deviation. This finding builds upon Bandura's (1982, 1977) proposition that individuals' self-efficacy can affect their feelings, thoughts and behaviours with influence on their alacrity to take

action, in this case, how effectively they engage in IPRC with IP team members.

The positive influence of general self-efficacy on IPRC found in this study provides a link between the two concepts in the literature and gives some direction on how to facilitate the development of role clarification as a interprofessional competency. Although no previous studies were found that link general self-efficacy to IPRC, Spitulnik (2019) noted that significant correlations were found between structural empowerment and general self-efficacy and psychological empowerment and general self-efficacy. Positive beliefs related to a high level of general self-efficacy may boost confidence and competence in practice (Bandura, 1982).

Interprofessional role clarification requires a team member to engage in formal and informal communication about one's own and others' roles (Allen et al., 2019). While it is known that IP teamwork and communications are sometimes fraught with role issues such as role uncertainty and ambiguity (Pryor, Walker, O'Connell & Worrall-Carter, 2009), a high level of general self-efficacy can promote persistency in the approach that individuals take to help to work through stressful situations, which in the case of IP team members, includes the process of clarifying roles.

7.2 Outcome of Interprofessional Role Clarification

This study aimed to learn more about the behaviours reflective of effective IPRC in HCPs. Its descriptive analysis pertaining to the Interprofessional Role Clarification Scale results as well as demographic data provided preliminary insight into this. Data for this study was obtained from fifteen healthcare professions working in rural and smaller community hospitals (n = 238) with a mean of 40.66, a medium level for overall IP role

clarification, and with the lowest individual score of 26 out of a possible 55. This means that overall, HCPs perceived a midrange level in overall effectiveness to clarify IP roles. Breaking this competency down further, HCPs in this study, reported a reasonably high level for both articulating roles and sharing roles. However, in the area of knowing roles, HCPs reported low scores, suggesting that learning regarding one anothers' roles must be enhanced to develop this facet. Kharicha et al (2005) reported that fostering joint working across social and primary health care providers, would help to better understand one anothers' roles, especially important since knowing about one anothers' roles has been described as a barrier to teamwork (Bittner, 2019, Oelke, Thurston & Arthur, 2013).

In this study, HCPs perceived a fairly high level of articulating their roles, however, to be effective, this communication must be done in concert with learning about others' roles, for without this full knowledge, the best mix of HCPs to effectively assist the client to meet care needs might not be correctly identified. Likewise, in this study, HCPs reported a high level of sharing, but the lack of reported understanding of their IP colleagues roles, suggests that more communication by formal and informal means might enhance the role clarification process further. Delivery of client-centred care requires reaching out to a variety of HCPs (Chan et al., 2010; Kim et al., 2017), but without the knowledge of roles, it is difficult to confirm that delegation of care is most effectively decided.

While HCPs in this study reported that overall they felt somewhat confident with their abilities to effectively clarify their healthcare roles, in cases where perceptions of what roles entail are not clear, team function could ultimately be affected. Adams, et al. (2014) found that eight months after formation of a diabetic foot care team formation,

defining and clarifying roles had evolved but continued to challenge some HCPs. This could suggest that role clarification is ongoing and iterative since along with clients' conditions and needs fluctuating, so too may members of the team change.

This study supports previous reports about role clarification and interprofessional teams needing to understand their own roles and the roles of others (CIHC, 2010; Ly, Sibbald, Verma & Rocker, 2018; WHO, 2010). The IPRCS, evolving from a concept analysis and CVI testing processes, led to three dimensions including knowing, articulating and sharing roles however, further studies assessing the validity and reliability of this instrument are needed to confirm these components of IPRC. The results in this study indicated that the subscale *Knowing Roles* scored considerably lower rating than the other two subscales. If there is a lack of fully understanding (knowing) one another's roles, this may not have been fully uncovered with the measures used and more studies are needed that use observation to capture actual interactions to clarify understanding about others' role. As well, an intervention that supports team building around clarification of roles with emphasis on their social interactions as part of the process could provide clearer testing of the value of the IPRCS in measuring this concept (Adams et al., 2014; Brown et al., 2011). Such team training may also assist IP role clarification to become a norm among IP team members and in healthcare practice.

The three IPRCS dimensions and their relevant items contained within -- *knowing roles, articulating roles,* and *sharing* roles as well as the IPRC attributes including (a) interaction between at least two IP team members; (b) opportunities for IP role socialization; (c) willingness to engage in collaborative practice; and (d) possession of knowledge, skills, and judgments of one's own profession provide insights into the

content and learning processes required for effective IPRC in teams. The new knowledge might also provide a means for understanding what should be contained within team building interventions (Adams et al., 2014; Salas et al., 2015)

Overall, this study provided a concept analysis, the development, and initial testing for the self-developed IPRCS measure, and findings from testing of a theorized model, leading to some insight into the direction for future advances for IPRC. Before suggesting use of the IPRCS to measure role clarification within IP practice, further research into its psychometric properties is recommended.

7.3 Study Limitations

This section addresses study limitations and presents construct, method and item biases using van de Vijver's (2011) SEM bias framework. Application to this study are discussed in the following paragraphs.

Construct bias occurs when a construct differs across cultures (van de Vijver, 2011) and could be an issue with regards to the construct of work engagement used in this study. Work engagement had a fairly low total mean score in this study and upon examination, it must be considered that front line HCPs could very likely be different than the population used in the UWES-9 instrument development (Schaufeli, Bakker, & Salanova,2006). Identification of this bias was partially confirmed by the CFA of the instrument which demonstrated low factor loadings especially for the *Absorption* subscale (.12, .49, .68). Further examination using interview and ethnographic information is needed to confirm how the construct was captured for the population in this study (van de Vijyer, 2011).

Method bias is a broad term for the sources of bias due to factors described in the

methods section, problematic since they have the potential of leading to false conclusions and can originate from the sample, administration or instrument (Podsakoff, MacKenzie & Podsakoff, 2012; van de Vijyer, 2011). Within the sample, response styles can include issues regarding social desirability, whereby the respondent answered in the way that was most likely seen as acceptable (Podakoff et al., 2012). To control for this bias in development of the IPRCS, care was taken to ensure the items were worded in a way that minimized perception of what was most desirable. Since this could not be addressed for the other previously developed and validated measurement instruments, social desirability cannot be ruled out. The use of an on-line survey allowed respondents to complete the survey away for others, thereby limiting the influences of colleagues; this also limited administration bias since respondents could choose a time and place to complete the survey.

Self-report surveys can inflate the magnitude of observed relationships limiting the dependent and independent scoring (Podsakoff et al., 2012; van de Vijyer, 2011). This can occur if respondents try to anticipate how they should rate each item based on how they feel it is present. Respondents were assured confidentiality in this study, thereby decreasing the likelihood that they would respond in a biased manner. To reduce the chance of common method bias, the measures used in this study underwent previous exploratory factor analysis (EFA) or confirmatory factor analsysis (CFA) and demonstrated validity and reliability, use of a variety of scale endpoints (e.g. 1 to 5, 1 to 7 used) and anchoring terms formats for the measures (strongly agree to strongly disagree, never to always) (Podsakoff et al., 2012; van de Vijyer, 2011).

There were some issues pertaining to instruments in this study. A CFA could not be completed for the conscientiousness scale from the BFI (John, Naumann, & Soto, 2008; John, Donahue & Kentle, 1991) to compare the instrument to previous studies since no other studies were found that used conscientiousness alone. An EFA conducted for this study suggested conscientiousness to be three factors, whereas the BFI presented conscientiousness as a one factor construct. Since no studies were found that used only the conscientiousness subscale, comparisons to previous reliability findings could not be assessed. These issues may have contributed to type 1 errors since results found no significant relationship to work engagement or IP role clarification.

A limitation existed regarding the SEM process whereby conscientiousness and general self-efficacy were observed variables and could therefore not be included as latent variables. This resulted in the decision to use factorial algorithm parcelling (Matsunaga, 2008). Some studies showed estimation bias of attenuated parameter estimate found in parcel-based models while others have reported the opposite with parcelled data (Matsunaga, 2008), therefore, these study results must be considered with caution. Scale dimensionality can also be a problem since parcelling will can change a unidimensional scale to multiple dimensions. Estimation bias has been reported with parcelling in SEM, thus, to ensure optimal psychometric and modeling benefits, Matsuna's (2008) recommendations, factorial algorithm (Rogers & Schmitt, 2004) was used since it equally allocated item-specific components of a concept into parcels.

The Reciprocity with Coworkers Scale (Gilliam & Rayburn, 2016) was also limiting. The original three item instrument offered nine response markers, but inadvertently, when the questionnaire was developed for this study, only five marker

points were included. The items loaded well onto the factor, but model was just-identified, therefore a CFA to inform model fit could not be undertaken on the instrument prior to adding it to the model as a moderator.

Finally, the IPRCS was designed to examine effective interprofessional role clarification. The sample size was a limitation since the sample could not be divided to use one portion of the sample to conduct the EFA, and a second portion to conduct the CFA. Thus, further studies are needed to test the validity and reliability of the IPRCS. Additionally, studies to revise the instrument might be also warranted, especially with regards to the Sharing Roles subscale given its regression results.

7.4 Implications of the Findings

The findings of this study will contribute to what is known about IPRC as both a process and an outcome. These contributions could inform efforts to facilitate development of IPRC as a key component in team building as well as a competency, that can be helpful for HCPs, healthcare organizations, post-secondary healthcare education and future research.

7.4.1 Healthcare Practitioners

Since IP team members have roles that can overlap across their professional boundaries, it is vital that HCPs work together to establish role parameters that contribute to shared team function required for IPC (Hardy & Conway, 1988; CIHC, 2010). Engagement in conversations with HCPs from other professions about one another's roles require a strong belief in one's self (Bandura, 2001) whereby IP team members must be willing to speak up to define their roles and ensure that care responsibilities are appropriately delegated (Suter et al., 2009).

7.4.2 Healthcare Organizations

Reforming healthcare delivery to include IPRC as a competency of IPC as a norm of healthcare practice has implications for professional autonomy and responsibility framed within IP relationships in healthcare practice. For healthcare organizations, this research could provide insight into professional training and skill development for IP team members to engage in IPRC, thereby building a supportive culture of certainty and well-being. In this study, general self-efficacy exerted influence on IPRC. Healthcare organizations should consider supportive interventions and processes that could help to build HCPs' capacity and opportunities to clarify their roles. Facilitating effective IPRC may help to support safe effective client-centred care as well as build a positive and collaborative working environment for HCPs.

7.4.3 Future Research

With a continual flux of roles based on clients' needs, a complement of communication and experience is key in the role clarification process (Brault et al., 2014; Hudson et al., 2017; Adams, Orchard, Houghton & Ogrin, 2014) with a degree of "trial and error" also contributing (Adams, et al., 2014). The IPRCS, developed for this study, extends the knowledge about IPRC, and could be a tool for HCPs to use as they individually reflect on their own practice. Future research should also examine the contribution of other theoretically-derived contributing variables associated with IP role clarification. The results of this study can be incorporated into the foundation of future research to examine the impact of activities and interventions that are reported to encourage effective IPRC in practice and in healthcare education. Implications discussed in the previous paragraphs could also be applicable to the nursing profession and nursing

education, however, further studies specific to nursing that build on the present study are required.

7.4.4 Post-Secondary and Continuing Education

Mentorship to assist novice HCPs or those new to a clinical setting could assist in building their confidence in clarifying their roles; becoming comfortable could reduce their turnover intent as was reported by Laschinger (2012). Role adjustments are often needed when new members join or as clients' healthcare needs change and proficiency in role clarification can be difficult to attain since role competencies are not always transferable (Hudson et al., 2017) emphasizing the need for organizations to provide ongoing role learning and engagement opportunities, such as team care planning (Sinclair et al., 2009), IP education and use of innovative shared tools and protocols (Körner et al., 2016). The findings of this study may be used by healthcare educators to ensure their students' curricula facilitate IPRC development of its processes and strategies as part of healthcare student education using IPC and IP education activities to encourage learning about IPRC. Pre-licensure health profession student must be encouraged to challenge and critically reflect about IP role contributions as a means to develop awareness of the need to clarify roles as they move through their professional education.

7.4.5 Nursing and Nursing Education

As nursing roles continue to evolve, and nurses are encouraged to work to their full scope of practice and take on additional responsibilities, it is conceivable that role issues can occur when the roles of the three classes of nurses overlap as they work together. In addition to contributing to the wider IP body of knowledge, this study may have application and contribute more specifically to the nursing process of role clarification. In

Ontario, nurses fall into three groups including general class registered practical nurses, general class registered nurses, and extended class nurse practitioners (CNO, 2019). The characteristics of various nursing practice roles may create barriers that can be structural (e.g. policies, human resources, training), or process-related (e.g. role activities, scope of practice) occurring at the individual, organizational or health systems level (CNA, 2014).

7.5 Conclusion

This study identified the attributes of IPRC by means of a concept analysis. It is the first known study to explore the effect of contributing factors on IPRC among licensed HCPs. The findings from this research indicated that general self-efficacy can lead to effective IPRC. Moreover, the study has provided preliminary evidence of the validity and reliability of a new instrument, the Interprofessional Role Clarification Scale. The study results have implications for healthcare practice, healthcare practice, post-secondary health care education, and potential future implications for nursing practice and education. As well, the findings have relevance to guide future research.

7.6 References

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