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Interprofessional Education and Collaborative Competency Development: A Realist Evaluation

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Abstract

Collaboration among healthcare professionals has been widely cited as critical in ensuring optimal and efficient client care. To foster the development of this interprofessional competency in healthcare graduates, the University of Toronto created an Interprofessional Education (IPE) curriculum. However, the means by which the IPE curriculum developed interprofessional collaborative competencies in occupational therapy (OT) graduates had not been explored. The study identified the mechanisms and outcomes of University of Toronto's IPE curriculum that contributed to OT graduates' collaborative competency development. This study also identified the contexts in which this development occurred, and why such patterns were observed. This study employed a mixed-methods realist evaluation, which is an approach underpinned by program theories hypothesizing that specific contexts and mechanisms result in distinct outcomes. Qualitative and quantitative data from 2018 and 2019 OT graduates' surveys, assessments, interviews, and reflection papers were utilized to test and refine initial program theories. Analysis revealed six outcomes that contributed to interprofessional collaboration: role clarification, team functioning, interprofessional communication, interprofessional conflict resolution, collaborative leadership, and advocacy. The analysis identified mechanisms that enabled and disabled the development of each outcome, and tested initial program theories, which aided refinement. The findings of this study can inform IPE curricula development, promote collaborative competency development in future OT graduates, and direct future IPE evaluation research.

Keywords

Interprofessional education, occupational therapy, interprofessional collaboration, realist evaluation

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Interprofessional Education and Collaborative Competency Development: A Realist Evaluation

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ABSTRACT

Collaboration among healthcare professionals has been widely cited as critical in ensuring optimal and efficient client care. To foster the development of this interprofessional competency in healthcare graduates, the University of Toronto created an Interprofessional Education (IPE) curriculum. However, the means by which the IPE curriculum developed interprofessional collaborative competencies in occupational therapy (OT) graduates had not been explored. The study identified the mechanisms and outcomes of University of Toronto's IPE curriculum that contributed to OT graduates' collaborative competency development. This study also identified the contexts in which this development occurred, and why such patterns were observed. This study employed a mixed-methods realist evaluation, which is an approach underpinned by program theories hypothesizing that specific contexts and mechanisms result in distinct outcomes. Qualitative and quantitative data from 2018 and 2019 OT graduates' surveys, assessments, interviews, and reflection papers were utilized to test and refine initial program theories. Analysis revealed six outcomes that contributed to interprofessional collaboration: role clarification, team functioning, interprofessional communication, interprofessional conflict resolution, collaborative leadership, and advocacy. The analysis identified mechanisms that enabled and disabled the development of each outcome, and tested initial program theories, which aided refinement. The findings of this study can inform IPE curricula development, promote collaborative competency development in future OT graduates, and direct future IPE evaluation research.

Introduction

Collaboration among healthcare professionals has been widely cited as critical in ensuring optimal and efficient client care (Abu-Rish et al., 2012; McNair, 2005). Respect and understanding among health professionals are foundational to the development of collaboration (World Health Organization [WHO], 1998). There is evidence to support the claim that interprofessional collaboration is effective in enhancing client outcomes and satisfaction, reducing healthcare costs, and enhancing professional identity (Paul & Peterson, 2002). However, research has shown that many new healthcare professionals enter practice without adequate knowledge and training in interprofessional collaboration (Abu-Rish et al., 2012), which can negatively impact the quality of client care, client safety and service delivery (Kvarnström, 2008).

Interprofessional education (IPE) is provided to learners around the globe by educational institutions as part of their healthcare curriculum to bring different healthcare professionals together to learn about, from and with each other with the goal of becoming collaborative-practice ready providers (WHO, 2010). IPE typically involves learners and educators from a variety of health professions, often including small group discussions and problem-based learning activities (Abu-Rish et al., 2012). It aims to create a collaborative learning environment to develop knowledge, attitudes, and skills optimal for team behaviors and foster respect, trust and a deeper understanding of all professions (Lidskog et al., 2007). Such collaborative development is essential across IPE curricula, as it translates to enhanced team functioning and allows providers to address potential barriers to optimal teamwork (Buring et al., 2009). Studies evaluating IPE curricula have found the approach to be effective in eliminating negative stereotypes across professions (Reeves et al., 2002), explaining the importance of team-based care and building communication skills (Dreier-Wolfgramm et al., 2016). However, a literature review examining such IPE research found that contexts (e.g., learning environments), populations (e.g., learners) and outcomes (e.g., student satisfaction and skill development) of IPE curricula were not adequately described, and thus studies on the topic were not often replicable (Abu-Rish et al., 2012). Further, an exploratory review by Thistlethwaite et al. (2015) found the existing literature on IPE to be too outcome-focused, as it only examined student satisfaction and learning. While such outcomes are important to consider, Thistlethwaite et al. (2015) concluded that future research on IPE should undertake realist evaluation to explore the mechanisms (e.g., teaching models) required for change, and the contexts (e.g., learning environments) in which this complex curriculum exists (Wong et al., 2011).

The University of Toronto (UofT) has integrated an IPE curriculum designed to foster interprofessional skills among learners of 11 healthcare professions, including occupational therapy (OT). The Collaborator is one of the six core competencies that OTs must demonstrate in practice, as outlined in the Profile of OT Practice in Canada (Canadian Association of Occupational Therapists [CAOT], 2012). The Collaborator competency is enacted when “occupational therapists work effectively with key stakeholders to enable participation in occupations by using and promoting shared decision-making approaches” (CAOT, 2012, p. 3). The American Occupational Therapy Association (AOTA, 2015) similarly asserts and reflects that an important standard of

competence for occupational therapists is having interpersonal abilities. Although the CAOT (2012) and AOTA (2015) assert that occupational therapists practice in this manner, the extent to which and how UofT's IPE curriculum develops collaboration competencies in OT graduates are not yet known. Thus, utilizing the realist perspective, as recommended by Thistlethwaite et al. (2015), this study aimed to identify the context, mechanisms and outcomes of UofT's IPE curriculum that contributed to OT graduates' collaborative competency development. In addition, this research will act as a pilot study, as its findings will inform ongoing evaluation of other health profession programs and permit comparison of mechanisms among learners of different health profession programs.

University of Toronto IPE Curriculum

UofT's IPE curriculum includes learners from 11 different healthcare programs (Centre for Interprofessional Education UofT, 2016). In addition to OT, these professions include: dentistry, Master of professional kinesiology, medical radiation sciences, medicine, nursing, pharmacy, physical therapy, physician assistant, social work and speech-language pathology. Through the IPE curriculum, all health professional learners have the opportunity to develop collaborative competencies in both classroom and practice settings. Over the course of UofT's IPE curriculum, learners engage in up to nine core mandatory learning activities: *Teamwork: Your Future in Healthcare*, *Roles of Health Professions and Team Dynamics*, *Faculty-Led Learning Activity*, *Understanding Client Partnerships in a Team Context*, *Collaborating for Quality*, *Conflict in Interprofessional Life*, *Case-Based Learning Activity: Pain Curriculum*, *Case-Based Learning Activity: Palliative Care*, and *IPE Component in a Practice Setting* (Centre for Interprofessional Education UofT, 2016). Additionally, learners complete a minimum number of approved elective learning activities according to their program requirements. For example, OT learners complete a minimum of three elective learning activities. Electives, facilitated by university and clinical faculty, include interactive sessions, simulations, client/family stories, clinical team-led cases and discussion, student team-based activities, community clinic engagement, as well as facilitated blended learning activities (Centre for Interprofessional Education UofT, 2016).

Methodology

This study employed realist evaluation, a theory-based methodology that is suited for evaluating complex programs (Pawson & Tilly, 1997). Realist evaluation offers a framework to understand how, why, and where the intervention works or not, through the generation of an explanatory program theory. In evaluation, program theory refers to the rationale that explains how the program yielded the obtained outcomes. Realist evaluation is underpinned by the context (C) + mechanism (M) = outcome (O; CMO) heuristic. A CMO configuration is a hypothesis that the program works (O) because of the action of some underlying mechanism (M), which only comes into operation in a specific context (C). In creating such a hypothesis, the realist evaluation methodology enables researchers to adjust and refine the program theories on which the intervention was based and provides transferable insights into how to develop and improve interventions (Pawson & Tilley, 2004). Through utilizing the realist evaluation

methodology, this study aimed to “open the black box” of how UofT’s IPE curriculum impacted OT graduate’s development of interprofessional collaborative competencies. Pawson and Tilley (1997, 2004) suggested four stages to guide realist evaluation, as summarized below. Each stage of realist evaluation informed the research design of this study, as will be demonstrated in the following sections.

Stage 1: Program Theory

A program theory facilitates the process of thinking through how a program works (Pawson & Tilley, 2004). Specifically, a program theory outlines how the program mechanisms may generate the desired outcomes in particular contexts within which the intervention operates. Three initial program theories were identified for this study following multiple consultations with stakeholders (university and clinical faculty, program/faculty, executives/administrators, students, and patient partners) and in-depth literature reviews on IPE theory and implementation. In addition, the three program theories were reviewed and approved by the IPE Evaluation Advisory Committee at UofT prior to engaging in the research.

1. UofT OT graduates from the 2018 and 2019 cohorts (context) who participated in longitudinal groups, engaged with patient partners, and participated in case-based discussions (mechanisms) developed collaborative competencies (outcome).
2. UofT graduates from 2018-2019 cohorts (context) who completed a structured IPE placement with support from preceptors (i.e., structured IPE placement; mechanism) developed collaborative competencies (outcome).
3. UofT OT graduates from the 2018 and 2019 cohorts (context) who went above IPE requirements (e.g., participated in more than three IPE elective activities) and engaged in leadership opportunities (e.g., participated in the Interprofessional Health Students Association, student facilitator workshops and/or curriculum development/delivery; mechanisms), developed greater collaborative leadership competencies (outcome) in comparison to graduates who just met IPE requirements.

Stage 2: Data Collection to Test the Program Theory

Realist evaluation is methodologically flexible; any method of data collection can be utilized to test and refine program theories. Thus, qualitative and quantitative data from 2018 and 2019 OT graduate cohort surveys, reflection papers, and interviews were collected to establish a comprehensive understanding of OT graduate perspectives with regards to the IPE curriculum offered at UofT.

Data Collection, Recruitment and Data Preparation

The data collection tools, their descriptions, as well as the recruitment means/data preparation methods that were utilized in this study are outlined in Table 1.

Table 1*Data Collection Sources, Recruitment and Data Preparation*

Data Sources	Data Source Descriptions	Recruitment and Data Preparation
IPE Learning Activity Evaluations (n=942)	The IPE Learning Activity Evaluation was distributed to learners after they completed the core and elective learning activities. The sample size used for this data source (n=942) included the total number of surveys completed by OT graduates following participation in the selected seven core and ten elective IPE activities. The evaluation included a 5-point Likert scale of 14 questions addressing objectives, learning activity format, and facilitator/presenter. In addition, this survey also included a series of open-ended questions.	Graduate IPE Learning Activity Evaluations from the 2018 and 2019 cohorts were obtained for seven core and ten elective IPE activities. Seven core IPE activities included: <i>Teamwork: Your Future in Healthcare</i> , <i>Roles of Health Professions and Team Dynamics</i> , <i>Understanding Client Partnerships in a Team Context</i> , <i>Collaborating for Quality</i> , <i>Conflict in Interprofessional Life</i> , <i>Case-Based Learning Activity: Pain Curriculum</i> and <i>Case-Based Learning Activity: Palliative Care</i> . The ten elective IPE activities were chosen out of a total of 155 electives offered between the years 2016 and 2019 (the time that took learners to complete the program). As IPE electives are optional, the ten elective activities chosen for this study were chosen by author SL based on the largest percentage of OT graduate attendance rate. The core and elective IPE Learning Activity Evaluations were filtered, de-identified and sorted on an Excel spreadsheet by the Centre for Interprofessional Education.

<p>Interprofessional Health Students Association (IPHSA) Surveys (n=115)</p>	<p>The IPHSA Survey, developed by a student body interested in promoting interprofessional engagement, was distributed to learners at the end of academic years to explore their perspectives regarding the interprofessional activities offered across the year. The survey included both open- and close-ended questions.</p>	<p>The results of the IPHSA Surveys were de-identified, filtered, and sorted by the IPHSA and shared on an Excel spreadsheet to faculty representatives.</p>
<p>The Interprofessional Competence Assessment (IPCA; n=155)</p>	<p>The IPCA is a 360-degree, 19-item assessment providing feedback to senior health profession learners. While on placement, learners ask two or three clinicians from other healthcare professions to provide feedback regarding their collaborative competence. Learners were graded either a 1 (Needs Improvement), 2 (Meets Expectations), or 3 (Area of Strength).</p>	<p>IPCA Fieldwork 3 and Fieldwork 4 entries from 2018 OT graduates were obtained from the UofT OT Department, and de-identified and sorted on an Excel spreadsheet by author SL. IPCAs that belonged to 2019 OT graduates were not obtained, as they had not been entered by the UofT OT department at the time of data collection.</p>
<p>Reflection Papers (n=40)</p>	<p>Reflection papers (1-2 pages) were course assignments in "Building Practice through Mentorship" course. In this study, recent OT graduates' Interprofessional Collaboration and Interprofessional Communication reflection papers completed during their final year of study were analyzed.</p> <ul style="list-style-type: none"> ● The Interprofessional Collaboration reflection paper prompted learners to reflect on (a) instances where interprofessional collaboration did or did not go well, (b) factors that facilitated or inhibited collaboration, (c) how group conflict was managed, and 	<p>Interprofessional Collaboration and Interprofessional Communication reflection papers written by the 2019 OT graduate cohort were obtained from the UofT OT Department by author SL. Reflection papers from the 2018 OT graduate cohort were not obtained, as they were not stored on Departmental servers at the time of data collection. Reflection papers were sorted into two key informant groups: (1) "Met Requirements" Group: UofT OT graduates who just met the IPE requirements (attended the</p>

	<p>(d) how learnings would be applied into future practice.</p> <ul style="list-style-type: none"> • The Interprofessional Communication paper prompted learners to reflect on (a) experiences highlighting communication in interprofessional learning groups, (b) factors that may have facilitated or inhibited communication, (c) how to express OT views within a group, and (d) how learnings would be applied into future practice. 	<p>core and mandatory three IPE elective activities), or (2) “Above Requirements” Group: UofT OT graduates who went above IPE requirements (attended five or more IPE elective activities or had participated in collaborative leadership opportunities). Once sorted, a total of 40 reflection papers (20 communication and 20 collaboration) were randomly selected, obtained, sorted and de-identified by author SL. Ten Interprofessional Collaboration and 10 Interprofessional Communication reflection papers were obtained for each of the “Above Requirements” Group and the “Met Requirements” Group.</p>
<p>Semi-structured Interviews (n=10)</p>	<p>Semi-structured interviews were conducted with key informants (OT graduates from the 2018 and 2019 cohorts) to obtain qualitative data on how the IPE curriculum and its components were perceived to develop collaborative competencies.</p>	<p>Interview participants were contacted by author SL if they were (1) from the graduating UofT OT class of 2018 or 2019, (2) in the UofT OT Department’s contact database, and (3) belonged to either the “Met Requirements” or “Above Requirements” key informant groups. Participants who met the inclusion criteria, were recruited by the research supervisor through email. Seven participants across the two cohorts who went beyond the IPE requirements, and three who met the minimum IPE requirements were recruited to participate in semi-structured individual</p>

		<p>person-to-person interviews with a research assistant (RA). The RA recorded, transcribed, and de-identified the interviews. De-identified transcripts were sorted to the “Met Requirements” or “Above Requirements” Groups.</p>
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Ethics

UofT’s Office of Research Ethics granted Research Ethics Board approval for this study (Protocol #: 16440) and approved all recruitment and data collection methods utilized.

Stage 3: Analysis of Data into CMO Configurations

Following the realist evaluation CMO configurations (Pawson, 2006), analyses were performed to identify sets of contexts, mechanisms and outcomes within each dataset.

Qualitative Data Analysis

All qualitative data was coded in NVivo. Phrases were coded as a mechanism if they related to the components of the IPE curriculum and as an outcome if related to the impact of the IPE curriculum in developing collaboration competencies (Pawson, 2006). As the context was salient throughout, phrases pertaining to it were not coded. Recurring codes within qualitative data sets were amalgamated into mechanism and outcome themes.

Reflection Papers and Semi-Structured Interviews. Reflection papers and written transcriptions of semi-structured interviews were analyzed using content analysis and informed by the CMO configurations. Organization and coding of data occurred in NVivo. Content analysis was performed by authors RR and SF in conjunction with SL. After RR and SF individually identified codes prevalent in five reflection papers each, they cross-checked them together to ensure consistency in coding. Subsequently, codes were reviewed by SL. A running list of codes was created based on this initial process. The remaining reflection papers were then coded and analyzed using this list of codes.

IPE Learning Activity Evaluations and IPHSA Surveys. Open-ended questions were analyzed using content analysis and informed by the CMO configuration. Organization and coding of data occurred in NVivo.

Quantitative Data Analysis

IPE Learning Activity Evaluations and IPHSA Surveys. Likert scale results were analyzed using descriptive statistics. Responses were averaged to determine the overall OT learner perspective. Averages across questions were compared to determine if responses varied. Quantitative results were extracted and combined with the qualitative data results.

Integration of Qualitative and Quantitative Datasets

The mechanism and outcome themes for all datasets were later amalgamated manually to create a holistic image of the impact of IPE curricula mechanisms on outcomes. The amalgamation of recurring codes from all datasets revealed six main outcomes. Moreover, it revealed several enabling mechanisms, which facilitated the development of outcomes in the CMO configuration, and disabling mechanisms, which inhibited the development of outcomes. The outcomes and mechanisms found were then used to test and refine initial program theories and thereby provide an evaluation of the ability of UofT's IPE curriculum to develop collaboration competencies in OT graduates.

Results

In keeping with the realist evaluation methodology, results are outlined in reference to the outcome, mechanism, and context themes. The three refined program theories that emerged through analysis and testing, are also outlined in this section.

Outcomes

This study found the following six constructs as outcomes of the UofT IPE Curriculum for OT learners: (1) Role clarification; (2) Team functioning; (3) Interprofessional communication; (4) Interprofessional conflict resolution; (5) Collaborative leadership; and (6) Advocacy. Outcomes 1 through 5 are consistent with the competencies outlined within the National Interprofessional Competency Framework (CIHC, 2010), as domains of interprofessional collaboration. In addition to these competencies, this study found the development of advocacy skills in OT graduates to be a significant outcome of the curriculum. The following sections describe the six outcomes found by this study, in addition to the mechanisms that enabled and disabled their development.

Outcome 1: Role Clarification

Role clarification is the ability of healthcare professionals to “clearly articulate and communicate their roles, knowledge and skills, and recognize and respect the diversity of other healthcare professionals' roles, responsibilities and competencies” (CIHC, 2010).

Quantitative and qualitative data analyses found that specific mechanisms enabled and disabled the development of this collaborative competency. Quantitative analyses of core and elective Learning Activity Evaluations revealed that 90% of graduates found that small group discussions contributed to role clarification. Table 2 illustrates the mechanisms found to enable and disable the attainment of role clarification.

Table 2*Mechanisms Enabling and Disabling Role Clarification*

Type of Mechanism	Mechanism Descriptions
Enabling Mechanisms	<ul style="list-style-type: none"> ● Working with written case studies during learning activities ● Participating in roleplay with learning groups, through reading curated scripts about interprofessional team and client interactions ● Participating in small and large group discussions during learning activities ● Creating a care plan for a mock client with learning groups ● Participating in learning activities (i.e., creating care plans, case studies) that are longer in duration (3+ hours) ● Working within learning groups with a diverse makeup of healthcare professional learners ● Participating in flexible IPE* activities during fieldwork ● Having preceptors that encouraged shadowing and observation of other healthcare professionals to learn about their roles and scopes of practice, during fieldwork
Disabling Mechanisms	<ul style="list-style-type: none"> ● Participating in learning activities held within large classroom sizes

*Flexible IPE activities completed by health profession learners while on fieldwork provided them the opportunity to reflect on their experiences shadowing and/or interviewing team members, analyzing interpersonal interactions of team members, and collaborating with team members. Through reflection, learners gained an understanding about the roles of other healthcare professionals, analyzed the nature of interprofessional interactions as well as its impact on clients, and identified factors that enabled or hindered interprofessional collaboration. Flexible IPE activities were graded by fieldwork preceptors.

Outcome 2: Team Functioning

Optimal team functioning is achieved when healthcare professionals respect the opinions of all team members and effectively facilitate team discussions in a respectful and ethical manner (CIHC, 2010). Quantitative and qualitative data analyses found that specific mechanisms enabled and disabled the development of this collaborative competency. Quantitative analyses revealed that 66.5% of graduates perceived that establishing group norms contributed to team functioning, while 84% perceived case studies to be beneficial. Table 3 illustrates the mechanisms that were found to enable and disable the attainment of team functioning.

Table 3*Mechanisms Enabling and Disabling Team Functioning*

Type of Mechanism	Mechanism Descriptions
Enabling Mechanisms	<ul style="list-style-type: none"> ● Establishing group norms during learning activities ● Working with written case studies during learning activities ● Learning about the essential care elements in healthcare ● Watching videos depicting team and client interactions ● Having learners be within the same year of study in their respected programs ● Having a facilitator (faculty or practicing health professional) lead discussions within learning groups ● Being within learning groups where learners have prior IPE experience ● Participating in flexible IPE during fieldwork
Disabling Mechanisms	<ul style="list-style-type: none"> ● Inclusion of Assessment of Interprofessional Team Collaboration Survey (AITCS) in the three-day core learning activity, “Interprofessional Pain Curriculum”

Outcome 3: Interprofessional Communication

Interprofessional communication is defined as the ability to communicate with other healthcare professionals, clients and families in a collaborative, responsive and responsible manner (CIHC, 2010). Quantitative and qualitative data analyses found that specific mechanisms enabled and disabled the development of this collaborative competency. Quantitative analyses revealed that 63% of OT graduates perceived large classrooms as not supportive of learning activities. Moreover, 88% of OT graduates perceived facilitators to be effective in supporting discussion, while 88.5% perceived student-leads to be effective in doing so. Table 4 illustrates the mechanisms that were found to enable and disable the attainment of interprofessional communication.

Table 4*Mechanisms Enabling and Disabling Interprofessional Communication*

Type of Mechanism	Mechanism Descriptions
Enabling Mechanisms	<ul style="list-style-type: none"> ● Establishing group norms during learning activities ● Working with written case studies during learning activities ● Observing a skit demonstrating interprofessional team and client interactions ● Participating in a learning activity with a patient partner, who shared their lived experiences interacting with healthcare teams and systems ● Watching videos depicting team and client interactions ● Participating in more than one learning activity with the same learning group ● Participating in learning activities with small learning group sizes (<9 learners) ● Participating in small group discussions during learning activities ● Being within learning groups where learners have prior IPE experience ● Being within learning groups where there were overlaps in the roles and scopes of practice between two or more learners, each representing different health professions ● Discussions between healthcare learners from the same profession within larger interprofessional groups ● Having learning group members who were aware of the roles and scopes of practices of different healthcare professionals ● Having a facilitator (faculty or practicing health professional) lead discussions within learning groups ● Having a student enrolled in one of the health profession program lead discussions within learning groups ● Preceptors that encouraged learners to speak during interprofessional team discussions (e.g., team rounds) during fieldwork
Disabling Mechanisms	<ul style="list-style-type: none"> ● Participating in learning activities that were short in duration (<3 hours) ● Participating in learning activities held within large classrooms

Outcome 4: Interprofessional Conflict Resolution

To resolve conflicts in a constructive manner, healthcare professionals must understand how to deal with conflict, work actively to resolve disagreements and establish a safe environment in which everyone can express their diverse opinions (CIHC, 2010). Quantitative and qualitative data analyses found that specific mechanisms enabled and disabled the development of this collaborative competency. Quantitative analyses revealed 60.5% of graduates perceived the Scope of Practice video to be an effective way of teaching conflict resolution. Table 5 illustrates the mechanisms that were found to enable and disable the attainment of interprofessional conflict resolution.

Table 5

Mechanisms Enabling and Disabling Interprofessional Conflict Resolution

Type of Mechanism	Mechanism Descriptions
Enabling Mechanisms	<ul style="list-style-type: none"> ● Being a part of a learning group, where leadership roles have not been assumed or exercised
Disabling Mechanisms	<ul style="list-style-type: none"> ● Having a facilitator (faculty or practicing health professional) lead discussions within learning groups ● Witnessing and experiencing the effects of hierarchical interactions between learners belonging to different healthcare disciplines during learning activities

Outcome 5: Collaborative Leadership

Collaborative leadership occurs when healthcare professionals use leadership principles to practice collaboratively (CIHC, 2010). Although quantitative data analyses were performed, they yielded no specific mechanisms that reflected this collaborative competency. Table 6 illustrates the mechanisms that were found to enable and disable the attainment of collaborative leadership.

Table 6*Mechanisms Enabling and Disabling Collaborative Leadership*

Type of Mechanism	Mechanism Descriptions
Enabling Mechanisms	<ul style="list-style-type: none"> ● Being a part of a learning group, where leadership roles have not been assumed or exercised
Disabling Mechanisms	<ul style="list-style-type: none"> ● Having a facilitator (faculty or practicing health professional) lead discussions within learning groups ● Witnessing and experiencing the effects of hierarchical interactions between learners belonging to different healthcare disciplines during learning activities

Outcome 6: Advocacy

Advocacy is enacted when healthcare professionals communicate their role to clients and team members, champion the need for their involvement at both an individual (e.g., client) and systems level (e.g., communities; Lohman, 2002), and integrate their professional values (i.e., client-centeredness and holistic practice) into interprofessional team practice (Law et al., 1997). Advocacy is especially essential for OT graduates to practice, as there is a lack of awareness of the profession's roles and responsibilities within healthcare teams and amongst service recipients (McAvoy, 1992). Table 7 illustrates the mechanisms found through qualitative data analyses that enabled and disabled the attainment of advocacy competencies in the sample OT graduates.

Table 7*Mechanisms Enabling and Disabling Advocacy*

Type of Mechanism	Mechanism Descriptions
Enabling Mechanisms	<ul style="list-style-type: none"> ● Working with written case studies during learning activities ● Having learning group members who were aware of the roles and scopes of practices of different healthcare professionals ● Being within learning groups where learners have prior IPE experience ● Low degree of client-centredness within some learners of the learning group ● Working within learning groups with a diverse makeup of healthcare professional learners ● Witnessing and experiencing the effects of hierarchical interactions between various healthcare disciplines during fieldwork
Disabling Mechanisms	N/A

Context

The outcomes and mechanisms found within this study reflected the experiences of UofT OT graduates from the 2018 and 2019 cohorts who participated in UofT's IPE program between the years of 2016 and 2019. Thus, it can be conceptualized that the mechanisms and outcomes found within this study existed within the unique socio-economic, political and cultural conditions of Toronto, Ontario between those years.

Stage 4: Refining the Program Theory

The refined program theories are described below:

1. OT graduates from the 2018 and 2019 cohorts who participated in UofT's IPE curriculum (context) expressed that having groups with diverse healthcare professional backgrounds (mechanism), best enabled them to learn how to collaborate with other healthcare disciplines (outcome). OT graduates articulated that working in groups with such a diverse makeup, enabled them to best advocate for, and educate others on the OT profession (outcome).
2. OT graduates from the 2018 and 2019 cohorts who participated in UofT's IPE curriculum (context) articulated that the creation of a psychologically safe environment through establishing group norms (mechanism) during the beginning of IPE activities helped to foster positive team dynamics (outcome).

Graduates articulated that this promoted confidence within interprofessional interactions when communicating and prepared them to mitigate potential conflicts (outcome).

3. OT graduates from the 2018 and 2019 cohorts who participated in UofT's IPE curriculum (context) whether they met IPE requirements, or went above IPE requirements and participated in additional elective learning activities and/or leadership opportunities (mechanism), did not show any differences in their degree of collaborative leadership and communication competency development (outcome).

Discussion

Through employing the realist evaluation methodology, this study evaluated the impact of an IPE curriculum on interprofessional collaborative competency development in OT graduates. The specific objectives of this study were to identify the contexts, mechanisms and outcomes of UofT's IPE curriculum that contributed to OT graduates' collaborative competency development.

This study found the following six outcomes as contributing to OT graduates' development of interprofessional collaboration: (1) Role clarification; (2) Team functioning; (3) Interprofessional communication; (4) Interprofessional conflict resolution; (5) Collaborative leadership; and (6) Advocacy. The following is a discussion of each outcome, and the program mechanisms found to enable or disable their development.

Outcome 1: Role Clarification

To collaborate within interprofessional teams, the specific roles and scopes of practices of each team member must be clearly delineated (Pellatt, 2005; Suter et al., 2009). As some authors argue (Henneman et al., 1995; Orchard et al., 2005) recognition of the knowledge of roles and contributions of other professionals in client care is an important prerequisite for collaboration to occur. The National Interprofessional Competency Framework (CIHC, 2010) states that healthcare professionals must accept the responsibility to act within the role obligations defined by their professional scope of practice, and communicate this scope of practice to others, as well as understand the roles and responsibilities of their interprofessional team members (CIHC, 2010), in order to function collaboratively within teams. However, as Pellatt (2005) stated, healthcare professionals are sometimes unclear about not only the roles and functions of other professionals, but also their own.

This study found that UofT's IPE program had enabling and disabling mechanisms (refer to Table 2) that affected OT graduates' ability to gain insight into the roles, professional cultures and practices of collaborating team members, as well as their own. This outcome is in agreement with evaluations performed on other IPE curricula, which concluded that IPE aids learners from various healthcare profession programs to clarify the values, and roles of other healthcare professionals, as well as any related stereotypes or misconceptions that may surround them (MacDonald et al., 2010; Earland et al., 2011). Like Hudson et al. (2017), who found that IPE learning activities

fostered role clarification particularly when they occurred over long durations of time (e.g., 5+ hours), this study revealed that learning activities that were three hours or longer provided graduates with sufficient time to learn about the roles of other healthcare professions and fostered greater trust in their own expertise. Similarly, Solomon and Salfi (2011) found that healthcare learners who worked through a case study with members of an interprofessional team, learned more about the roles of others. However, while these authors found that stereotypes and misconceptions about a profession's responsibilities were eliminated through the introduction of case studies (Solomon & Salfi, 2011), OT graduates sampled for this study did not report a similar result. These findings warrant further exploration of the potential role of case studies in dispelling misconceptions about a profession's responsibilities and roles among OT graduates.

Outcome 2: Team Functioning

Interprofessional team members within healthcare must understand teamwork dynamics and processes, facilitate team discussions, and maintain working relationships with their interprofessional peers to enhance interprofessional collaboration (CIHC, 2010). In this study establishing group norms during the onset of learning activities was found to enhance perceptions of team functioning and group dynamics. Kane (1975) found that while some group norms were beneficial, others were not conducive to positive interprofessional team functioning. For example, she stated that norms against conflict are harmful. Although data analysis was unable to uncover the content of group norms created by learning groups, future research that does so may be beneficial to help explain findings. Similar to OT graduates in this study, Guest et al. (2002), found that medical learners involved in interprofessional case discussions perceived their learning groups to have better team functioning than groups not guided by case studies. Thus, it may be beneficial for IPE curricula developers to incorporate case studies into all learning activities. Hudson et al. (2017) found longer IPE activities enabled the development of stronger interprofessional relationships. Although this mechanism was not found to be a significant enabler or disabler of team functioning in this study, a larger sample of data may yield more insight.

Outcome 3: Interprofessional Communication

Interprofessional communication behaviors such as negotiating, consulting and discussing, as well as communicating to (a) ensure common understanding of care decisions, (b) set shared goals, and (c) share responsibilities for care among others, supports interprofessional collaborative practice (CIHC, 2010). This study found that UofT's program, and specific program mechanisms inherent within it (refer to Table 4), enabled or disabled OT graduates to develop interprofessional communication skills. Keller et al. (2013) found that interprofessional communication competencies in their sample of medical and nursing students was related to their experience interacting with other professions. In concordance with these findings, this study found that prior experience interacting with other healthcare professions in IPE activities enhanced OT graduates' interprofessional communication. Moreover, like Keller et al. (2013), this

study revealed that a lack of understanding of other professions and their roles and scopes impeded communication among professions. Thus, it may be beneficial for IPE curriculum developers to dedicate time to outline the roles, values, and perspectives of each healthcare discipline.

In this study, faculty members and practicing clinicians were found to be essential in facilitating discussions and interprofessional communication within learning groups. Specifically, when team discussions started to lull, facilitators asked prompting questions or provided appropriate feedback, which enhanced interprofessional communication. Similarly, Solomon and Salfi (2011) found facilitators who were licensed and practicing social workers, with expertise and skills in communication and group processes, provided interprofessional learning groups with appropriate suggestions regarding perceived communication issues. In addition, UofT's IPE program utilizes trained student leads enrolled in the final year of their healthcare programs to facilitate interprofessional learning group discussions. This study found that these student leads were also effective in enhancing interprofessional communication. Thus, it may be beneficial for future researchers to further evaluate the effectiveness of designating student leads, trained in facilitation, communication and group processes, to guide and facilitate discussions within learning groups, as this may prove to be more cost- and time-effective than employing faculty or practicing healthcare professional facilitators.

Suter et al. (2009) found that team rounds fostered interprofessional communication amongst practicing healthcare professionals, as it enabled them to coordinate care and share patient stories, issues and concerns. The results of our study found that such small-scale discussions within interprofessional learning groups optimally enabled OT graduates to practice various communication strategies and develop interprofessional communication competencies. Therefore, simulating such real-life interprofessional discussions within IPE curricula may equip OT graduates with the communication competencies necessary to collaborate with healthcare teams in practice.

Outcome 4: Interprofessional Conflict Resolution

Interpersonal conflict or disagreements between two or more parties who perceive a threat to their needs, interests, or concerns (Mayer, 1990), is common within interprofessional healthcare teams (Brown et al., 2011; Kaufman, 2011; Lee et al., 2008). Conflict within healthcare teams can have negative consequences, such as higher staff turnover, absenteeism, job dissatisfaction, higher reactivity to job stressors, lower productivity, increased length of hospital stays and increased client morbidity and mortality (Gilin Oore et al., 2015; Lee et al., 2008). Interprofessional conflict resolution occurs when individuals actively engage themselves and other team members in positively and constructively addressing disagreements as they arise (CIHC, 2010). Interprofessional healthcare teams that are able to resolve conflict in such a manner, are better equipped to collaborate, while those who are unable to resolve conflict, exhibit poor collaborative attitudes (Aberese-Ako et al., 2015).

This study found that UofT's program enabled OT graduates to develop interprofessional conflict resolution competencies. Group norms that promote openness to discussions involving conflict, and an openness to confrontation, actively encourage individuals to express their doubts, opinions, and uncertainties (Jehn, 1995). Groups that establish conflict norms encourage tolerance of differing views and promote an openness and acceptance of disagreement which can augment the positive effects of conflict and decrease its negative effects (Brett, 1991). Our study found that group norms enabled OT graduates' interprofessional conflict resolution competencies. However, due to limitations imposed by our data collection methods, we were unable to identify whether conflict norms were established within OT graduates' learning groups. Further research could determine the content and impact of groups on conflict resolution competency in learning activities. Our study also found longer IPE activities as a disabling factor in the development of conflict resolution competencies, although this may reflect the type of activities included.

Outcome 5: Collaborative Leadership

Collaborative leadership encourages healthcare practitioners to work as a team to enable effective team processes, decision making, and establish collaborative environments (CIHC, 2012). Collaborative leadership supports a shared leadership model or collaborative choice regarding a leader who is best suited to meet the group's needs at any given point. This form of leadership has two components: task-orientation and relationship-orientation. In task-orientation, the leader ensures that the team works towards a consistent goal through staying on task. In relationship-orientation, the leader assists through facilitating positive working relationships and aiding individuals to work effectively together (CIHC, 2012).

Student-driven interactions within IPE activities is an important part of fostering collaborative leadership. Consistent with the literature (Greenlee & Karanxha, 2010), our study found that mechanisms relating to psychological safety and the presence of a facilitator either contributed or hindered development of collaborative leadership skills. Fundamental characteristics of an effective group include a clear purpose, shared leadership, open communication, and a safe environment. Groups that are inclusive and allow the participation of all group members creates effective group performance and meeting of team goals (Greenlee & Karanxha, 2010), and as demonstrated in our study, this impacted the degree of leadership practiced within the team setting. Moreover, safe environments in which all members felt comfortable participating, encouraged graduates to take initiative in more leadership roles. Our study indicated that groups in which a perceived hierarchy existed between graduates, were seen as contributing to a psychologically unsafe environment, thereby hindering group participation and development of leadership competencies. Student-led interactions play an important role in interprofessional learning, through allowing learners the opportunity to engage, develop their critical skills, and take initiative to lead the group to meet team goals (Ruiz et al., 2013). Our study demonstrated that in groups led by faculty facilitators, students had less of an opportunity to develop collaborative leadership skills and that having student facilitators enabled them to take a greater leadership role in supporting their interprofessional team.

Outcome 6: Advocacy

Advocacy entails the initiative taken by learners or graduates to articulate their professional roles and responsibilities with the intention of helping other individuals learn and appreciate their own scope of practice (Solomon, 2011). Advocacy is especially important when others have a limited understanding of a professional role and it can allow other providers to understand how a profession can contribute to optimal client care (Dunleavy et al., 2017). Practicing this competency enables greater interprofessional collaboration, through creating mutual understanding, respect, and appreciation of roles amongst team members.

Learning activities, such as case studies, where learners worked together to identify how different professions could contribute to client care, allowed graduates to develop advocacy skills. These activities provided the opportunity to explain their professional role and contribution to client care. Our study also found that the degree of group member awareness of different healthcare professionals impacted the perceived need for advocacy to explain profession roles. Existing literature does not speak to the effectiveness of such mechanisms or their contribution to advocacy development. Thus, more research on the topic is needed to more comprehensively understand their importance.

Program Theories

Three refined program theories were uncovered as a result of analysis and testing. The literature supports the first theory, as it indicates that participating in diverse learning groups provides learners with opportunities to learn about what is important to different healthcare learners, and their professional priorities (Forte & Fowler, 2009). Through interprofessional interactions, learners are better able to notice differences in thinking amongst healthcare colleagues, thereby giving clarity to their own professional boundaries. Working with a diverse group allows learners to recognize the importance of each other's roles in responding effectively to client needs (O'Neill, & Wyness, 2005). Diversity is especially important in IPE as a lack of it can lead to condescension, defensiveness, and inhibiting connection (Watkins, 2016). UofT OT graduates similarly articulated that working with a diverse range of healthcare learners, created opportunities to advocate for and explain the roles and responsibilities of their profession to other learners. Such interactions contribute to the development of interprofessional collaboration and enable OT graduates to develop stronger healthcare teams.

The second program theory is supported by the literature, as it indicates that creating a psychologically safe environment within a group setting is an important part of fostering trust and supportive communication that is open and authentic. Groups that are more cohesive and have supportive environments are more likely to have members more inclined to expressing their opinions, debating ideas, and giving or receiving feedback (Greenlee & Karanxha, 2010). Establishing group norms is one approach to creating a safe environment (Lees & Meyer, 2011). Specifically, integrating group norms regarding the importance of confidentiality can promote safe exploration and sharing within the group (Greenstreet, 2005). UofT OT graduates similarly articulated that incorporating

group norms into IPE activities allowed them to create a more comfortable working relationship with their peers from other professions. Graduates felt that having these positive team dynamics fostered self-confidence when communicating and helped them feel comfortable and more prepared to approach group conflict. These positive team dynamics also promote the development of collaborative competencies in graduates through encouraging and modeling strategies for productive team interactions.

The third program theory outlined did not find any differences between the two key informant groups (“Above Requirements” and “Met Requirements”). Many factors could have contributed to this, such as individual personality, further training received in the workforce, or extra non-academic opportunities pursued (e.g., volunteerism). As this study did not assess graduate performance in practice, potential differences were not captured. Future research is needed to explore the relationship between quantity of IPE experiences and collaborative competency development.

Limitations

Firstly, this study only examined the perspectives of 2018 and 2019 UofT OT graduates. Further, due to time and cost constraints, qualitative data was only obtained from a small subset of these graduates. It is possible that other outcomes, mechanisms and program theories may have emerged as a result of sampling a larger portion of the population. Further, the two key informant groups identified (“Above Requirements” and “Met Requirements”) were defined by the number of elective activities learners completed. However, this may not be a sufficient distinction and it might be of value to create more specific inclusion criteria to determine group differences. As interview participants were new graduates and had either entered the workforce recently or were job-seeking, participants’ recall of their IPE curriculum perspectives may have been limited. Furthermore, IPE Learning Evaluation Surveys did not clearly define and quantify variables such as “large class sizes, and as such the findings of this study are limited in their ability to identify appropriate class sizes required for optimal interprofessional collaboration competency development. Finally, the outcomes identified from this study are based primarily on graduates’ perspectives of the competencies acquired, and not on the actual performance of these competencies in practice. Further research assessing graduate performance is needed to determine how IPE activities impact interprofessional collaboration in practice.

Implications for Occupational Therapy Education

As the Collaborator is a key role for occupational therapists (CAOT, 2012), it is vital that academic institutions deliver IPE curricula to OT learners with appropriate program mechanisms which enable them to develop competencies necessary for interprofessional collaboration. It may be appropriate for future research to utilize observational methods of data collection to identify enabling and disabling program mechanisms not found within this study. Hopefully, this study inspires others to evaluate the longitudinal effects of IPE curricula in practicing occupational therapists, as such

research may uncover additional program mechanisms and outcomes that can aid in further refining IPE curricula. Educators belonging to other institutions evaluating the effectiveness of their IPE curricula can also utilize the methodology to explore, compare, and contrast the collaborative competency development of their OT graduates.

Conclusion

Using the realist evaluation methodology, this study demonstrated the role of IPE in the development of collaborative competencies in OT graduates. Specifically, this study identified the mechanisms of UofT's IPE curriculum that enabled and disabled the development of key interprofessional collaboration competencies such as, (1) role clarification, (2) team functioning, (3) interprofessional communication, (4) interprofessional conflict resolution, (5) collaborative leadership, and (6) advocacy. Educators should consider incorporating enabling mechanisms and removing disabling mechanisms from IPE curricula to foster the development of interprofessional collaboration in OT graduates. Continuing research of IPE curricula will enable OT programs to support collaborative competency development, inform ongoing evaluation of other health profession programs, and foster the development of collaborative practitioners.

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