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An Assessment of the Knowledge, Perceptions, and Attitudes Related to Interprofessional Education and Collaborative Practice Among Faculty of the Hubert Department of Global Health

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An abstract of
A thesis submitted to the Faculty of the
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ABSTRACT

An Assessment of the Knowledge, Perceptions, and Attitudes Related to Interprofessional Education and Collaborative Practice Among Faculty of the Hubert Department of Global Health

By Taylor B. Hayes

Background: Interprofessional Education and Collaborative Practice (IPECP) is a team-based framework for implementing and achieving initiatives in the health sciences. The Woodruff Health Sciences Center (WHSC) at Emory University has demonstrated the need for interprofessional collaborations by prioritizing IPECP in their 2018-2022 strategic plan. Public health practitioners of the Hubert Department of Global Health (HDGH) of Rollins School of Public Health (RSPH) are consistently involved in complex policy and research endeavors that necessitate interprofessional collaborations. Despite this, observations from various health professionals of the WHSC suggest a gap in the knowledge and implementation of IPECP at Emory University.

Objective: The purpose of this special studies project was to examine the knowledge, perceptions, and attitudes related to IPECP and to assess the state of IPECP among faculty members of the HDGH of RSPH at Emory University in order to highlight areas of success and provide recommendations for improvement in collaborative educational and professional practice initiatives.

Methods: A mixed methods approach consisting of online questionnaires (n = 16) and key informant in-depth interviews (n = 5) was done to gather information about the scope, practice, and experience of interprofessional collaborations among faculty of the HDGH.

Results: The data revealed that although HDGH faculty members have overall positive feelings toward participating in interprofessional collaborations, there is a significant gap in knowledge of the meaning of IPECP, its relation to public health practice, and how it differs from other collaborative paradigms, namely cross-disciplinary collaborations. HDGH faculty expressed similar perceptions of barriers and facilitators of interprofessional collaborations evidenced in the literature, in addition to some nuances specific to public health academic culture. Notably, the external incentives of achieving tenure/promotion and grants ultimately reinforce siloed rather than collaborative public health practice.

Conclusion: Interprofessional collaborations are at the center of public health, a field that has the potential to serve as a successful model for multidimensional partnerships and interventions related to political, cultural, and other systematic components of healthcare delivery and health outcomes. In order to accomplish this, efforts should be made to further research the scope of public health practice in the context of IPECP and how it relates to public health academic culture.

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<center>**DEFINITIONS**</center>

<u>Interprofessional Education (IPE):</u> IPE "occurs when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (Gilbert, Yan, & Hoffman, 2010).

<u>Interprofessional Collaborative Practice (IPCP):</u> IPCP occurs when "multiple health workers from different professional backgrounds work together with patients, families, caregivers and communities to deliver the highest quality of care. It allows health workers to engage any individual whose skills can help achieve local health goals" (Gilbert et al., 2010).

<u>Unidisciplinarity:</u> "…a process in which researchers from a single discipline work together to address a common research problem" (Stokols, Hall, Taylor, & Moser, 2008).

<u>Multidisciplinarity:</u> "…a sequential process in which [team members] from disparate fields work independently… periodically coming together to share their individual perspectives for purposes of achieving broader-gauged analyses of common research problems. Participants in multidisciplinary teams remain firmly anchored in the concepts and methods of their respective fields" (Stokols et al., 2008).

<u>Interdisciplinarity:</u> "…an interactive process in which [team members] work jointly, each drawing from his or her own discipline-specific perspective, to address a common research problem… team members not only combine or juxtapose concepts and methods drawn from their different fields, but also work more intensively to integrate their divergent perspectives, even while remaining anchored in their own respective fields" (Stokols et al., 2008).

<u>Transdisciplinarity:</u> "an integrative process in which [team members] work jointly to develop and use a shared conceptual framework that synthesizes and extends discipline-specific theories,

concepts, methods, or all three to create new models and language to address a common research problem" (Stokols et al., 2008).

Core Competencies of Interprofessional Education and Collaborative Practice (IPECP)

<u>Values/Ethics for Interprofessional Practice:</u> The ability to "work with individuals of other professions to maintain a climate of mutual respect and shared values" (IPEC, 2016).

<u>Roles/Responsibilities:</u> The ability to "use the knowledge of one's own role and those of other professions to appropriately assess and address the health care needs of patients and to promote and advance the health of populations" (IPEC, 2016).

<u>Interprofessional Communication:</u> The ability to "communicate with patients, families, communities, and professionals in health and other fields in a responsive and responsible manner that supports a team approach to the promotion and maintenance of health and the prevention and treatment of disease" (IPEC, 2016).

<u>Teams and Teamwork:</u> The ability to "apply relationship-building values and the principles of team dynamics to perform effectively in different team roles to plan, deliver, and evaluate patient/population-centered care and population health programs and policies that are safe, timely, efficient, effective, and equitable" (IPEC, 2016).

ACRONYMS AND ABBREVIATIONS

ASPPH Association of Schools and Programs of Public Health

CAIPE Centre for the Advancement of Interprofessional Education

CEPH Council on Education for Public Health

HDGH Hubert Department of Global Health

IPCP Interprofessional Collaborative Practice

IPE Interprofessional Education

IPECP Interprofessional Education and Collaborative Practice

ITTD Interprofessional Team Training Day

MPH Master of Public Health

MSPH Master of Science in Public Health

NIH National Institutes of Health

RSPH Rollins School of Public Health

WHEA Woodruff Health Educators Academy

WHO World Health Organization

WHSC Woodruff Health Sciences Center

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INTRODUCTION

Interprofessional Education and Collaborative Practice (IPECP) is a highly integrative and interactive team-based framework for implementing and achieving initiatives in the health and social sciences (Gilbert et al., 2010). Interprofessional education (IPE) preps learners to become adept at collaborating effectively in teams, while interprofessional collaborative practice (IPCP) is the continued practical application of this knowledge at the professional level. The overall goal of both elements is to strengthen once fragmented health systems with the ultimate result of improving health outcomes. IPECP is widely emphasized in medical and public health research, services, academia, and policy (Choi & Pak, 2006). Thus, numerous universities, research organizations, and accrediting bodies have since instituted interprofessional curricula and team-based practice models of varying degrees to support this aspirational endeavor.

Emory University, an internationally recognized research university located in Atlanta, Georgia, has made several strides to promote and facilitate interprofessionality in the health sciences. In 2017, the Woodruff Health Sciences Center (WHSC) launched a strategic plan, *Setting Priorities for Our Future 2018-2022*, to support collaboration, innovation, and service throughout the various schools and programs housed within the WHSC (WHSC, 2018b). These institutions include Emory Healthcare, Emory University School of Medicine, Nell Hodgson Woodruff School of Nursing, Rollins School of Public Health (RSPH), Winship Cancer Institute, and the Yerkes National Primate Research Center. One of the four strategies of the WHSC's strategic plan is to prioritize IPECP, with the goals to invest in infrastructure to facilitate IPECP across WHSC; establish curricula to promote proficiency in interprofessional competencies for learners, faculty and healthcare providers; and develop practice models and further the knowledge of IPECP impact through research (WHSC, 2018a). The WHSC IPECP Council was then formed in 2018 to ensure

the prioritization of IPECP as a central educational theme in the areas of faculty development, student curriculum, research, simulation, and clinical practice (WHSC, 2019a). Key initiatives led by this council include the Interprofessional Team Training Day (ITTD)[1] (WHSC, 2019b), the IPECP Synergy Award (WHSC, 2017c), the Woodruff Health Educators Academy (WHEA) (WHSC, 2017a), and the IPE Journal Club (WHSC, 2017d).

The RSPH is equally recognized for its excellence and contributions to local, national, and global public health—the school is the number five public health program in the country and is ranked number six in research support from the National Institutes of Health (NIH) (WHSC, 2017b). The RSPH's involvement in ITTD followed the 2016 Council on Education for Public Health's (CEPH) addition of the *Interprofessional Practice: perform effectively on interprofessional teams* competency to the Master of Public Health (MPH) Foundational Competencies. To be considered interprofessional, the competency must be fulfilled in the context of "engagement with professionals (either students in other professions or practicing professionals) outside of public health (e.g., architects, nurses), rather than to engagement with individuals from other public health disciplines (e.g., biostatisticians, health promotion specialists)" (CEPH, 2016). This competency has since been added to the MPH/Master of Science in Public Health (MSPH) Foundational Competencies at RSPH (RSPH, 2020c). In addition to ITTD and prior to the creation of the WHSC 2018-2022 strategic plan, learners at RSPH were exposed to interprofessional and cross-disciplinary collaborations through the Emory Global Health Institute grants (EGHI, 2020a) and case competitions (EGHI, 2020b), global field experiences (RSPH, 2020b), and dual degree program tracks (RSPH, 2020a).

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[1] The ITTD began in 2007 with first year medical and nursing learners. In 2018, it was expanded to include learners of RSPH (WHSC, 2019b).

State of IPECP within the Hubert Department of Global Health (HDGH) of RSPH

Interprofessional collaborations are at the center of public health, a field that has the potential to serve as a successful model for multidimensional partnerships and interventions. By default, the practice of public health involves the application of cross-disciplinary methodologies (multidisciplinarity, interdisciplinarity, and transdisciplinarity) to engage multiple sectors within the social ecological model to prevent morbidity and mortality and promote local and national public health (K. D. Hager, Blue, Zhang, & Palombi, 2018; Nystrom, Karltun, Keller, & Andersson Gare, 2018; Redwood, Brangan, Leach, Horwood, & Donovan, 2016).

In the case of global public health, defining the role of interprofessional collaboration as it relates to political, cultural, and other systematic components of healthcare delivery and health outcomes is imperative to the establishment and maintenance of international partnerships (Mickan, Hoffman, Nasmith, World Health Organizations Study Group on Interprofessional, & Collaborative, 2010; Purden, 2005; Ward et al., 2018). Public health practitioners of the HDGH have demonstrated the need for interprofessional collaborations through their extensive involvement in complex policy and research endeavors (RSPH, 2020d). Most recently, HDGH faculty have been heavily involved with policy makers, different health care professionals, and the public/private sector in the global effort to diagnose, treat, and stop the spread of the SARS-CoV-2 virus (COVID-19) (RSPH, 2020e).

Despite RSPH's efforts to integrate IPECP in public health practice, observations from various health professionals at Emory University suggest that the schools within WHSC appear to work in a siloed fashion. Additionally, there is little information known about the full degree of knowledge and implementation of IPECP among HDGH faculty of RSPH. Finally, it is unclear how HDGH faculty feel about collaborative education and professional practice and whether it is

similar to the barriers and facilitators referenced in the literature. If a lack of understanding exists surrounding IPECP in the context of public health academia, it could have a negative impact on collaborative initiatives at Emory University involving HDGH faculty and serve as a hindrance to the fulfillment of the WHSC 2018-2022 strategic plan goals. Therefore, it is imperative to determine the relationship between public health practice and IPECP at Emory University in order to highlight areas of success and provide recommendations for improvement in collaborative educational and professional practice initiatives.

Project Goals & Objectives

The purpose of this special studies project was to examine the knowledge, perceptions, and attitudes related to IPECP and to assess the state of IPECP among faculty members of the HDGH of RSPH at Emory University. To achieve this goal, the following objectives were developed:

- **Objective 1:** Scope of IPECP: Identify the extent of interprofessional collaborations that are occurring among HDGH faculty within and outside Emory University.

- **Objective 2:** Knowledge of IPECP: Identify the degree to which HDGH faculty understand IPECP in the context of cross-disciplinary collaborations (multi/inter/transdisciplinarity).

- **Objective 3:** Perceptions and Attitudes Related to IPECP: Assess HDGH faculty perceptions of and attitudes toward past, present, and future participation in IPECP initiatives.

The results of this special studies project were compiled in a summary document and presented to Dr. Usha Ramakrishnan, Chair of the HDGH, as the representative of the department (Appendix I). Considering the WHSC 2018-2022 strategic plan and the implications of IPECP in the greater public health community, it is important to understand the nature of IPECP at RSPH and the

challenges and opportunities related to the role of public health professionals in contributing to IPECP.

Of note, IPE may occur at the preprofessional and professional levels, while use of the term IPCP is primarily reserved for professional practice (Golom & Schreck, 2018; Reeves et al., 2011). This research focused on HDGH faculty involvement in and experiences of IPE and IPCP. The knowledge, attitudes, and perceptions of learners/preprofessional students were not assessed in this study.

Potential Benefits to RSPH and the WHSC at Emory University

Data rendered from this special studies project has the potential to support the WHSC 2018-2022 strategic plan by providing an overview of what interprofessional collaborations public health professionals at the HDGH are involved in and motivations for participation in interprofessional initiatives. Additionally, HDGH faculty may gain a better understanding of IPECP competencies and their relation to cross-disciplinarity in order to better determine appropriate instances to engage in interprofessionality. Finally, the study may aid non-health sciences professions at Emory University in better understanding when and how to involve public/global health faculty in an IPECP initiative.

Potential Benefits to the Public Health Profession

Data rendered from this special studies project may be transferable to contribute towards the creation of a framework for IPECP that could be considered within the greater public health and general academic communities. Detailed examples of IPECP among faculty of the HDGH can provide a better understanding of the various roles and expertise public health practitioners contribute to the practice of ICECP. Finally, the study may provide ideas on topics for further exploration in support of the budding collaborative nature of public health practice.

LITERATURE REVIEW

<u>IPECP Concept and Terminology Origins</u>

Despite the recent surge in IPECP use and recognition in the fields of healthcare and public health, IPECP in itself is not a new concept. In 1978, the WHO identified interprofessional collaborations as a key aspect of primary health care in the fight for "Health for All" (Ross, 2007). In 1996, the UK Centre for the Advancement of Interprofessional Education (CAIPE), a London-based organization founded in 1987, created a national interprofessional network to promote the sharing of high quality advancements in the research and practice of IPE for professions engaged in health and social services (Barr & Waterton, 1996). According to a bibliography published in 1991, it appears that the concept of interprofessionality and the subsequent terminology in use today has been alluded to in the literature by various entities around the globe as early at 1969 (Toase, 1991).

D'Amour and Oandasan (2005) are also credited with the early conceptualization of IPECP by delineating the idea of interprofessionality which is defined as a "process by which professionals reflect on and develop ways of practicing that provides an integrated and cohesive answer to the needs of the client/family/population. Interprofessionality comes from the preoccupation of professionals to reconcile their differences and their sometimes opposing views and it involves continuous interaction and knowledge sharing between professionals organized to solve or explore a variety of education and care issues..." Key to interprofessionality is that it requires a paradigm shift away from siloed and unidisciplinary thinking, facilitates active participation of the beneficiaries of a care plan or intervention, and highlights the interdependence between health professions' education and future collaborative practice (D'Amour & Oandasan,

2005). The competency-based approaches (Table 1) to fulfilling IPECP have largely emerged from the work of Barr, D'Amour, and Oandasan (IPEC, 2011).

Overview of IPECP in the Public Health Context

IPECP has steadily garnered widespread attention since the World Health Organization (WHO) Study Group on IPECP released the "Framework for Action on [IPECP]", the first report on the global uptake of the concept (Gilbert et al., 2010; Ross, 2007). At one end of the framework continuum is IPE which "occurs when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (Gilbert et al., 2010). At the opposite end of the continuum is IPCP which "happens when multiple health workers from different professional backgrounds work together with patients, families, caregivers and communities to deliver the highest quality of care. It allows health workers to engage any individual whose skills can help achieve local health goals" (Gilbert et al., 2010).

In general, IPCP has predominantly been referenced in regard to clinical practice in the medical and nursing professions but the phrase is becoming more popular in other settings such as public health. For the purposes of this research, the WHO definition was adapted to better describe the diversity in collaborative public health interactions and interventions: Public health collaborative practice occurs when multiple workers from different professional backgrounds and/or sectors work together with patients, families, communities, and governmental and non-governmental organizations to prevent disease, injury, and disability, eliminate health disparities, and correct injustices.

In 2011, six national associations of schools of health professions joined to further define IPECP by establishing the following core competency domains: 1) Values/Ethics for Interprofessional Practice 2) Roles/Responsibilities, 3) Interprofessional Communication, 4) and

Teams and Teamwork (IPEC, 2011). These competencies revolve around the notion that IPECP is patient/family centered and community/population oriented. The Association of Schools and Programs of Public Health (ASPPH) was one of the six original national associations of schools of health professions to create the interprofessional core competencies. In 2016, the competencies were updated in response to the ever-changing U.S. healthcare system in order to better address population health issues and Triple Aim outcomes: improving patient experience, improving population health, reducing the healthcare costs (IPEC, 2016). Key characteristics of each core competency are described in Table 1.

Table 1: Characteristics of IPECP Core Competency Domains

Competency Domain	Characteristics
Values/Ethics for Interprofessional Practice	- Keep interests of patients/populations at the center of intervention - Embrace diversity of patients, populations, and team members - Maintain competence in one's own profession - Develop trust between beneficiaries and team members - Show high standards of ethical conduct - Act with honesty and integrity - Promote atmosphere of mutual respect
Roles/Responsibilities	- Communicate one's role/responsibilities clearly - Recognize limitations in one's knowledge and skills - Engage diverse professionals and associated resources that complement one's own professional expertise - Be able to explain the roles/responsibilities of other professionals - Use full scope of knowledge and skills of all team members - Forge interdependent relationships with other professions - Engage in continuing professional and interprofessional development
Interprofessional Communication	- Utilize effective communication tools and techniques - Avoid discipline-specific terminology when possible - Share knowledge with confidence, clarity, and respect and work to ensure common understanding of plan(s) - Encourage active listening and open expression of ideas and opinions - Give timely, considerate, and constructive feedback to team - Use respectful language in conflicts and other difficult situations - Recognize how one's expertise, culture, and power effects communication
Teams and Teamwork	- Develop consensus on ethical principles - Engage other professionals in patient-center problem-solving - Integrate knowledge and experience of other professionals - Lead in a manner that supports teams - Constructively manage disagreements - Share accountability - Reflect on individual and team performance - Use evidence-based practices to inform teamwork

Adapted from Core Competencies for Interprofessional Collaborative Practice: Report of an Expert Panel (IPEC, 2011).

<u>Overview of Cross-disciplinary Collaborations</u>

The terms used to describe cross-disciplinary collaborations are often confused with the terms used to describe interprofessional collaborations. Both concepts involve collaborative practice between individuals of different backgrounds; however, they have different meanings and implications. Cross-disciplinarity is a collaborative methodology comprised of the following approaches listed in order of increasing degree of integration of concepts, methods, and application: multidisciplinary, interdisciplinary, and transdisciplinary (Klein; Rosenfield, 1992; Stokols et al., 2008) (see Figure 1 for a graphic depiction of the difference between the three terms). For the purposes of this assessment, the following definitions will serve as the basis for further discussion of the varying degrees of cross-disciplinary knowledge and application among HDGH faculty:

- Multidisciplinarity "…is a sequential process in which [team members] from disparate fields work independently… periodically coming together to share their individual perspectives for purposes of achieving broader-gauged analyses of common research problems. Participants in multidisciplinary teams remain firmly anchored in the concepts and methods of their respective fields" (Stokols et al., 2008).

- Interdisciplinarity "…is an interactive process in which [team members] work jointly, each drawing from his or her own discipline-specific perspective, to address a common research problem… team members not only combine or juxtapose concepts and methods drawn from their different fields, but also work more intensively to integrate their divergent perspectives, even while remaining anchored in their own respective fields" (Stokols et al., 2008).

- Transdisciplinarity "…is an integrative process in which [team members] work jointly to develop and use a shared conceptual framework that synthesizes and extends discipline-specific theories, concepts, methods, or all three to create new models and language to address a common research problem" (Stokols et al., 2008). This level of cross-disciplinarity "(1) substantially includes actors from outside academia, (2) deals with socially relevant real-world, 'wicked' problems, (3) aims at mutual learning processes by including the knowledge not only from different scientific disciplines, but also from actors outside science, and (4) creates knowledge that is solution-oriented in a way that it generates results that are relevant to both practice and science (Defila et al. 2006; Scholz et al. 2006; Lang et al. 2012; Mauser et al. 2013)." (Binder, Absenger-Helmli, & Schilling, 2015).

Figure 1: Author's graphic interpretation of the three types of cross-disciplinary collaborations

| Multidisciplinarity | Interdisciplinarity | Transdisciplinarity |
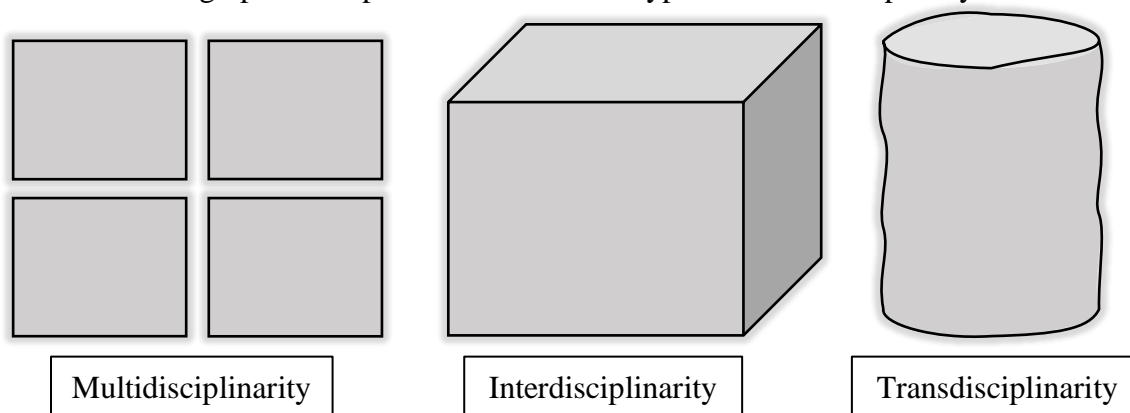
Multidisciplinarity: the four separate squares represent different disciplines working mostly independently of each other. Interdisciplinarity: the squares are now joined together. They actively and intentionally work together to draw from each's other expertise. Transdisciplinarity: no longer confined by disciplinary lines, the disciplines synthesize the various aspects of their expertise to create something new.

Although it is suggested that transdisciplinary collaborations have the greatest potential to produce innovative ideas that can generate significant outcomes, this level of collaboration does not automatically result in the successful implementation of interventions and achievement of team goals (Binder et al., 2015; Rosenfield, 1992). Likewise, there are instances where cross-

disciplinary collaborations as a whole are not necessary to accomplish the proposed goal of a project or initiative (Choi & Pak, 2006, 2007; Stokols et al., 2008). In these cases, a unidisciplinary approach, where professionals from a single discipline collaborate to solve a problem (Stokols et al., 2008), may suffice.

Therefore, it is encouraged that practitioners be aware of the different levels of cross-disciplinarity and consider how that relates to their particular IPECP initiative and goals. The literature points to potential ways to accomplish this but there is no general consensus. The meaning of the terms multidisciplinary, interdisciplinary, and transdisciplinary is ill-defined and poorly understood and the terms themselves are often used interchangeably (Choi & Pak, 2006; Mahler, Gutmann, Karstens, & Joos, 2014; Whitfield & Reid, 2004). The development of an algorithm to provide a more systematic and standardized method of determining the need for cross-disciplinary teams may be helpful but has not yet been developed.

IPECP and Cross-disciplinarity: What's the difference and how do the concepts relate?

The Merriam-Webster Online Dictionary (2020) defines discipline as "a field of study" while profession is defined as "a calling requiring specialized knowledge and often long and intensive academic preparation." Parse (2015) poetically contrasts the two in the following ways: "A *discipline* is a body of scientific knowledge that is ever-changing with the integration of creative conceptualizations and formal research findings… A *profession* is an organizational body consisting of persons who are committed to a vision and are educated with particular disciplinary knowledge to promote that vision. The regulatory bodies of the [said] profession set standards consistent with the disciplinary knowledge to preserve the integrity of the profession..." Ultimately, a profession is the practical application and embodiment of discipline-specific knowledge—it is the connection between theory and practice (Mahler et al., 2014).

In the case of public health, public health is the profession while specific areas of study such as biostatistics, epidemiology, health policy, etc. are disciplines (CEPH, 2016; Kivits, Ricci, & Minary, 2019). It is also important to note that the knowledge base of many academic disciplines outside the realm of public health can inform professional practice (Mu & Royeen, 2004). For example, the disciplines of psychology, political science, medicine, and law can all be used to strengthen the capacity of the public health profession (Bellmann, 2012; Kivits et al., 2019).

Table 2: Differences between Cross-disciplinary and IPCP teams

Differences between multidisciplinary, interdisciplinary and IPCP teams		
Multidisciplinary Team	**Interdisciplinary Teams**	**IPCP Teams**
Hierarchical	Less hierarchical but not equal	No hierarchy or territory; all members are equal
Excludes the patient and family; patients and families are merely recipients of care	More inclusive of the patient and family; patients and families viewed as team members with less authority	Patient and family focused; patient and family are equally powerful team members
Strong leader gathers, synthesizes, disseminates data	Less dependent on a central team leader	No central leader; leadership is shared among team members
Members have limited knowledge of others' disciplines and roles	Members understand each others' disciplines and roles but operate within disciplinary boundaries	Role clarification is a conscious effort; input from other disciplines is intentionally sought
Members are accountable to self	Members are accountable to self and each other	Shared responsibility and accountability by the members of the team as well as the team as a unit
Limited communication between team members	More communication between team members, but often ineffective owing to time constraints, use of disciplinary jargon	Continuous, seamless, dynamic, effective communication among team members

From Golom & Schreck, 2018. The Journey to Interprofessional Collaborative Practice: Are We There Yet?; with permission from the authors.

The distinction between discipline and profession is important because their fundamental differences have implications for the conceptualization and implementation of practice models for

collaboration. Golom and Schreck (2018) describe this by contrasting group vs. team dynamics as an analog for the difference between cross-disciplinary vs. interprofessional collaboration (Table 2). While interprofessional *teams* collaborate under the principle of interdependence through continuous communication and shared accountability and responsibility, cross-disciplinary *groups* often collaborate less interdependently as task completion and outcome production are done without much interaction from other group members. Underpinning this distinction is an additional theoretical component that no hierarchy exists in interprofessional teams and power is equally distributed among all team members, including patients, families, and their respective communities.

D'Amour and Oandasan (2005) also support this necessary distinction by noting that the emergence of interdisciplinarity occurred in hopes of building cohesion between fragmented knowledge. In contrast, interprofessionality emerged in hopes of fostering more cohesion, integration, and collaboration in professional practice. Therefore, no matter the extent of integration of knowledge, it is not possible to effectively apply that knowledge in professional practice without a thorough understanding of the nature of interprofessional collaborations.

Despite acknowledgement in the literature that the distinction between discipline and profession must be maintained, there is still very little consensus on the matter. The insufficient understanding of cross-disciplinarity in relation to IPECP serves as a basis for confusion in many collaborative spheres (Mu & Royeen, 2004; Parse, 2015). Of note, Golom and Schreck's description of the characteristics of IPCP teams (see Table 2) is quite similar to the characteristics of transdisciplinary collaborations described in the literature (Binder et al., 2015; Choi & Pak, 2006; Rosenfield, 1992; Stokols et al., 2008; Wickson F., 2006). Further exploration of the relationship between IPCP and transdisciplinarity is outside the scope of this paper, but it is worth

noting that the lack of cohesion among professionals in their use and understanding of these concepts must be addressed in order to properly apply them in professional practice (Choi & Pak, 2006; Mu & Royeen, 2004; Parse, 2015).

Practical Application of IPECP: Influencing factors, Impressions, and Outcomes

IPE and IPCP are distinct entities yet not necessarily mutually exclusive of one another and often overlap (Lutfiyya, Brandt, & Cerra, 2016). For practicing professionals, IPE is presented in the forms of faculty development or continuing education, especially in the case of practitioners who may not have had sufficient interprofessional experiences in their preprofessional training (Golom & Schreck, 2018; Ratka, Zorek, & Meyer, 2017). IPCP can occur in a variety of settings including community engagement initiatives, policy and legislative decision-making, and large scale global health protocols (Gilbert et al., 2010; Reeves et al., 2011).

Numerous studies have been conducted to test the validity and reliability of self-assessment surveys used to determine the degree to which practitioners have a better understanding of interprofessional core competencies before and after IPECP interventions (Archibald, Trumpower, & MacDonald, 2014; Hasnain et al., 2017; Lutfiyya, Chang, McGrath, Dana, & Lipsky, 2019; Roberts, Lindsey, & Limon, 2018; Schmitz et al., 2017). Overall, these studies suggest that continuing education and faculty development programs improve knowledge and understanding of IPCP and the ability to facilitate and participate in IPECP initiatives.

Barriers & Facilitators of IPECP

The implementation of IPECP comes with many barriers and facilitators that are present at micro, meso, and macro levels. The micro level barriers primarily concern interpersonal dynamics between different professionals where power differentials and hierarchy play a crucial role. The power imbalance and subsequent conflicts that arise when working with physicians has frequently

been mentioned in the literature (McDonald, Jayasuriya, & Harris, 2012; Orchard, Curran, & Kabene, 2005; S. A. Reeves et al., 2017). Battles over "turf" keep professionals from sharing new ideas and outcomes from research until findings are published (McDonald et al., 2012; Orchard et al., 2005). This imbalance is also evidenced in teams with professionals of varying experience levels and competency in their respective field. Learners/preprofessional students who work on interprofessional teams with practicing professionals are especially vulnerable to this (S. A. Reeves et al., 2017).

At the meso level, many barriers have been identified including lack of time and scheduling conflicts, organizational infrastructure, and financial resources (Hall & Zierler, 2015; IPEC, 2011; Supper et al., 2015; Xyrichis & Lowton, 2008). These barriers are particularly evident in interprofessional initiatives that are facilitated by faculty in educational institutions who are inadequately trained in the core competencies and goals of IPECP (Silver & Leslie, 2017; Supper et al., 2015; Xyrichis & Lowton, 2008). Additionally, organizational culture significantly impacts IPECP prioritization in institutions and subsequent uptake by employees. When there is limited buy-in from key leaders such as administrators and deans, there is little motivation to facilitate and participate in IPECP (IPEC, 2011; Odegard & Strype, 2009). Finally, a key issue in the recognition and utilization of IPECP is that many professionals were trained and have since practiced in settings where collaboration may not have been readily accessible or even desired (IPEC, 2011).

In regard to facilitators of IPECP at the micro level, trust is a major factor. According to a qualitative study conducted by McDonald et al. (2012), trust is cultivated when roles/responsibilities are clear and accepted, competence in the problem at hand is demonstrated, and communication is respectful. Trust develops over time and is key to fostering power equalization and better team dynamics (Mavronicolas, Laraque, Shankar, & Campbell, 2017;

Supper et al., 2015). Additional facilitators include having consistent communication, practicing good conflict resolution skills, use of common professional language, and setting clearly defined goals at the onset of the collaboration (Mavronicolas et al., 2017; Orchard et al., 2005; S. A. Reeves et al., 2017; Supper et al., 2015). At the meso level, institutional and administrative support through funding and protected time to collaborate and adequate faculty development through training workshops, simulations, and structured group discussions are key (IPEC, Bridges, Davidson, Odegard, Maki, & Tomkowiak, 2011; Gilbert et al., 2010; Hall & Zierler, 2015; 2011; Moyce, Bigbee, & Keenan, 2017; Ratka et al., 2017; Ruebling et al., 2000).

Finally, IPECP is best supported when there is a shared vision for macro-level systems that are developed with interprofessional principles in mind (D'Amour & Oandasan, 2005). Many of the barriers to IPECP are largely due to the social, cultural, and systemic factors that ultimately reinforce silos (Jacobs, 2014; McDonald et al., 2012; Orchard et al., 2005). Therefore, supportive government policies, buy-in from key policy-makers, and clear guidance and accountability from accrediting bodies strongly influence interprofessional collaborations (D'Amour & Oandasan, 2005; Gilbert et al., 2010; Mickan et al., 2010).

Perceptions of and Attitudes toward IPECP

The various barriers and facilitators that impact the establishment and facilitation of IPECP ultimately influence perceptions of and attitudes toward the aspirational approach. Although health professionals recognize the need for interprofessional work, they are less likely to participate in IPECP initiatives if they have prior experiences of feeling undervalued and not fully respected as an expert (Hinderer et al., 2016; Selleck et al., 2017). Faculty members also felt they were not adequately trained in interprofessional communication and conflict resolution, resulting in low confidence in their knowledge of and ability to teach IPE (Hinderer et al., 2016). Lack of perceived

team efficiency and productivity can also negatively impact IPECP initiatives, especially when clear roles/responsibilities and team goals are not defined in the early stages (Ong, Tan, Knab, Farrell, & Lim, 2017; Suter et al., 2009; Verhaegh et al., 2017).

Impressions of IPECP also seem to differ by profession and gender. In a study conducted by Gary et al. (2018), faculty from nursing and public health, who are historically recognized for their ability to collaborate well with other professions, had more favorable attitudes toward interprofessional education, learning, and teamwork when compared to faculty from more traditionally siloed professions like medicine and dentistry. Additionally, women were found to have more interest in and better attitudes toward participating in interprofessional collaborations compared to men, which is consistent with findings in other studies (Hojat et al., 2015; Odegard & Strype, 2009). When these perceptions and attitudes are fully considered, practice models for the translation of research to practice can be used to advance the utilization of IPECP and solve public health problems (Careau et al., 2015; K. Hager et al., 2016; Redwood et al., 2016; Selleck et al., 2017).

Utilitarian vs Emancipatory views in IPECP

An interesting concept underlying the barriers/facilitators and impressions of IPECP is whether there is a shared discourse and how differing discourses can affect the conceptualization, implementation, and evaluation of collaborative initiatives. Haddara and Lingard (2013) discovered at least two discourses in interprofessional collaborations: utilitarian and emancipatory. The utilitarian discourse asserts that interprofessional collaborations are necessary for the improvement of patient care and overall outcomes. It is characterized by a high degree of interaction among different professionals and proposed improvements in outcomes must be validated by evidence-based research. In contrast, the emancipatory discourse asserts that

interprofessional collaborations are necessary because they equalize power imbalances, particularly in relation to the historical dominance of the medical model and physicians' authority. It is characterized by calls to level the power hierarchy between medicine and other professionals through "shared leadership models" and tools to assess interprofessional collaborations through the lens of power and conflict. The extent to which one discourse is valued over another within an interprofessional team may explain the issues that arise in IPECP initiatives.

IPECP impact on health-related outcomes

Theoretically, IPE is essential to creating a "collaborative practice ready" workforce to respond to local, national, and global health needs (IPEC, Gilbert et al., 2010; 2011). Thus, effective IPCP is the result of adequate understanding, teaching, and utilization of IPE, whether as a learner or as a practicing professional. The WHO report (2010) sited numerous research articles that demonstrated the benefits of IPECP in relation to health outcomes. In summary, the data proposed that collaborative practice reduced healthcare costs and medical errors, improved overall health outcomes for individuals with chronic diseases, and strengthened the relationship between professionals of differing backgrounds and the communities in which they interact and work.

However, the Institute of Medicine (2015) and Lutfiyya et al. (2016) noted that despite these prior findings, substantial evidence is still lacking regarding the impact of IPE on IPCP and of IPCP on health outcomes. The Lutfiyya et al. article claimed that major analytical gaps still remain in the following five areas: 1) statistically significant and generalizable evidence of changes in health outcomes, 2) varied results on the effectiveness of collaborative teams, 3) possible need for additional IPECP core competencies, 4) identification and implementation of best practices in education, and 5) reliable and validated tools and methods to measure the direct impact of IPECP. Of note, despite the involvement and support of public health organizations such as CEPH,

ASPPH, and the WHO, the impact of IPECP on population health is still not adequately addressed and may need to be a competency in itself. An even bigger question is whether IPECP is the answer to improved Triple Aim outcomes (Berwick, Nolan, & Whittington, 2008; Brandt, Lutfiyya, King, & Chioreso, 2014).

Since 2016, two review papers have been released to determine the degree of IPECP impact on health-related outcomes. Reeves et al. (2017) reviewed nine studies that compared IPCP interventions to the standard of care. Overall, there were slight improvements in the use of resources and patients' adherence to recommendations but insufficient evidence to measure the effects of IPCP on patient health outcomes such as morbidity and mortality. Lutfiyya et al. (Lutfiyya et al., 2019) summarized that out of 375 studies related to IPECP, only twenty assessed clinically relevant health outcomes; the remainder focused on educational ventures and practitioner attitudes and perceptions. Although practitioners' experiences and impressions of IPECP are important, there is an even greater need for statistically significant, generalizable data of health outcomes in order to evaluate the degree of impact of IPECP initiatives.

Role of IPECP in Global Public Health Practice

In the context of public health initiatives, collaborative practice appears to bridge the gap between the translation of research and knowledge to practice, thus making it necessary for the resolution of complex health-related problems (Nystrom et al., 2018; Redwood et al., 2016). The interrelated concepts of stakeholder engagement, shared governance, and capacity building are all evidenced in successful models of cross-sectorial, multiorganizational, and international public health partnerships.

Adequate identification of and engagement with key stakeholders, including industry, the private sector, non-academians, and many more appears to be the first step in initial collaboration

efforts. This generates mutual respect and trust by acknowledging all stakeholders as equal and necessary (Mickan et al., 2010; Purden, 2005; Ward et al., 2018). Purden (2005) additionally notes that, if done well, collaborations can aid in the enhancement of cultural competency and sensitivity in order to better address the needs of individuals from culturally diverse backgrounds. Stakeholder engagement promotes an atmosphere of shared governance, "the processes which define expectations, grant power and verify performance" (Mickan et al., 2010), between health professionals and across sectors—particularly in the context of structured protocols from legislation and research guidelines. The final result is capacity building, which mitigates injustices and power differentials that are often inherent in partnerships (Ward et al., 2018). Ward et al. emphasizes the fact that capacity building is an ethical obligation in collaborative research and initiatives because the top-down dynamics of typical donor-recipient relationships foster inequitable partnerships that "will not alone secure conditions of good health for a population" and "pose a direct threat to public health." There must be a commitment toward institutional and national sustainability in order for collaborations to actually make a significant impact.

A good example of all three of these concepts is the Health Integration Team (HIT) model. In 2012, Bristol Health Partners developed the HIT model to part from the biomedical-dominant discourse and better facilitate knowledge translation in patient-centered care following a series of events that had resulted in a fragmented health care system in the United Kingdom (Partners, 2020; Redwood et al., 2016). The model is driven by four themes: two processes, 1) whole system engagement (a structural partnership of local organizations, authorities, patients/community members, and universities) and 2) collaboration (the development of systematic methods to collaborate across different disciplines, professions, sectors, and organizations) that ultimately result in two outcomes, 3) integration of ideas and services and 4) innovation in product

development and service delivery. The HIT model is now integrated in 23 public health initiatives, including adverse childhood experiences, chronic medical conditions, and mental health and appears to have a significant impact on population health, health care costs, and health service delivery compared to previous models implemented in the United Kingdom.

As suggested by Lutfiyya et al. (2016), a probable gap in the translation of the interprofessional core competencies to actual practice is the likelihood that more competencies need to be added. Based on the concepts of stakeholder engagement, shared governance, and capacity building, what may be missing from the IPECP core competencies is the commitment to identifying the role of all stakeholders (e.g. professionals outside the health sciences, non-governmental organizations, policy-makers, the civil society, etc.) in the establishment of sustainable partnerships. To truly embody the WHO definition of "[working] together with patients, families, caregivers and communities to deliver the highest quality of care" and "[engaging] any individual whose skills can help achieve local health goals", all potential implementors and beneficiaries must be equitably involved at every step of the collaboration.

Public health practice is dynamically informed by the concepts and philosophies of numerous health and non-health disciplines (Kivits et al., 2019). As a result, it has the unique ability to transcend professional, disciplinary, organizational, and sectorial boundaries (Redwood et al., 2016). The integrative nature of public health may serve as a best-practice model for collaborative practice as it often facilitates stakeholder engagement, shared governance, and capacity building, all of which seem to aid in the establishment and maintenance of local and international partnerships and research initiatives (Mickan et al., 2010; Purden, 2005; Redwood et al., 2016; Ward et al., 2018).

Despite public health's contributions to the original IPECP expert panel (IPEC, 2011) and the 2016 update to the core competencies with new emphasis on population health outcomes (IPEC, 2016), there is scant literature that directly focuses on the overall role and experiences of public health professionals in interprofessional collaborations. The majority of what has been studied is in relation to medical/clinical practice. This special studies project intends to provide some insight on the topic and identify potential new areas of study in IPECP.

METHODS

The purpose of this special studies project was to describe the scope of interprofessional collaborations occurring among faculty of the HDGH of RSPH at Emory University and to assess their knowledge, perceptions, and attitudes related to the concept. A review of the IPECP and cross-disciplinary collaborations literature was conducted to inform the development of a research protocol and data collection instruments. A mixed methods approach consisting of questionnaires and key informant in-depth interviews was employed to gather information about the scope, practice, and experience of interprofessional collaborations among faculty of the HDGH.

Study Population and Recruitment

The study was conducted at RSPH among faculty of the HDGH. The HDGH is one of six academic departments at RPSH and consists of 156 faculty, 45 of whom are primary faculty (full/part-time). Participants were recruited for the survey via an email sent to the faculty listserv and by word-of-mouth. The population of interest for the survey was anyone on the HDGH faculty listserv, including post-doctoral fellows (n=89) (Figure 2). Convenience sampling was utilized to ensure that the survey was completed by as many faculty as possible.

Figure 2: Stratification of HDGH faculty[2]
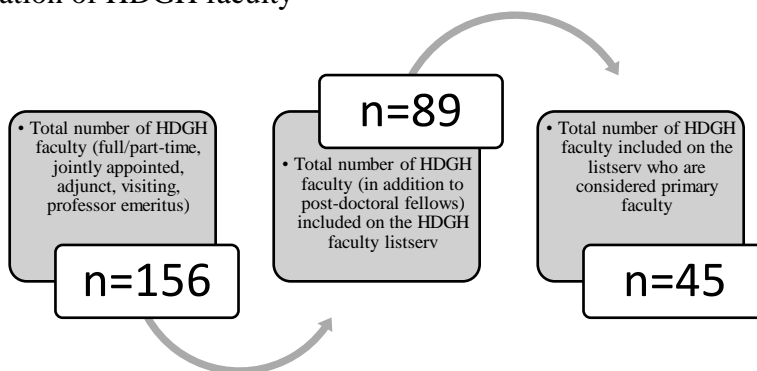
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[2] Although not all HDGH faculty (n=156) (e.g. jointly appointed, adjunct, etc.) are included on the HDGH faculty listserv (n=89), all primary faculty (n=45) are included on the HDGH faculty listserv, in addition to post-doctoral fellows.

Faculty who opted-in to be interviewed after completing the questionnaire and faculty who did not complete the questionnaire but were recommended by interviewees were the population of interest for the follow-up key informant interviews. Faculty who did not complete the questionnaire were allowed to accommodate for possible difficulties in getting sufficient interviews with faculty who originally opted in. Faculty with a conflict of interest in the study (e.g. thesis chair, thesis committee members, and other faculty who reviewed the data collection instruments) and those from the other RSPH departments were excluded from the population criteria.

Development of Data Collection Instruments

Survey

The survey instrument (Appendix II) used in this study was divided into three sections: Section A. General Faculty Information, Section B. Knowledge, Perceptions, and Attitudes of Interprofessional Education and Collaborative Practice, and Section C. Survey Closing. Section A consisted of 16 multiple choice and open-ended questions that asked about faculty demographics, professional information, and details of interprofessional practice. Section B consisted of 24 Likert-scale questions and covered two main areas: 1) overall perceptions and knowledge of IPECP and 2) attitudes toward the four core competencies. This section was constructed by adapting three validated IPECP questionnaires: the "Interprofessional Perception, Knowledge, and Attitudes Scale (IPKAS)" (Hinderer et al., 2016); the "Jefferson Scale of Attitudes Toward Interprofessional Collaboration (JeffSATIC)" (Hojat et al., 2015); and the "Attitudes Toward Health Care Teams Scale (ATHCTS)" (Ong et al. 2017). These validated questionnaire were adapted by changing some of the subjects in questions to better apply to the field of public health. For example, if the questions used the word "health care professional" or "provider" it was changed

to "public health professional" or "practitioner", "patient" or "client" was changed to "population" or "community", etc. Section C consisted of two questions giving survey participants the option to be contacted further for a follow-up interview.

The survey instrument was reviewed and vetted for appropriateness by the thesis chair, thesis committee members, the Senior Associate Dean for Academic Affairs (Dr. Kimberly Jacob Arriola), and the Director of the Office of Evidence-based Learning (Dr. Delia Lang). The questionnaire was then transferred to an online platform using Survey Monkey due to ease of survey development and ability to export results directly into Excel. To assess the quality (i.e. validity and reliability) of the questionnaire, pretesting was conducted prior to the official launch of data collection. The author and thesis committee members conducted the pretesting, allowing them to assess the ease of use of the online tool and whether the data generated was accurate, precise, and expected for the answer choices given. Due to time constraints, pretesting was solely done among the thesis committee members. Additionally, pretesting allowed the author to determine the amount of time needed to complete the online questionnaire, with the goal of duration of 5-10 minutes. This was an important part of the recruitment strategy since it was assumed that faculty were less likely to complete the questionnaire if it was too long.

In-depth Interviews

A 22-question semi-structured in-depth interview (IDI) guide (Appendix III) was created to conduct IDIs among identified key informant research participants. The creation of the guide was informed by the literature and developed prior to the administration of the online questionnaire. Once the survey closed, the author conducted a preliminary review of survey results and the IDI guide was further improved and adapted to address key themes that were identified.

The final interview guide was designed to last about 45 minutes and covered four topic areas: 1) opening questions about demographic information and professional/educational background, 2) details of interprofessional experiences, 3) knowledge, perceptions, and attitudes of IPECP, and 4) final remarks, including recommendations to the HDGH. The IDI guide was reviewed by all three committee members. It was also pretested on a public health colleague, with the main goal of testing appropriate time duration. The IDI guide was reviewed after each interview and edits were made as needed in support of the iterative process of the qualitative component.

Data Collection

The author drafted a participant recruitment email consisting of a brief overview of the special studies project and a link to the online survey. This email was then sent to the HDGH faculty listserv by the department's administrative manager, Ms. Maria Sullivan, on behalf of Dr. Usha Ramakrishnan, Chair of the HDGH. The survey opened on November 19, 2019 and closed on December 6, 2019 at 11:59pm. Email reminders were sent to the listserv one week after the release of the online questionnaire and two days before it closed.

A total of 16 faculty members completed the online questionnaire. A statement of consent was provided on the first page of the questionnaire before the participants could begin. The average time to complete the questionnaire was six minutes. At the end of the online questionnaire (Section C), participants were given the option to volunteer for a possible follow-up key informant interview. If the respondent selected "Yes" to be considered for an interview, he/she was redirected to a separate questionnaire page and prompted to fill in his/her information to be contacted for an interview in the near future. The respondents were redirected to a separate form so that their contact information would not be directly linked to their online questionnaire responses, thus protecting

their anonymity. Half of the participants (n=8) opted-in to be considered for the key informant interviews; however, only four forms were completed.

All interviews were audio recorded with permission of the participants and lasted between 35 to 64 minutes. The IDI guides were printed and the author took handwritten notes during each interview. The author conducted all of the interviews. A total of five interviews (male=2 and female=3) were conducted between December 31, 2019 and February 6, 2020. All interviews were scheduled via email and conducted in the offices of the participants per their request. Of the four faculty members that originally opted-in to be interviewed, only three were available for scheduling. One of these individuals recommended the final two interviewees, neither of whom had completed the questionnaire.

<u>Data Management and Analysis</u>

The online questionnaire results were kept on a password protected Survey Monkey account that only the author had access to. IP addresses were not tracked on Survey Monkey. The author was also given de-identified demographic data of all HDGH faculty (n=156) in a Microsoft Excel document to compare to data generated from the study. Descriptive analyses were performed on Section A of the online questionnaire and the dataset from the HDGH using SAS software. These datasets were also uploaded to Dedoose to aid in mixed-methods analyses. Both datasets were thoroughly reviewed and cleaned (i.e. missing and implausible values, skip patterns, other-specify, open-ended questions) before they were analyzed in SAS and Dedoose. Section B of the online questionnaire was analyzed using Tableau, an online data visualization tool.

All interviews were recorded via the author's password protected cellphone and iPad (as a back-up), immediately uploaded to the author's password protected personal laptop upon completion of the interviews, and then deleted from the author's cellphone and iPad. The author

is the sole user of the laptop and log-in/password information was not shared with the thesis chair, thesis committee, or any other individuals. The interviews were transcribed verbatim and de-identified in Microsoft Word. The de-identified transcripts were then coded using Dedoose. To aid in the objectivity of the coding process, a classmate was solicited to code one de-identified transcript (inter-coder agreement).

Inductive themes were generated from the codes using Grounded Theory methodology (Hennink, Hutter, & Bailey, 2011). All data analysis was completed by the author, with the supervision and in consultation with the thesis chair and committee members. In this regard, only the de-identified transcripts were shared. A codebook was developed highlighting the major themes and demonstrative quotes from the transcripts (Appendix IV).

Ethical Considerations

The Non-Human Subjects Research Determination Electronic Form was completed on July 30, 2019. IRB approval was not needed for this special studies project. It was considered non-research as it is an assessment of a process or approach that is not meant to be generalizable.

Limitations and Delimitations

A number of weaknesses were inherent in the study design and methodology. Since randomness was not utilized in selecting participants for the online survey, there was a possibility that the sample was not representative of HDGH faculty. It was not possible to estimate sampling error or bias given that convenience sampling was the only method of faculty recruitment for the online survey. Only half of HDGH faculty (n=156) were included on the faculty listserv (n=89) and it was possible that this missing half of the population (e.g. adjunct and jointly appointed faculty) could have differing views and experiences of IPECP than primary faculty. Additionally, the sample size (n=16) was very small in relation to the total number of faculty on the HDGH

faculty listserv (response rate of 18%). A likely contributor to this was the time of the year in which the online survey was released. Due to previous delays, the online questionnaire was launched just a few days before the Thanksgiving break. This was also a time of the year when faculty are busy preparing final exams and submitting final grades.

As stated previously, eight questionnaire respondents selected "Yes" to be contacted for the follow-up interview, but only four people left their contact information. It was unclear whether there was a malfunction in the online system with capturing this data or the respondents simply decided not to participate. Two of the interviewees were recommended by one particular individual which may have introduced bias, given their prior relationship and similar area of expertise. Additionally, the 6th interviewee that was contacted but not available in time for consideration was a male. His interview would have made the number of males and females even.

Finally, considering that the study was only conducted among faculty of the HDGH, efforts to better facilitate IPECP can only be applied to this department. RSPH would need to expand this study to the remaining academic departments in order to get a more accurate account of faculty's experiences, understanding, and impressions of IPECP before school-wide recommendations and changes can be made. However, while not generalizable, the data may still be transferable enough to inform further study by RSPH, especially since the topic of IPECP among public health faculty has not been previously explored.

RESULTS

Of the 156 HDGH faculty, 56% were males and 44% were females. Mean age was 55.97 years. Mean years of employment at Emory University was 13.34 years, with 51% of primary faculty (n=45) in research track positions, 20% in tenure track positions, and 29% with tenure. The majority of faculty members identified as White (69.23%), 13.46% Asian, 8.33% Black/African American, and 8.33% Hispanic/Latina (Table 3). In comparison, 62.5% of the assessment's online survey participants (n=16) were female and 37.5% were male. The majority of participants (n=9) were in the 36-50 age category and had less than five years of experience in their current positions (n=7). Academic track positions and ethnicity data were not collected for study participants.

Table 3: Demographic data of HDGH faculty compared to online questionnaire respondents

	Hubert Department of Global Health Faculty n = 156 (%)		Online Questionnaire Respondents n = 16 (%)	
Gender	Male	87 (56)	Male	6 (37.5)
	Female	69 (44)	Female	10 (62.5)
Age	Mean	55.97 years	21-35	2 (12.5)
	SD	13.26 years	36-50	9 (56.25)
	Range	25-97 years	51-65	3 (18.75)
			66-80	2 (12.5)
			80 and over	0
Ethnic Group	Asian	21 (13.46)	Data not collected	
	White	108 (69.23)		
	Hispanic	13 (8.33)		
	Black	13 (8.33)		
	Not specified	1 (0.64)		
Years of Employment	Mean	13.34 years	≤ 5 years	7 (43.75)
	SD	8.89 years	6-10 years	4 (25)
	Range	0.5-42.5 years	11-15 years	3 (18.75)
			16-20 years	1 (6.25)
			> 20 years	1 (6.25)

The online questionnaire participants demonstrated a wide array of collaborative academic and professional backgrounds (Table 4). They represented four academic areas of study (applied science, humanities, natural science, and social science) and nine disciplinary backgrounds. Fourteen identified their primary appointment in the RSPH and two in the Emory University

School of Medicine (SOM). Seven participants had joint/secondary appointments within RSPH and just over half had appointments in other schools and programs at Emory University. Faculty members' current collaborative affiliations outside Emory University spanned six different countries in various settings such as universities and national public health organizations[3]. In addition to public health, they reported collaborations with over 15 disciplines throughout their academic and professional careers.

Table 4: Academic and professional backgrounds of online questionnaire respondents

Variable	n (%)	Variable	n (%)
General academic area & Discipline		**Primary Department at RSPH**	
Applied Science: Business, Engineering & Technology, Medicine & Health	10 (62.5)	Hubert Department of Global Health	16 (100)
Humanities: Theology	1 (6.25)	**Joint or Secondary Appointment at RSPH**	
Natural Science: Biology	1(6.25)	No	9 (56.25)
Social Science: Economics, Ethics, Demography, Psychology	4 (25)	Yes	7 (43.25)
Primary Appointment at Emory		Environmental Health	1
Rollins School of Public Health	14 (87.5)	Epidemiology	6
School of Medicine	2 (12.5)	Health Policy and Management	1
Joint or Secondary Appointment at Emory		**Type of Appointment**	
No	7 (43.75)	Full-time	13 (81.25)
Yes	9 (56.25)	Jointly/Secondarily Appointed	2 (12.5)
Candler School of Theology	1	Post-doctorate	1 (6.25)
Center for Ethics	1	**Experience with ICP**	
Emory College of Arts and Sciences	2	No	2 (12.5)
Emory Healthcare	1	Yes	12 (75)
Emory University School of Medicine	3	Unsure	2 (12.5)
Laney Graduate School	2	**Disciplines Collaborated With**	
Non-Emory Affiliations		No response	4 (25)
No	7 (43.75)	Anthropology, Biology, Business, Computer science, Economics, Engineering & Technology, Government, Human geography, Performing & Visual arts, History, Language & Literature, Law/philosophy, Medicine & Health, Political science, Psychology, Sociology, Social work, Statistics, Theology	12 (75)

Yes
   Geographic location of international affiliations: Belgium, Canada, India, Kenya, Mexico, South Africa
   Geographic location of affiliations in the United States: California, Georgia, Pennsylvania, Washington
	9 (56.25)		

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[3] Considering the small sample of faculty members who completed the survey, the exact names of collaborative affiliations were replaced with the respective geographic location in order to maintain anonymity.

Among interview participants (n=5), the average length of time at Emory University was 6.1 years with a range of 1.5-12 years. All were full-time faculty except one post-doctoral fellow. Of the full-time faculty members, two were in research track positions, one in tenure track position, and one with tenure; all participants in research track positions were women.

Four core themes emerged from the data: *scope and knowledge of interprofessional and cross-disciplinary collaborations*, *key aspects of successful collaborations*, *power dynamics*, and *culture of academic public health* (Appendix IV). Each core theme is further described with relevant data from the online questionnaire Likert scale results (Figure 3) and qualitative data from the in-depth interviews.

Scope and Knowledge of Interprofessional and Cross-disciplinary Collaborations

In regard to faculty members' general thoughts of IPECP, the majority of online questionnaire participants had favorable viewpoints. Of note, all participants agreed that public health practitioners should cooperate with other professionals and seek the help of other professionals when working with complex populations. Additionally, all participants agreed that interprofessional practice ultimately results in more effective public health interventions. When interviewees were asked about the purpose of interprofessional collaborations, the role of IPCP in achieving collective team goals clearly emerged.

> […] my collaborators include people from industry. My collaborators include also the policy people…also nutritionists. Um. So, for me interprofessional [collaboration] is the essential way…in which you really get work done. I imagine it's rare that people…really only stay within one track. Like, you know, even within a clinical setting. It's not *just* the nurse. It's not *just* the physician. It's not *just* the person who, um, does your laboratory test, you know. All of these people have to work together for the—to meet the goal, in which case—that case, making a patient healthy… (P03, female)

Figure 3: Knowledge, Perceptions, and Attitudes Related to Interprofessional Education and Collaborative Practice
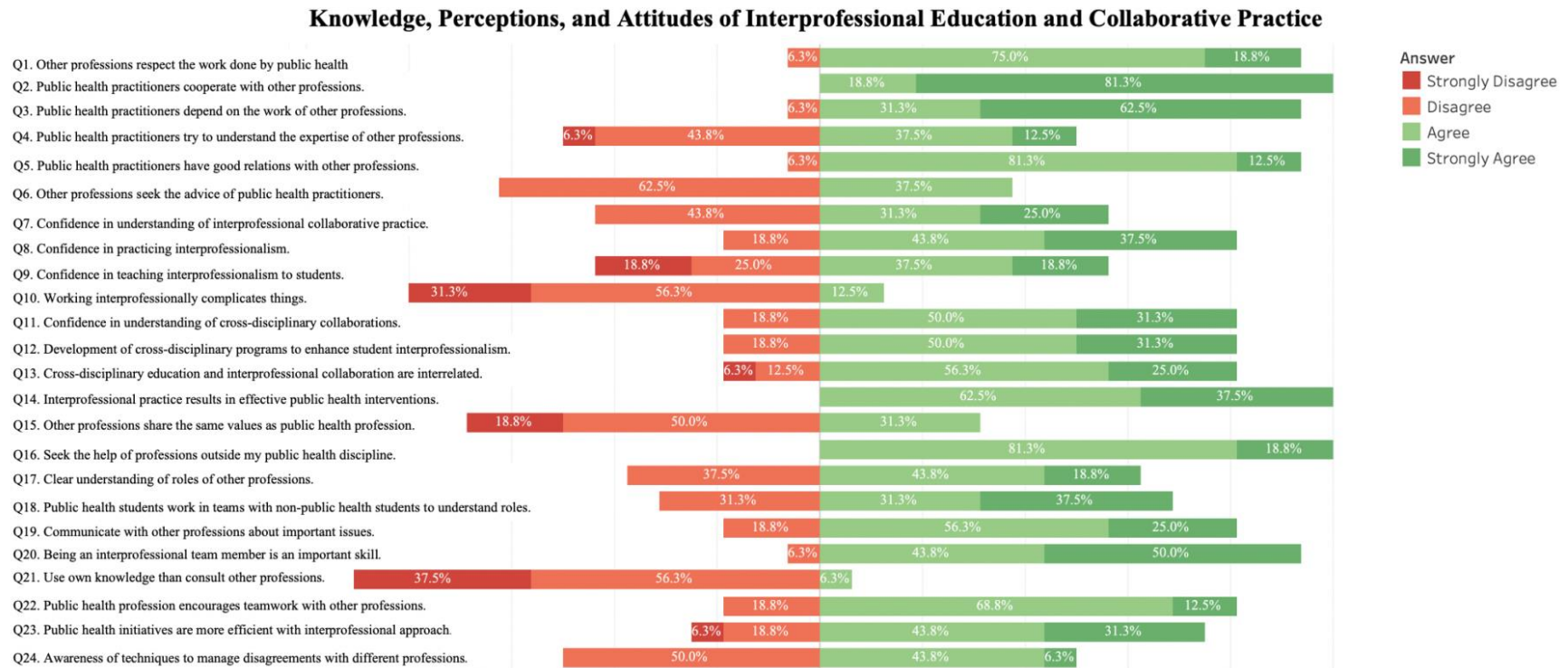
Divergent stacked bar chart demonstrating the Likert scale data from "Section B: Knowledge, Perceptions, and Attitudes Related to Interprofessional Education and Collaborative Practice" of the online questionnaire. (Corresponding questions paraphrased in chart. Refer to Appendix II for full questions.

When describing their public health activities, interviewees were noted to work with a range of 3 to 8 different disciplines on any given collaboration. One participant expanded further on this notion that goals cannot be achieved in a siloed fashion.

> I personally think that it's a—it's a very…ah…good way to do scientific inquiry. Um…if you do it all by yourself, I think you're bound to miss something because we all have—we're all just like filling different parts of an elephant. Right? (P01, female)

The involvement of specific sectors and local, national, and/or global organizations were also key aspects to public health practice. All of the faculty members interviewed had active professional affiliations with other entities outside of Emory University, especially local and international research and governmental bodies. Additionally, every faculty member endorsed the involvement of anywhere from two to five sectors and/or organizations on any given interprofessional collaboration.

In addition to participating in collaborative practice with other professionals, the inclusion of non-academic stakeholders who were foreseen as the beneficiaries of an intervention or project appeared to be an important piece of the puzzle. One participant shared an experience where parents of children with birth defects were able to share their concerns with a governing body in order to advocate for policies that supported their needs.

> [The beneficiaries] are *strong* advocates. So usually like…we've had, ah…neuroscientists—neurosurgeons come in and say, "I…have to operate on newborns who were born with this… birth defect because in our country—you know, because…*likely* because in our country there isn't this policy that ensures that women get…good folate status early on in conception." And so, they can talk about what these children's lives are like. And in a country like the United States, or in more developed countries—economically developed countries—their lives are going to be pretty okay. Um…but in less developed countries, these children may be purposely neglected…maybe just don't get a chance because there isn't the health system…um, in place to be able to give them all the care that they need. So, in low and middle-income countries[…] *that* is very powerful…to bring in a parent and a child who's been affected by this and for the parent to describe, you know, "This is what my life is like. I need to change the catheter on that baby." Um…you know, "I need to wipe their butt because they can't do it themselves." [...] So…just giving the human face to a problem… um, and them saying, "This is in *my own country*. *I* could contribute to this. I can make this better. In the future, through my actions, there may be fewer babies who are born…with these issues." (P03, female)

Not only did involving community members result in large scale positive change but it also resulted in feelings of pride and empowerment to those individuals.

Despite expressing ideas that non-academic stakeholders deserved "a seat at the table" (P01 and P03, females) and should be regarded as "repositories of valuable knowledge" (P05, male), these ideas were not implemented in faculty members' collaborative public health interventions. Often, non-academic stakeholders were not considered integral members of the research team. When asked why this was the case, certain cultural aspects of public health such as research pressure and egocentrism (themes further defined later) were highlighted.

> I think the structure of academic science very much rewards the individual[…] it *does not* reward[…] people who do community-based participatory research [because that] takes a million years to, like, establish that. By the time you've established that, the grant period is over. You didn't even write a paper. You have nothing to show for it. Why should NIH *waste* money on you the next time? (P01, female)

> […] *in the context* of these interprofessional, interdisciplinary practices—how do, um…how do we *adopt* practices of allowing ourselves to be *informed* by those people in the community? I still think that there's an *evidentiary problem here* and this is kind of one of the areas that we're working on—that…if you go to someone [in the community] and they tell you something…um…we *don't* have good ways of privileging that as having evidentiary value. So, they'll say, "Well we don't know 'cause we haven't done a randomized trial." But some of those insights, um, are…they really are…there's—some of them are *self-evident* once, you know—some of them are non-obvious but self-evident—once you *know them.* You actually *don't* need a randomized trial to know that they're true. Um, and we haven't gotten our minds around that very, very well[…] And the question at an interdisciplinary level should be, "What approaches—what strategies should we be, um, developing and adopting that will allow us to get *better access* to that knowledge *and* will allow us to do the kind of learning that we need, either as individuals, or practices, or organizations, to actually be *responsive* to the insights that we get through those [community] engagements?" *That's* where most of it fails. A big chunk of our work these days is focusing on organizational learning…'cause people talk about stakeholder engagement, they go out, they engage people and then you say, "Okay. What have you learned and how are you using that?" And it's silence. It's like, "Oh! We *engaged them*." And it's like, "Okay. You've delivered your knowledge units and your public health messaging. Um…what insights did you gain from those interactions? How have you utilized that?" And it's like, you know, blank stares—and that's unfair. (P05, male)

One participant further emphasized the presence of this discrepancy in public health practice, noting that non-academic stakeholders had "some voice", albeit not as much as they should. She also felt a "need to learn more [about] how to engage and partner with them." However, when they

were properly engaged and considered active contributors in the creation and implementation of an intervention, their importance and necessity was clearly revealed.

> […] sometimes I feel that we are trying to promote […] *healthy eating* in this community and it turns out that…it's very silly. Because the problem is like…family violence and these women are like struggling with all of this. And I'm here like, "Eat these five vegetables!" […] So, I'm hoping to be able to like—that's part of the idea of empowering them, so they can take over that and also reach other people. Because the few people that we reach…I don't think it's enough. Like it's a *small tip* of an iceberg. So…so *definitely* yeah, it has like—I know they're….um, *essential* and like the reason for *everything*. (P04, female)

Although 81.2% of online questionnaire participants felt confident in their understanding of cross-disciplinary collaborations (multidisciplinarity, interdisciplinarity, and transdisciplinarity), interviewees' responses revealed conflicting degrees of understanding. Only one interviewee accurately defined the three types of cross-disciplinary collaborations. The remaining either felt the terms were interchangeable or simply "confusing" (P03, female). These interviewees also thought they were defining the characteristics of one type of cross-disciplinarity when in reality their definition better described another. At the end of the interview, one participant expressed that he had never thought about the distinct differences between the three terms and that moving forward he should consider "who I work with, how I work with them and how some of that comes together" (P02, male). Furthermore, every faculty member used multidisciplinarity, interdisciplinarity, and transdisciplinarity interchangeably with interprofessional.

Key Aspects of Successful Collaborations

Half of the online survey questions specifically addressed the four core competencies of IPECP (values/ethics, roles/responsibilities, communication, and teams/teamwork). Over 93% of online questionnaire participants believed that being able to work as an interprofessional team member was an important skill in the public health profession. Furthermore, 81.25% of participants felt confident in their ability to easily communicate with non-public health professionals about important issues. Despite this, 50% of the participants were unaware of

techniques that can be used to constructively manage disagreements that may occur within interprofessional teams. There was also a gap in understanding the roles of non-public health professionals with whom online questionnaire participants interacted with on a regular basis.

Communication and Roles/Responsibilities

When asked to describe experiences where interprofessional collaborations were successful, faculty members noted characteristics that largely revolved around the subtheme of building "social capital" within a team. They were unable to endorse specific conflict resolution techniques they have used and/or were familiar with, but they noted basic communication and interpersonal skills as their primary methods for resolving conflict. Clear communication of expectations related to research processes, task assignments, and overall goals at the beginning of a collaboration were key to abating issues related to conflict and understanding team member roles.

> I mean a lot of it was just a lot of…kind of *upfront* discussion…you know, really sort of laying out—I mean, we created, you know, kind of summary documents for study; provided that to people as we were going through to try to introduce some of that…um, and you know, just really had a lot of discussion about, you know, "These are the things that we're looking to do," you know. "Are they feasible? Are they something that you can help us with? You know…do they align with your goals?"[...] You know, letting them know where we're at with the process, you know…even as we go through data analysis and manuscripts, making sure that everybody is aware of what's coming out of all of that. (P02, male)

This participant also attributed the use of "soft skills", which often were not adequately addressed in public health education, as the reason why most of his interprofessional collaborations have gone well. Specifically, he credited professional mentors from early in his public health career that influenced him to utilize soft skills when working collaboratively in diverse teams.

> I mean I *hate* the word *soft skills*, but some of those things I think sometimes get deprioritized a little bit in mentorship…um, but I've been lucky enough to have, you know, mentors who saw the value of that [how to work best in interprofessional teams] and have really, you know, encouraged kind of best practices around that. So, that to *me* has made it easier to work in these very collaborative teams across disciplines[...] whether it be, you know, within academic public health, or the community, or how we interact there…um, you know, to do that the most effective way possible. (P02, male)

Teams and Teamwork and Values/Ethics

Fourteen of sixteen online questionnaire participants agreed that in order to promote the best interest of the beneficiaries of a public health intervention, public health professionals should not rely solely on their own judgment. Instead, they should consult their colleagues in other disciplines to ensure the most effective outcomes.

> [...] if you look at, um…care teams, you know, where—I think they might be a good example of interdisciplinary practice—where you may have a nurse practitioner…maybe the nurse practitioner is the front end, right? So, he sees the patient first and there's, you know, it has *really* high level of competency around a whole bunch of areas. But then says, "You know…I'm a little anxious about this one dimension that I don't feel confident"—passes it off to the attending physician and then she looks at it and says, "Good call. I think this could be a leukemia or something and we got to investigate that deeply." (P05, male)

During the interviews, faculty members further supported this statement and expressed that humility was paramount to facilitating healthy collaborative practice. Across the board, faculty members expressed that practicing humility ultimately meant their expertise in public health may not be sufficient to solve a problem. They noted the importance of having "self-awareness of [their] limitations and skills" (P03, female) and surrendering their ways of discipline-specific training and thinking in order to "[confront] complexity together" (P05, male). Embracing humility ultimately resulted in developing trust in and respect for team members' expertise and feedback.

> I recognize that, you know, as much as I'd *like* to think that I know everything*, I don't* [laughs]. Um…you know, and…if I try to do everything on my own, I'm probably going to mess…*a lot of it up*. Um…you know, so I—I would rather, you know, spread more of those efforts across these larger teams to make sure that things are being done…correctly. Because, you know, just—I'm one person. I have my perspectives. And I even know that *my* perspectives have to get checked sometimes. Um, and having people with those different…*mindsets* I think really helps, um…you know, helps balance and improve the effectiveness of the work that we do. (P02, male)

When humility, trust, and mutual respect were lacking in interprofessional teams, faculty members did not feel valued.

> Well…I think with like physicians it's *always*…a challenge [feeling valued in an interprofessional collaboration] . Like you are always having to *prove* that…like you *understand* health and that you have a broader perspective in some parts. And…um…so I think *that* has been some of the

struggle[...] You'll have to *prove* yourself…um, so they know that you are in—at a similar, um, level. (P04, female)

Finally, when asked about their motivations for working in interprofessional teams, every faculty member further accentuated the point that public health practice and interventions cannot be done without the expertise of other professions. As life-long learners, few even noted the shear "fun" in being able to work with and learn from their peers.

> Um, and honestly, it's a little—especially when I started both in my previous job for /intervention/ and then this job, um…it's really exciting at the beginning—the huge learning curve…learning so much. I'm learning from people from other fields who have different terminology and different ways of thinking—that I definitely really enjoy. And even though I'm eight years into this work, there's still, you know—I'll go to a conference and I may have heard that person speak many times before but I still get gems out of what they say. So, um… it's very exciting to learn something new. (P03, female)

Likewise, team members need to "be excited", "be genuinely invested", and actually "want to be there" (P01, female).

Power Dynamics

Power dynamics were not addressed in the online questionnaire. It was largely an inductive core theme that emerged from the interviews and seemed to be heavily influenced by the concept of intersectionality within social and professional constructs. A surprising subtheme within this category was the *intersectionality between gender and collaborative practice*. Of note, two of the female faculty members expressed these feelings without probing from the interviewer. None of the male faculty members mentioned gender relations. One female participant reflected on her personal experiences of gender-based stereotypes consequently defining roles on a collaborative team.

> [...] I don't know if this is really true, it's just my perception, is that interdisciplinary work is like a feminine thing…that women are better at talking, and women are better at working with other people, and like making compromises, and… there is this kind of like stereotype about women being like better at that kind of thing. I've experienced this a couple of times in academic public health research where…ah…there will be, like, a high-power, like, male who will be like, "Well, like, that's great, like, that they're doing that work. Like, I just don't do that work." (P01, female)

The same two female faculty members also expressed how social and cultural aspects of being male or female impact a person's degree of credibility and/or ability to work in certain positions or settings.

> I think that's just how things are, right? The older generation…um, of professionals are mostly men and a few women who have been able to work under that system and who probably have already internalized some of that [men predominantly holding positions of power]. Like they think, "The rules are the rules," and it's hard for them to change that. So…um…and it's interesting how…like in Rollins, for example, it's like…the students are mostly women, right? The [laughs] young faculty is... mostly women. And […] as you go up the ranks, it's harder to find, um, women. (P04, female)

Hierarchy, the other major subtheme, was primarily revealed through the code "credibility and acknowledgement", which faculty members described as the reputation behind a person's ability to be believable and influential that is mainly fueled by gender, expertise, money, resources, and accolades. Three of the interviewees (two female and one male) shared how their lack of credibility, especially in the early years of their public health careers, resulted in negative experiences when working with other professions, sectors, and/or organizations. One participant recounted a shocking story that unfortunately happened to her on more than one occasion.

> So, there have definitely been times where people have taken my ideas and put them into their own documents. And so, there's a part of me that's a little bit *flattered* that they thought it was good enough to just pretty much steal it. [...] But there is a little bit of that kind of…from the *professional researcher* perspective of, 'It would have been great if someone had given me *credit* for this idea that they went on to…put out.' So…again, I'm not sure—in the end I think the ideas were valued. They may not have been in a—they didn't…value *my name* necessarily being attached to those ideas. (P03, female)

Of note, the lone post-doctoral fellow interviewee, who was younger in her career compared to the other faculty members, referenced the credibility code almost three times as much as any other participant. Additionally, although the issue of credibility was mentioned among both men and women, the code was applied more among the women (seventeen times) compared to the men (six times).

<u>Culture of Academic Public Health</u>

The culture of academic public health was not addressed in the online questionnaire but evolved into a very dynamic and complex inductive core theme which was further divided into three subthemes: *education and training, reward structure and logistical considerations in research, and discipline-specific beliefs and practices*. It was the most coded core theme and codes within the subthemes largely overlapped and/or built off each other. Overwhelmingly, this core theme revealed how the academic, research, and discipline-specific practices of public health actually dissuade interprofessional and cross-disciplinary collaborations. This discordance between what is believed to be integral components of public health practice versus what is actually done, or "lip-service," (P01, female), was summarized in one remark.

> …And I think that we…*love* the terms [multidisciplinary, interdisciplinary, transdisciplinary] because they're, ah, you know…they're *aspirational*…and I think we *rarely* accomplish them. (P05, male)

Education and Training

In relation to academics, 81.75% of online questionnaire participants believed there was a link between IPE and IPCP and that academic institutions should develop cross-disciplinary educational programs to enhance collaborative practice. A lesser amount (68.75%) felt that all public health students should have experience working in teams with non-public health students during their formal education in order to better understand their respective expertise. When asked about their knowledge of the WHSC Strategic Plan for IPECP, none of the participants were aware that the initiative existed; although when asked about the ITTD, most assumed that the two were connected in some way.

Three interviewees were familiar with the annual ITTD, one of whom recently served as a facilitator in the Fall 2019 event. In his opinion, the ITTD was "*almost* there" in terms of what is needed for IPE to yield future IPCP; however, he noted that the lack of time allotted and the

"independent" structure of the case scenarios ultimately made achieving the goals of the event very difficult.

> …it seemed like for the amount of time that we got to spend with all the students and the amount of things that they were asking us to do in that short period of time……just the administrative burden of introducing a *new scenario* and doing some of that, rather than finding ways to just sort of *build naturally* off of something, um…I think made it a little *difficult*. Um, and that was even some of the feedback that we got from the students that we worked with…that, you know, it didn't…you know—if we're supposed to be talking about interprofessional collaboration and we have two scenarios that we're working on and one is this like very sort of *high-level* public health piece and the other is this very *clinical* piece…um, but they're independent scenarios that we're working through, then how do we really find a way to do sort of…*interprofessional work*. You know, and [laughs]…so that, you know, that's why I'm saying like, you know, I see the concepts— I see what it's going for. Um. I think that…it could be very, very useful…um, but I think as it's currently structured it needs to be…tweaked a little bit to really fully embrace what's needed to address those needs. (P02, male)

Another participant who was familiar with ITTD but had no formal connection to the event also expressed the difficulties of exposing public health students to the "full *breath* of professionals who work in public health" (P03, female). When asked how she would better integrate this information into required core courses, she revealed that the time and effort required for research work as well as lack of appropriate salary compensation ultimately hindered faculty members from devoting their efforts toward incorporating IPE in the classroom.

> I think the reality is that people who teach at Emory—unless they're paid full-time to teach—they are *stretched*…because they also have to bring in money for their research[…] there are *a lot* of resources on campus to help you *plan* your courses, um…but you need *time* to do that. And so, time…is money and…if the university *pays* that time—*great*. But if you're spending your research time doing *teaching* then you'll get upset and you don't want to do that. So, I think *the system* is really screwed up in a way—what we value—that we don't value education as much as we value research. So, I think that makes it *harder* for people who are *younger* in their careers 'cause they *have* to get tenure or they *have* to get that next grant. Makes it harder for more established, um, people, um, if they're running really big labs or research programs because they *need* to keep on bringing in money 'cause they now have a—people's livelihoods depend on them. So, I just think it's a system that's really difficult to, um…to…value any innovations in [interprofessional] education…especially if it takes time. And they're all going to take time if it's something different and new. (P03, female)

Reward Structure and Logistical Considerations in Research

Faculty members' participation in interprofessional collaborations was heavily influenced by the demands of academic research. In general, they noted lack of time and administrative

support as barriers. Lack of availability to participate in interprofessional collaborations was largely due to having "other priorities" (P04, female) and conflicting work and/or traveling schedules. The need for more time was also directly related to administrative support in terms of paperwork and communicating amongst various individuals and organizations. One participant felt that the more he could "delegate" and "get off [his] desk" the more effectively he could incorporate interprofessionalism in his daily practice (P05, male). Another participant described her frustrations with current administrative processes related to receiving grant money, specifically that it needed to be more "streamlined" and not require as much close follow-up.

> …administratively…it's just a pain in the butt to—any big organization has a lot of—hiring people just takes weeks. Um…getting a payment, getting a new contract established—like you've gotten money from a donor and you need to set up an account within the University—that takes weeks and tons of emails and phone conversations [...] because we're a big organization at Emory, all the admin takes a long time. (P03, female)

81.25% of online questionnaire participants felt the public health profession encouraged teamwork with non-public health professionals. Despite this, all but one of the faculty members interviewed noted that the current "reward system" in academic public health does not support interprofessional collaborations since priority needs to be given to the individualistic effort to build an academic career. Some of this is influenced by the perceived value and recognition (or lack thereof) brought on by interprofessional practice.

> I…have relatively little faith that…um, *true* interdisciplinary work is, like, sustainable beyond, like, individual projects. With the […] reward structures that are currently in place in academia [focused on] credibility, papers…ah, tenure-track positions in academic institutions…ah, to a lesser extent travel to conferences, being able to represent your work…um, to an even lesser extent, being, like, science-Twitter famous. (P01, female)

Another interviewee expressed a concern with the issue of competitiveness in research and how individuals often do not participate in interprofessional collaborations due to distrust of others and fears that they may try to "steal" their ideas.

> …well, I think the *underlying* fear is that we are in a very *competitive*, um, environment. So, like I mentioned…our salaries depend on the papers that you can write and the grants that you can get.

> And if someone takes…your *idea*, or your *space*, or your *opportunity*, um…and doesn't *include you* then—like it affects *your entire*, um, *life* and way of living. And so, all this…like *competitiveness*. And the fact that everything depends on getting grants and funding, I think it's *not* very conducive to collaborating and being open. (P04, female)

In order to negate these barriers, participants alluded to the fact that when an interprofessional collaboration is proposed for a particular initiative or intervention, it must be mutually beneficial in order for all necessary parties to want to participate. One participant noted that much of the on-going effort to have consistent check-ins and meetings in his collaborations were to ensure that his organization was getting what they needed "in terms of our *publications*, and our future *research*, and our future *grants*" (P02, male). Likewise, another participant expressed how difficult it could be to genuinely want to learn about the expertise of other professionals on a team when there is no perceived benefit to understanding it.

> They [members on the team] all like had very valuable and important perspectives, but it was very, very hard for them to see the overlap[…] for example, I had like…explained, like, what immunogenicity is... like what the regression discontinuity design is. That…wedge would have gotten bigger, but it also takes a lot of effort on their part, and it's not, like, immediately obvious what a direct benefit to them is. And so…they just—they're not selfish people. Like, they are invested in my success, but they ah…it just wasn't like an incentive for them to—to learn that [discipline-specific terminology]. (P01, female)

Finally, money was described as a significant stressor in public health. Participants believed it was a key determinant of whether individuals chose to participate in interprofessional collaborations. Much of this influence was fueled by the financial precarity of research, including pressures to secure promotions and tenure. After sharing he was unaware of the WHSC Strategic Plan for IPECP, one participant quickly followed with this response:

> …my job, you know, if I have to describe it…as a single thing—it's looking for money [...]there's such a…um, a drive now to go out and find money…that I think it's…it really has become a powerful shaping influence on the way that we are even able to pay attention to things in our environment[...] So, even questions like this, "Do you know about that [WHSC Strategic Plan for IPECP]?"—a part of me thinks, "It would be awesome to know about that—to be able to go and hang out and hear talk about that; to hear more about how people were making sense of that; to read that strategic plan and think for a while about what the implications are." It's not even possible anymore. (P05, male)

Another participant expressed that although the goal of public health was to "[improve] the health and well-being of *everyone*", funding streams were often not allocated to areas of greatest need and impact. As a result, funding tended to "[*guide] you* or [*push] you* into very… *specific*, *narrow* programs and interventions that…you don't really know if they're—if that's what's needed or not." (P04, female). One participant felt this pressure could be alleviated, but only if more funding promoted the use of interprofessional teams to solve public health problems (P05, male).

Discipline-specific Beliefs and Practices

Despite the general notion that interprofessional collaborations were necessary for public health practice, it appeared that effective outcomes do not always coincide with efficiency as 25% of online questionnaire participants believed an interprofessional approach can decrease the efficient implementation of public health initiatives. Similarly, 12.5% felt working in an interprofessional manner unnecessarily complicated things most of the time.

When faculty members were asked about common pitfalls in interprofessional collaborations, the general lack of commonality across disciplinary lines in regard to terminology/language, expertise, and perspectives proved difficult. Two faculty members discussed issues with understanding discipline-specific jargon that either resulted in hours of inconsequential discussion or simply giving up on the process of learning all together. Another interviewee shared an experience where she inappropriately minimized the perspective and expertise of another discipline during a public health intervention because she was unable to understand it.

A key pitfall in interprofessional collaborations that interviewees identified was the often siloed practice of research. In general, the faculty members described various constructs that kept professionals of different disciplines isolated and less likely to work interprofessionally. One

participant noted that siloes were the result of "distrust" when research grants and projects are at stake (P03, female). Another participant felt that silos promoted a false sense of expertise which ultimately made him/her a more "credible" researcher.

> I think that in academic sciences um…there is like a temptation to think that you're like on your own. Not necessarily in a bad way. We are like *siloed* because that is the thing that allows us to pretend like we are the experts [laughs]…and stuff. So, if like I am the only person who does what I do, then "*I'm* the expert" and *"I'm* special" and *"I* get the Nobel Prize" and "Good job *me"* and, you know…there's like an incentive a little bit to, like, do that. (P01, female)

Faculty members expressed that silos were cyclically linked to egocentrism, which they described as the personal belief or attitude of heightened self-importance when compared to other disciplines, professionals (both within and outside one's discipline), and beneficiaries (e.g., community members). Egocentrism was described as "hubris" (P03, female) and "worldviews" (P05, male) which ultimately discouraged reflexivity and may prevent someone from working effectively in an interprofessional setting.

> Um, you know, if people feel like they're always, you know, they're always correct or they're always *right*, you know, without necessarily a perception around…you know…a willingness to listen or even sort of, you know, vulnerability, for lack of a better term, you know, to sort of let themselves be open to other ideas or other concepts. Um. I think that's one of the biggest issues [that hinders the successful implementation of interprofessional collaborations]. (P02, male)

In regard to worldview, one participant noted the "religious devotion" that disciplines had to their own ways of thinking and doing things. This "we know best—we *must* know best" mentality is so historically and pedagogically engrained from education to professional practice that individuals lose their identity whenever their worldview was challenged. The challenge can essentially be anything that differs from what they knew or thought to be true. Additionally, he expressed that the field of public health is especially fixated on the spread of its own worldview because of the field's historical contributions to disease prevention and control. He used an evolutionary analogy when further explaining this idea.

> Um, disciplines just by their nature have histories. And what characterizes one discipline compared to another is essentially the historical accumulation of ways of thinking about theories, about

> epistemological assumptions, and how they are, um, how they're kind of captured in a body of knowledge and how they're disseminated through that body of knowledge and practices. Um, and so by their nature—it's like a species. By their nature, there *can't* be too much interbreeding for disciplines to stay as disciplines. Right? I think maybe the speciation thing is not a bad analogy. (P05, male)

The other faculty members did not specifically discuss this idea of at least some preservation of disciplinary lines, but they did share that without diverse teams, public health values would not be realized. All participants felt that the achievement of end-goals in public health often involved some degree of interprofessional collaboration. The core aspirational values of public health that were best fulfilled collaboratively included "correcting injustices" and doing "what's best for large groups of people" (P01, female), accomplishing "maintenance and long-term sustainability" in communities (P02, male), and "improving the health and well-being of everyone" (P04, female).

> …within my team, we do a lot of qualitative research to understand perspectives [related to health promotion and receiving health information]…um, and some of the research that we've done, for example, we did within a large mega-church in Metro Atlanta. Um…[sucking teeth] but from my perspective, that's not, you know—the sort of issues around, you know, religion and public health—that's not something that I necessarily have a strength in…but I'm going to pull in people who are, you know, who work in those areas to have them, kind of, within that interdisciplinary team, making sure that we're getting—we're hearing those voices. (P02, male)

DISCUSSION

Overall Perceptions and Attitudes Related to IPECP

This study examined the knowledge, perceptions, and attitudes related to IPECP among HDGH faculty members. Overall, the online questionnaire respondents and in-depth interview participants felt that interprofessional collaborations were often key to accomplishing public health goals. When working with complex populations and problems, the discipline-specific expertise of other professions filled in gaps of knowledge that otherwise would remain unaddressed, often to the detriment of the beneficiaries of a public health intervention or initiative. Public health professionals welcome collaborations, not only for the more obvious benefits of contributing to scientific knowledge, but also for the intellectual enjoyment that accompanies learning new information.

Scope and Knowledge of Interprofessional and Cross-disciplinary Collaborations

According to the WHO definition, IPCP involves the collaboration of health workers from different backgrounds to deliver care to individuals and the communities in which they live (Gilbert et al., 2010); however, it appears that this definition may not adequately describe the collaborative nature of public health practice at the HDGH. Data from this study revealed that many public health initiatives of the HDGH faculty involved collaborations with non-academic stakeholders (e.g. community members), institutions, and entire sectors (industry, governmental bodies, etc.), not just different professions. Additionally, faculty members noted that public health practitioners often collaborate with non-health science professions, not solely "health workers."

The literature reveals similar diversity in public health collaborations, especially in the context of large-scale international interventions (Mickan et al., 2010; Nystrom et al., 2018; Redwood et al., 2016; Ward et al., 2018). The literature also suggests that the current core

competencies of IPECP may not sufficiently describe the extent of collaborations that occur in regard to population health goals (Lutfiyya et al., 2016). As a result, it is difficult to assess the impact that interprofessional collaborations have on population health outcomes.

Anecdotally, a high-level academic administrator of the RSPH noted that the online questionnaire for this project may not be well-received by RSPH faculty because the term "interprofessional collaborative practice" is not commonly used among public health professionals. Ultimately, the formal definition of IPCP appears to miss the mark in terms of highlighting the integral role of non-health science professions, non-academic stakeholders, institutions, and sectors as active members of the team and key contributors to the overall goals of a public health intervention.

This lack of coherence between what IPCP describes and what public health actually entails could explain the lack of clarity about the meaning of cross-disciplinarity among HDGH faculty members. Although the majority of individuals who completed the online survey felt confident in their understanding of the term, those who were interviewed seemed to share conflicting views about the formal definition of cross-disciplinarity and their understanding of the concept. Additionally, all but one of the faculty members interviewed consistently used the terms multidisciplinary, interdisciplinary, and transdisciplinary interchangeably. All interviewees used these terms synonymously with interprofessional education and/or collaborative practice.

This lack of clarity is supported in the literature as numerous sources note chronic discrepancies in the definitions and practical use of the terms multidisciplinary, interdisciplinary, and transdisciplinary (Choi & Pak, 2006; Mahler et al., 2014; Whitfield & Reid, 2004). The literature also notes a gap in understanding the differences between interprofessional collaborations and the types of cross-disciplinary collaborations (Mu & Royeen, 2004; Parse,

2015). Haddara and Lindgard's discovery of the utilitarian and emancipatory discourses within IPCP (2013) may reveal one of many reasons why the conceptualization of interprofessional collaborations differs among individuals of different academic and professional backgrounds. From a utilitarian standpoint, the purpose of interprofessional collaborations is to improve patient care and outcomes. In contrast, the purpose of the emancipatory discourse is more focused on achieving power equalization and shared leadership between different professions. Each discourse predicates differing end goals in relation to the expected outcome of an interprofessional collaboration. As a result, these differences may negatively impact the manner in which different professions think about and interact with one another.

The results of this assessment seem to corroborate the common confusion and disagreement referenced in the literature surrounding the understanding of interprofessional and cross-disciplinary collaborations. From a public health standpoint, it is unclear from the literature whether this lack of understanding has a significant impact on the intent and practice of public health practitioners. Considering the various contexts in which HDGH faculty members described the terms, it appears they may have formed their own working definitions based off their various experiences and the desired end goals of their projects. Overall, it appears there is not enough clarity in the understanding of the characteristics of interprofessional and cross-disciplinary collaborations, how they relate and compare, in what context they should be utilized, and the nature of their implications.
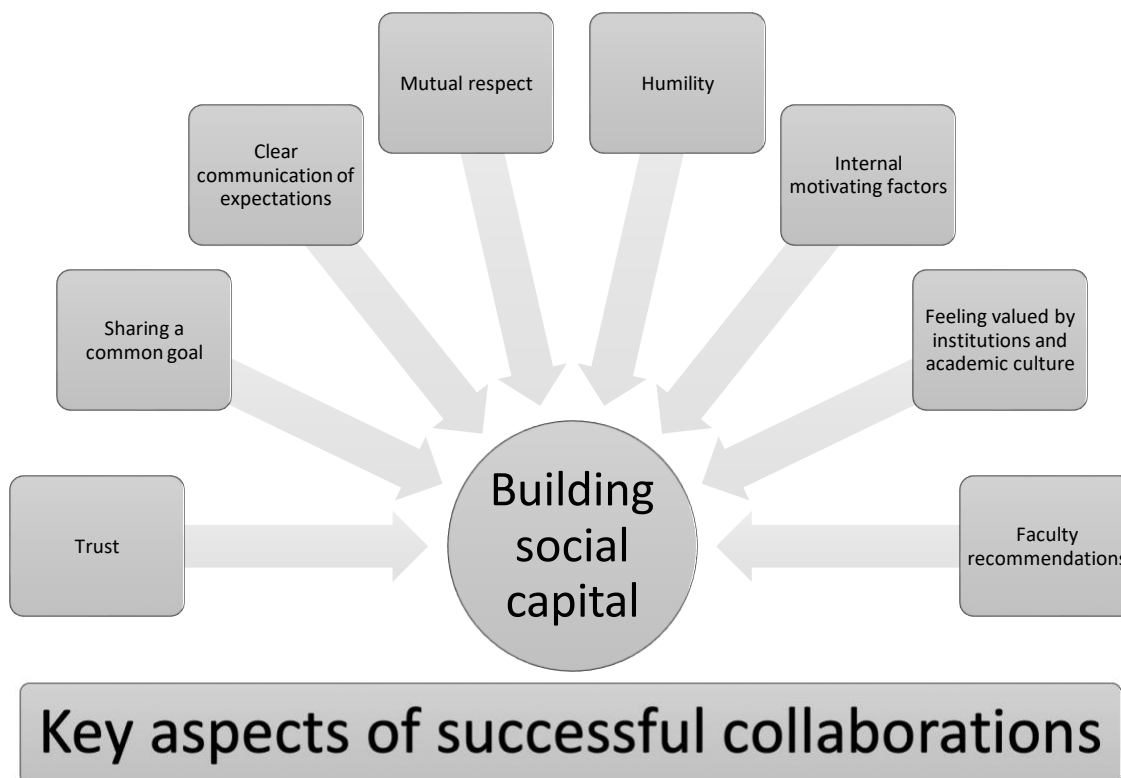
Key Aspects of Successful Collaborations

The online questionnaire responses and in-depth interviews also revealed many similarities to the barriers and facilitators of IPECP evidenced by the literature. HDGH faculty members believed that building social capital was key to successful collaborative practice (Figure 4). Based

on the results of this assessment, social capital may be described as the comradery that develops over time as consistent positive interactions occur on an interprofessional team. Social capital is heavily influenced by consistent and respectful communication. It involves clear discussion about roles/responsibilities, intervention processes, and conflict resolution that ultimately leads to the achievement of overall team goals.

When these things occur, trust and power equalization among team members is steadily cultivated over time. These aspects of healthy team dynamics result in feelings of humility about discipline-specific limitations which ultimately are seen as facilitating mutual respect and successful collaboration among team members of varying backgrounds and expertise. Consequently, HDGH faculty members feel valued on interprofessional teams because their area of expertise is genuinely admired and solicited to meet a need.

Figure 4: Thematic network for "Key aspects of successful collaborations" core theme

Barriers to Successful Collaborations

      RPSH faculty members endorsed that lack of time, administrative support, and money are major barriers to partaking in IPECP initiatives. The competitive nature of academia and concerns about not receiving credit for their research ideas was also heavily referenced. These issues proved influential in keeping faculty members siloed in their academic field. Additionally, HDGH faculty members mentioned various issues related to power imbalances between different disciplines and/or professions that did not necessarily hinder their willingness to participate in IPECP but often produced conflict and made the collaboration less enjoyable. The power differential evidenced in teams with professionals of varying levels of experience also made interprofessional collaborations more difficult for HDGH faculty members, especially when in the earlier stages of their careers. Learners/preprofessional students are significantly affected by this, as noted by the post-doctoral fellow's description of her struggles navigating through the power dynamics of teaching and research.

      None of the faculty members were familiar with the WHSC Strategic Plan on IPECP, which is odd considering how large-scale the initiative has become and WHSC's stated commitment to achieving its mission. The literature highlights that full support and facilitation of IPECP from key-leaders is imperative to motivating individuals who follow those leaders to remain engaged in interprofessional initiatives (IPEC, 2011; Odegard & Strype, 2009). The data generated from this project did not reveal why HDGH faculty members lack knowledge of the WHSC strategic plan, but based on the literature it is possible that it has not been significantly emphasized by RSPH leadership.

Intersectionality of Gender and IPECP

HDGH faculty members who were women mentioned issues concerning gender-based stereotypes and biases that negatively impacted some of their interprofessional collaborations. Overall, they expressed their dismay with the lack of women in leadership roles and the limited and/or stereotyped scope of responsibilities that women may have on a team. The intersectionality of gender and interprofessional collaborations was not thoroughly addressed in the initial literature review. Upon further review of the literature, numerous papers have been published within the past five years that reveal the pervasiveness of this issue.

Whitworth (2016) noted the discrepancy between the number of women employed in the health sciences and the underrepresentation of women in senior positions. Another study conducted at Emory University describing female faculty members' perceptions of gender inequity and discrimination further noted the disproportionate number of women in clinical research-track positions compared to tenure-track positions and other senior roles (Evans, Sales, Krause, & Del Rio, 2019). Female faculty members of Emory University also believed issues surrounding merit and power dynamics were often quite gendered and negatively impacted women.

In a mixed-methods study conducted by Gaughan and Bozeman (2016), team dynamics related to gender were heavily reliant on hierarchy and revealed that men in senior roles were competitive, intimidating, and had trouble accepting suggestions from junior team members. In contrast, Migotto et. al (2019) found that attitudes of collaboration and cooperation increased when female physicians led an interprofessional team compared to male physicians. Although the literature does support that women appear to be more receptive to teamwork (Hojat et al., 2015; Odegard & Strype, 2009), this inadvertently has caused barriers to collaborations. Namely because

women's stereotyped gender roles tend to result in less leadership opportunities (Carnes, Bartels, Kaatz, & Kolehmainen, 2015; Migotto et al., 2019).

The results of this assessment seem to support the findings in the literature related to the power imbalances between men and women on collaborative teams and the lack of women in leadership roles. Additionally, female HDGH faculty members appear to be negatively impacted by stereotypical gender roles as it effects their perceived credibility and the extent of their responsibilities on research projects. The study conducted by Evans et al. (2019) at Emory University thoroughly highlighted the presence of gender inequity in academia and could serve as a foundation for further research on the subject among female faculty members specific to academic public health.

The Culture of Academic Public Health…to the Detriment of IPECP?

The data also revealed numerous barriers to participating in interprofessional collaborations that are specific to public health practice, namely in relation to public health culture. These barriers were not evidenced in the literature. Across the board, HDGH faculty members endorsed the primary goal of public health is to ensure the health and well-being of all people. This is accomplished when every potential stakeholder (e.g. other professions, non-academic stakeholders, institutions, and public/private sectors) is actively involved in a public health initiative from the beginning. If a stakeholder is silenced, passively present, or all together physically absent from the discussion, gaps in knowledge and failure to effectively implement the initiative are bound to occur. Additionally, the "soft skills" that are paramount to successful collaborations must be leveraged consistently.

According to the interviewees of this study, the desire and ability to contribute to science in a way that improves the lives of others is a good thing—it is the crux of public health. Despite

this belief, faculty members surprisingly shared that collaborations rarely unfold in this manner. As they proceeded to elaborate on the various barriers surrounding time, money, administrative support, silos, and power dynamics that make facilitating IPECP so difficult, the discordance between public health theory and the practical application of collaborative practice became more evident. Notably, HDGH faculty members reported numerous conflicting ideas between what they felt was needed for a successful interprofessional collaboration and the ways in which the culture of public health largely dissuaded that. Much of this revolves around the research culture of public health and how it hinders innovation in collaborations with other disciplines.

Scientific research is a key component of public health practice. According to HDGH faculty members, there is a high expectation to obtain grants, perform robust research, share the outcomes in the form of presentations and publications, garner the benefits of prestige and recognition, and then move on to the next project. While in clinical research track positions, faculty members noted the immense pressure to find money to keep their job. These research track faculty members also expressed the perception that tenure track provides higher status and power compared to research track. In the case of tenure track, once tenure has been achieved the pressure to obtain grants is somewhat alleviated due to more job security. However, in either track, the expectant urgency to continue to contribute to public health research remains and often at the cost of working in teams.

When it gets down to the point of keeping up with public health academic culture, IPECP is often at stake because the current "reward system" is not conducive for collaborative practice. HDGH faculty members defined this "reward system" as any external motivators that primarily benefit them as individuals—grants, tenure/promotion, and accolades. This ultimately boosts their credibility as public health professionals and the overall sphere of influence of the public health

profession. From there, the egocentrism that informs discipline-specific "worldviews" is established, which furthers the gap between theory and practice. These isolating characteristics of public health's academic culture are in direct conflict with the internal motivators (e.g. intellectual exploration, learning from others, etc.) and overall goals of public health that faculty members expressed are needed to influence their involvement in interprofessional collaborations.

Mutual exchange, a concept that also emerged from the culture of research subtheme, may serve as a buffer between these conflicting entities of public health practice. When there is mutual exchange of information and resources within an interprofessional team, there is ultimately a net gain of benefits. This occurs because the relationship is reciprocal—something is given in return for something else. Nothing is lost. Furthermore, when individuals on a team have the same amount of risks at stake, they are more likely to dedicate the time and effort needed to understand the roles/responsibilities, values, and discipline-specific terminology of other members on the team, characteristics that otherwise accentuate the lack of commonality across disciplinary lines.

In the often demanding and highly competitive environment of academia, where schedules conflict and time is limited, HDGH faculty members expressed the need for some type of external incentive in order to collaborate with intention. This understanding among faculty about mutual exchange in IPECP is not limited to other professionals but also involves non-academic stakeholders, institutions, and sectors. Alternatively, HDGH faculty also noted that if the politics of public health culture could be pushed aside and funding in support of interprofessional collaborations was readily available, more time could be spent practicing the "fundamentals" of public health.

It is unclear whether this conflict between theory and practice in regard to IPECP occurs in other professions. Public health academic culture is unique compared to other professions of the

health sciences in that the bulk of public health professionals in academia are involved in research. The desire for external incentives to partake in interprofessional collaborations highlights the typically precarious financial situation of researchers. In the attempt to establish some form of professional security, it appears the pressure to maintain the research culture of public health will continue to perpetuate the current "reward system" of money, tenure and prestige, to the detriment of IPECP.

CONCLUSION

Unfortunately, some of the barriers to successful interprofessional collaborations expressed by HDGH faculty members cannot be changed without a complete overhaul of public health academic culture. Specifically, the reward system of external incentives is a significant component of public health practice that may impact the extent in which HDGH faculty members participate in interprofessional collaborations. Based on the results of this assessment, the external incentives of achieving tenure/promotion and grants often influence HDGH faculty members to remain siloed. Interprofessional collaborations are difficult, time consuming, and may not garner the acknowledgement and recognition often sought after for career advancement in public health academia. This pressure to focus on individual rather than collective goals ultimately perpetuates the cycle of wanting to be involved in interprofessional collaborations but not having adequate logistical and institutional support to do so.

Considering the necessity of research in public health academic culture, this issue of external incentives reinforcing silos which ultimately hinders participation in interprofessional collaborations is not likely to disappear anytime soon, if at all. To confront this reality, it will take more creative strategies to intentionally integrate collaborations into daily public health practice. The end goal will not only be to achieve the goals of an intervention but also to facilitate processes that are efficient enough for professionals from different disciplines to actively seek to collaborate.

HDGH faculty members who participated in the interviews shared a few suggestions to improve their ability to incorporate interprofessionalism in their daily practice. To begin with, some faculty members expressed the desire to learn more about IPECP, how it differs and overlaps with cross-disciplinary collaborations, and the implications for both when preparing to work in diverse teams. One faculty member suggested a training workshop or seminar to provide an

overview of the topics. The literature reveals that trainings associated with a formal faculty development program are effective in building capacity and competence in IPECP (K. Hager et al., 2016; Moyce et al., 2017; Shrader, Mauldin, Hammad, Mitcham, & Blue, 2015; Silver & Leslie, 2017).

Secondly, HDGH faculty members requested more protected time and opportunities to participate in collaborations. They felt part of this could be achieved by developing more streamlined administrative processes. With more administrative support, they believed they can spend less time on paperwork and following-up on tasks and devote more time to cultivating healthy team dynamics with their team members. Garrido et. al (2019) provided some practical tips to improving administrative support for research teams, such as boosting communication and problem solving skills, contributing to team discussions and decisions, and participating in the onboarding process as much as possible. According to this paper, adequate administrative support may have a significant effect on the productivity of research groups by facilitating a more efficient and effective research environment. Proper administrative support could ultimately benefit the HDGH by instituting a more fluid process to obtain grants, produce higher impact research, and establish greater global visibility for RSPH.

Additionally, one faculty member referenced the Emory Global Health Case Competitions, an annual event where students work together to develop solutions to global health problems (EGHI, 2020b). She suggested that something similar to this competition be developed for all faculty members at Emory University in order to create a space for diverse collaborations.

In terms of public health teaching, one faculty member suggested that the HDGH hire professors only designated for teaching. Considering they would not have any research obligations or pressures, they could devote the necessary time to develop interprofessional curricula that is

innovative and relevant to public health learners. Furthermore, the new involvement of RSPH learners in the ITTD offers a unique chance to promote better cohesion across different academic disciplines within the WHSC. Faculty members expressed the need for more time to facilitate the discussions and the development of case scenarios that better integrated the different disciplines represented.

To achieve these things, the ITTD may need to be expanded to multiple events throughout the course of the academic year as opposed to one single event. Additionally, learners may find more commonality among the different disciplines if the case scenarios are relevant to current events such as the COVID-19 pandemic or racial and social injustices. Because these events are well known from the media and affect everyone in some way, they readily transcend disciplinary lines and may allow more interesting, natural conversation. In a study presenting the results of a one-year faculty development pilot program, Hall and Zierler (2015) discovered that the development of experiential learning opportunities/curricula that fit the local context and consistent mentoring from senior faculty facilitated the development of interprofessional leadership skills in faculty members facilitating IPE activities.

Finally, one participant noted the need for more technological support for interprofessional teams. The goal of this would be to provide a central location for researchers to readily find answers to their questions and to track what other professionals are doing at Emory University. He referenced the Emory Faculty Information on Research, Scholarship, and Teaching (Emory FIRST), an internal database used to "facilitate collaboration between Emory faculty, initiate student mentoring, create a faculty web presence, and establish outside development efforts. The Emory FIRST system contains a range of faculty data including publications, grants, professional and teaching activities information" (Emory Libraries and Information Technology, 2020). It is

unclear whether this particular resource is still available to faculty but in general, a central database where faculty members can log their activities and view the activities of their colleagues may be a good way to encourage collaborations.

In addition to faculty suggestions, there are a few themes that were revealed in the data that may need to be further studied in order to better understand the role of IPECP in public health practice. Given the often diverse teams involved in public health interventions, "interprofessional" collaboration may not be an adequate term to describe public health practice. Efforts should be made to fully describe the scope of public health practice and then apply these findings to establishing a definition that better encompasses the depth of collaborative practice that occurs among public health professionals. Based on the literature review conducted and the data revealed through this study, the WHO definition of IPCP may be adapted in the following way to better describe the diversity in collaborative public health interactions and interventions among HDGH faculty members: *Public health collaborative practice occurs when multiple local, national, and/or global workers from different professional backgrounds or sectors work together with patients, families, communities, and governmental and non-governmental organizations to prevent disease, injury, and disability, eliminate health disparities, and correct injustices.*

Additionally, the intersectionality of gender and IPECP is a relatively new subject in the literature and requires more study that is specific to public health practitioners. Finally, the data in this project revealed that the public health academic culture may have a profound impact on participation in IPECP. A study with a larger sample size and more targeted questions related to public health culture is paramount to further revealing the intricacies of this core theme.

This mixed-methods study assessed the knowledge, perceptions, and attitudes of IPECP among the HDGH faculty members of the RSPH. The data revealed that although HDGH faculty

members have overall positive feelings toward participating in interprofessional collaborations, there is a significant gap in knowledge of the meaning of IPECP and how it differs from cross-disciplinary collaborations. HDGH also faculty expressed similar perceptions of barriers and facilitators of interprofessional collaborations that are also evidenced in the literature, in addition to some nuances specific to public health culture that should be studied further to gain better understanding. Finally, HDGH faculty members' had little knowledge of the WHSC 2018-2022 strategic plan for prioritizing IPECP among the health sciences at Emory University, which could lessen the perceived benefit and impact of WHSC-led collaborative initiatives involving RSPH faculty moving forward.

Public health is a dynamic field that often requires complex, large-scale collaborations in order to achieve its mission to promote health and well-being and prevent disease, injury, and disability. With more research dedicated to the relationship between public health practice and IPECP at Emory University and beyond, public health may serve as a leading model for collaborative practice in the health and social sciences.

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APPENDIX I: EXECUTIVE SUMMARY

<u>Executive Summary</u>

This report is the result of a special studies project to fulfill the graduation requirement for the Emory University Master of Public Health degree and the Master of Medical Science degree for the School of Medicine Physician Assistant (PA) Program. The study was conducted at the Emory University Rollins School of Public Health (RSPH) among faculty of the Hubert Department of Global Health (HDGH). RSPH is one of six academic and professional institutions housed within the Woodruff Health Sciences Center (WHSC) of Emory University. The purpose of the project was to assess the state of interprofessional education and collaborative practice (IPECP) among faculty members of the HDGH in order to highlight areas of success and provide recommendations for improvement in collaborative educational and professional practice initiatives. In order to achieve this goal, three interrelated objectives about the scope, practice, and knowledge of interprofessional collaborations among faculty of the HDGH were developed for the study:

- **Objective 1:** Scope of IPECP: Identify the extent of interprofessional collaborations that are occurring among HDGH faculty within and outside Emory University.

- **Objective 2:** Knowledge of IPECP: Identify the degree to which HDGH faculty understand IPECP in the context of cross-disciplinary collaborations (multi/inter/transdisciplinarity).

- **Objective 3:** Perceptions and Attitudes Related to IPECP: Assess HDGH faculty perceptions of and attitudes toward past, present, and future participation in IPECP initiatives.

Table 1: Differences between Cross-disciplinary and IPCP teams

Differences between multidisciplinary, interdisciplinary and IPCP teams		
Multidisciplinary Team	**Interdisciplinary Teams**	**IPCP Teams**
Hierarchical	Less hierarchical but not equal	No hierarchy or territory; all members are equal
Excludes the patient and family; patients and families are merely recipients of care	More inclusive of the patient and family; patients and families viewed as team members with less authority	Patient and family focused; patient and family are equally powerful team members
Strong leader gathers, synthesizes, disseminates data	Less dependent on a central team leader	No central leader; leadership is shared among team members
Members have limited knowledge of others' disciplines and roles	Members understand each others' disciplines and roles but operate within disciplinary boundaries	Role clarification is a conscious effort; input from other disciplines is intentionally sought
Members are accountable to self	Members are accountable to self and each other	Shared responsibility and accountability by the members of the team as well as the team as a unit
Limited communication between team members	More communication between team members, but often ineffective owing to time constraints, use of disciplinary jargon	Continuous, seamless, dynamic, effective communication among team members

From Golom & Schreck, 2018. The Journey to Interprofessional Collaborative Practice: Are We There Yet?; with permission from the authors.

The analysis of the data revealed that HDGH faculty members have overall positive feelings toward participating in interprofessional collaborations; however, there is a significant gap in knowledge of the meaning of IPECP and how it differs from cross-disciplinary collaborations (Table 1). Study participants also expressed similar perceptions of barriers and facilitators of interprofessional collaborations evidenced in the literature, in addition to some nuances specific to public health culture that should be studied further to gain better understanding. Finally, HDGH faculty members had little knowledge of the WHSC 2018-2022 strategic plan for prioritizing IPECP among the health sciences at Emory University, which could lessen the perceived benefit and impact of WHSC-led collaborative initiatives involving RSPH faculty moving forward.

Background

IPECP is a highly integrative and interactive team-based framework for implementing and achieving initiatives in the health and social sciences (Gilbert et al., 2010). It has steadily garnered widespread attention since the World Health Organization (WHO) Study Group on IPECP released the "Framework for Action on [IPECP]", the first report on the global uptake of the concept (Gilbert et al., 2010; Ross, 2007). At one end of the framework continuum is interprofessional education (IPE) which "occurs when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (Gilbert et al., 2010). At the opposite end of the continuum is interprofessional collaborative practice (IPCP) which "happens when multiple health workers from different professional backgrounds work together with patients, families, caregivers and communities to deliver the highest quality of care. It allows health workers to engage any individual whose skills can help achieve local health goals" (Gilbert et al., 2010). Ultimately, IPE preps learners to become adept at collaborating effectively in teams, while IPCP is the continued practical application of this knowledge at the professional level. The overall goal of both elements is to strengthen once fragmented health systems with the ultimate result of improving health outcomes.

Interprofessional collaborations are at the center of public health, a field that has the potential to serve as a successful model for multidimensional partnerships and interventions. By default, the practice of public health involves the application of cross-disciplinary methodologies (multidisciplinarity, interdisciplinarity, and transdisciplinarity) to engage multiple sectors within the social ecological model to prevent morbidity and mortality and promote local and national public health (K. D. Hager et al., 2018; Nystrom et al., 2018; Redwood et al., 2016). In the case of global public health, defining the role of interprofessional collaboration as it relates to political, cultural, and other systematic components of healthcare delivery and health outcomes is imperative to the establishment and maintenance of international partnerships (Mickan et al., 2010; Purden, 2005; Ward et al., 2018).

The WHSC at Emory University has demonstrated the need for interprofessional collaborations by prioritizing IPECP in their strategic plan, *Setting Priorities for Our Future 2018-2020.* The initiative serves to invest in infrastructure to facilitate IPECP across the various schools and programs within the WHSC (including RSPH); establish curricula to promote proficiency in interprofessional competencies for learners, faculty and healthcare providers; and develop practice models and further the knowledge of IPECP impact through research (WHSC, 2018a). Following the announcement of this strategic plan, the WHSC IPECP Council was formed to ensure the prioritization of IPECP as a central educational theme in the areas of faculty development, student

curriculum, research, simulation, and clinical practice (WHSC, 2019a). Key initiatives led by this council include the Interprofessional Team Training Day (ITTD)[1] (WHSC, 2019b), the IPECP Synergy Award (WHSC, 2017c), the Woodruff Health Educators Academy (WHEA) (WHSC, 2017d), and the IPE Journal Club (WHSC, 2017d).

The RSPH's involvement in ITTD followed the 2016 Council on Education for Public Health's (CEPH) addition of the *Interprofessional Practice: perform effectively on interprofessional teams* competency to the Master of Public Health (MPH) Foundational Competencies. This competency has since been added to the MPH/Master of Science in Public Health (MSPH) Foundational Competencies at RSPH (RSPH, 2020c). In addition to ITTD and prior to the creation of the WHSC 2018-2022 strategic plan, learners at RSPH were exposed to interprofessional and cross-disciplinary collaborations through the Emory Global Health Institute grants (EGHI, 2020a) and case competitions (EGHI, 2020b), global field experiences (RSPH, 2020b), and dual degree program tracks (RSPH, 2020a). In the case of RSPH's academic departments, public health practitioners of the HDGH have demonstrated the need for interprofessional collaborations through their extensive involvement in complex policy and research endeavors (RSPH, 2020d).

Despite RSPH's efforts to integrate IPECP in public health practice, observations from various health professionals at Emory University suggest that the schools within the WHSC appear to work in a siloed fashion. Additionally, there is little information known about the full degree of knowledge and implementation of IPECP among HDGH faculty of RSPH. Finally, it is unclear how HDGH faculty feel about collaborative education and professional practice and whether it is similar to the barriers and facilitators referenced in the literature. If a lack of understanding exists surrounding IPECP in the context of public health academia, it could have a negative impact on collaborative initiatives at Emory University involving HDGH faculty and serve as a hindrance to the fulfillment of the WHSC 2018-2022 strategic plan goals. Therefore, it is imperative to determine the relationship between public health practice and IPECP at Emory University in order to highlight areas of success and provide recommendations for improvement in collaborative educational and professional practice initiatives.

Methodology and Data Analysis

A review of the IPECP and cross-disciplinary collaborations literature was conducted to inform the development of a research protocol and data collection instruments. A mixed methods approach consisting of an online questionnaire and key informant in-depth interviews was employed to gather information about the scope, practice, and experience of interprofessional collaborations among faculty of the HDGH.

The HDGH is one of six academic departments at RSPH and consists of 156 faculty, 45 of whom are primary faculty (full/part-time). Participants for the online survey questionnaire and the key informant in-depth interviews were recruited via an email sent to the faculty listserv and by word-of-mouth (Figure 1).

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[1] The ITTD began in 2007 with first year medical and nursing learners. In 2018, it was expanded to include learners of RSPH (WHSC, 2019b).

Figure 1: Stratification of HDGH faculty[2]
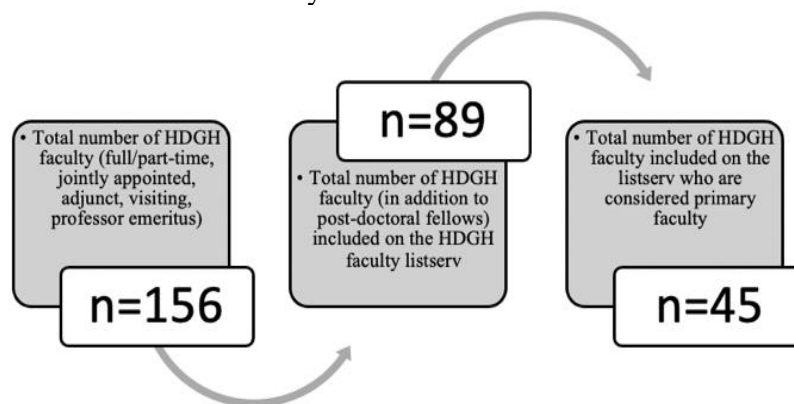
The survey instrument (Appendix II) used in this study had 40 questions divided into three sections: Section A. General Faculty Information, Section B. Knowledge, Perceptions, and Attitudes of Interprofessional Education and Collaborative Practice, and Section C. Survey Closing. Section A consisted of 16 multiple choice and open-ended questions that asked about faculty demographics, professional information, and details of interprofessional practice. Section B consisted of 24 Likert-scale questions and covered two main areas: 1) overall perceptions and knowledge of IPECP and 2) attitudes toward the four core competencies. The survey was administered using the online service Survey Monkey. The 22-question semi-structured interview guide instrument (Appendix III) was designed to last about 45 minutes and covered four topic areas: 1) opening questions about demographic information and professional/educational background, 2) details of interprofessional experiences, 3) knowledge, perceptions, and attitudes of IPECP, and 4) final remarks, including recommendations to the HDGH. Interviews were conducted in person and audio recorded.

Descriptive analyses were performed on Section A of the online questionnaire and a dataset from the HDGH consisting of faculty demographic information using Statistical Analysis Software (SAS). Section B of the online questionnaire was analyzed using Tableau, an online data visualization tool. Key informant interviews were transcribed verbatim and de-identified in Microsoft Word. Grounded Theory methodology (Hennink et al., 2011) was used to generate inductive themes by coding the de-identified transcripts and using Dedoose (a qualitative data analysis software). To aid in the objectivity of the coding process, a classmate was solicited to code one de-identified transcript (inter-coder agreement). A codebook was developed highlighting the major themes and demonstrative quotes from the interviews' transcripts (Appendix IV).

Ethics
The online questionnaire results were kept on a password protected Survey Monkey account that only the author had access to. IP addresses were not tracked on Survey Monkey. The author was also given de-identified demographic data of all HDGH faculty (n=156) in a Microsoft Excel document to compare to data generated from the study. All interviews were audio recorded via the author's password protected cellphone and iPad (as a back-up), immediately uploaded to the

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[2] Although not all HDGH faculty (n=156) (e.g. jointly appointed, adjunct, etc.) are included on the HDGH faculty listserv (n=89), all primary faculty (n=45) are included on the HDGH faculty listserv, in addition to post-doctoral fellows.

author's password protected personal laptop upon completion of the interviews, and then deleted from the author's cellphone and iPad.

The author was the sole user of the laptop and log-in/password information was not shared with the thesis chair, thesis committee, or any other individuals. All data analysis was completed by the author, with the supervision and in consultation with the thesis chair and committee members. In this regard, only the de-identified transcripts were shared.

Results

Of the 156 HDGH faculty, 56% were males and 44% were females. Mean age was 55.97 years. Mean years of employment at Emory University was 13.34 years, with 51% of primary faculty (n=45) in research track positions, 20% in tenure track positions, and 29% with tenure. The majority of faculty members identified as White (69.23%), 13.46% Asian, 8.33% Black/African American, and 8.33% Hispanic/Latina (Table 3). In comparison, 62.5% of the assessment's online survey participants (n=16) were female and 37.5% were male. The majority of participants (n=9) were in the 36-50 age category and had less than five years of experience in their current positions (n=7). Academic track positions and ethnicity data were not collected for study participants.

The online questionnaire participants demonstrated a wide array of collaborative academic and professional backgrounds (Table 2). They represented four academic areas of study (applied science, humanities, natural science, and social science) and nine disciplinary backgrounds. Fourteen identified their primary appointment in the RSPH and two in the Emory University School of Medicine (SOM). Seven participants had joint/secondary appointments within RSPH and just over half had appointments in other schools and programs at Emory University. Faculty members' current collaborative affiliations outside Emory University spanned six different countries in various settings such as universities and national public health organizations[3]. In addition to public health, they reported collaborations with over 15 disciplines throughout their academic and professional careers.

Among interview participants (n=5), the average length of time at Emory University was 6.1 years with a range of 1.5-12 years. All were full-time faculty except one post-doctoral fellow. Of the full-time faculty members, two were in research track positions, one in tenure track position, and one with tenure; all participants in research track positions were women.

Four core themes emerged from the data: *scope and knowledge of interprofessional and cross-disciplinary collaborations*, *key aspects of successful collaborations*, *power dynamics*, and *culture of academic public health* (Appendix IV). Each core theme is further described with relevant data from the online questionnaire Likert scale results (Figure 2) and qualitative data from the in-depth interviews.

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[3] Considering the small sample of faculty members who completed the survey, the exact names of collaborative affiliations were replaced with the respective geographic location in order to maintain anonymity.

Table 2: Academic and professional backgrounds of online questionnaire respondents

Variable	n (%)
General academic area & Discipline	
Applied Science: Business, Engineering & Technology, Medicine & Health	10 (62.5)
Humanities: Theology	1 (6.25)
Natural Science: Biology	1(6.25)
Social Science: Economics, Ethics, Demography, Psychology	4 (25)
Primary Appointment at Emory	
Rollins School of Public Health	14 (87.5)
School of Medicine	2 (12.5)
Joint or Secondary Appointment at Emory	
No	7 (43.75)
Yes	9 (56.25)
Candler School of Theology	1
Center for Ethics	1
Emory College of Arts and Sciences	2
Emory Healthcare	1
Emory University School of Medicine	3
Laney Graduate School	2
Non-Emory Affiliations	
No	7 (43.75)
Yes	9 (56.25)
Geographic location of international affiliations: Belgium, Canada, India, Kenya, Mexico, South Africa Geographic location of affiliations in the United States: California, Georgia, Pennsylvania, Washington	

Variable	n (%)
Primary Department at RSPH	
Hubert Department of Global Health	16 (100)
Joint or Secondary Appointment at RSPH	
No	9 (56.25)
Yes	7 (43.25)
Environmental Health	1
Epidemiology	6
Health Policy and Management	1
Type of Appointment	
Full-time	13 (81.25)
Jointly/Secondarily Appointed	2 (12.5)
Post-doctorate	1 (6.25)
Experience with ICP	
No	2 (12.5)
Yes	12 (75)
Unsure	2 (12.5)
Disciplines Collaborated With	
No response	4 (25)
Anthropology, Biology, Business, Computer science, Economics, Engineering & Technology, Government, Human geography, Performing & Visual arts, History, Language & Literature, Law/philosophy, Medicine & Health, Political science, Psychology, Sociology, Social work, Statistics, Theology	12 (75)

Figure 2: Knowledge, Perceptions, and Attitudes Related to Interprofessional Education and Collaborative Practice
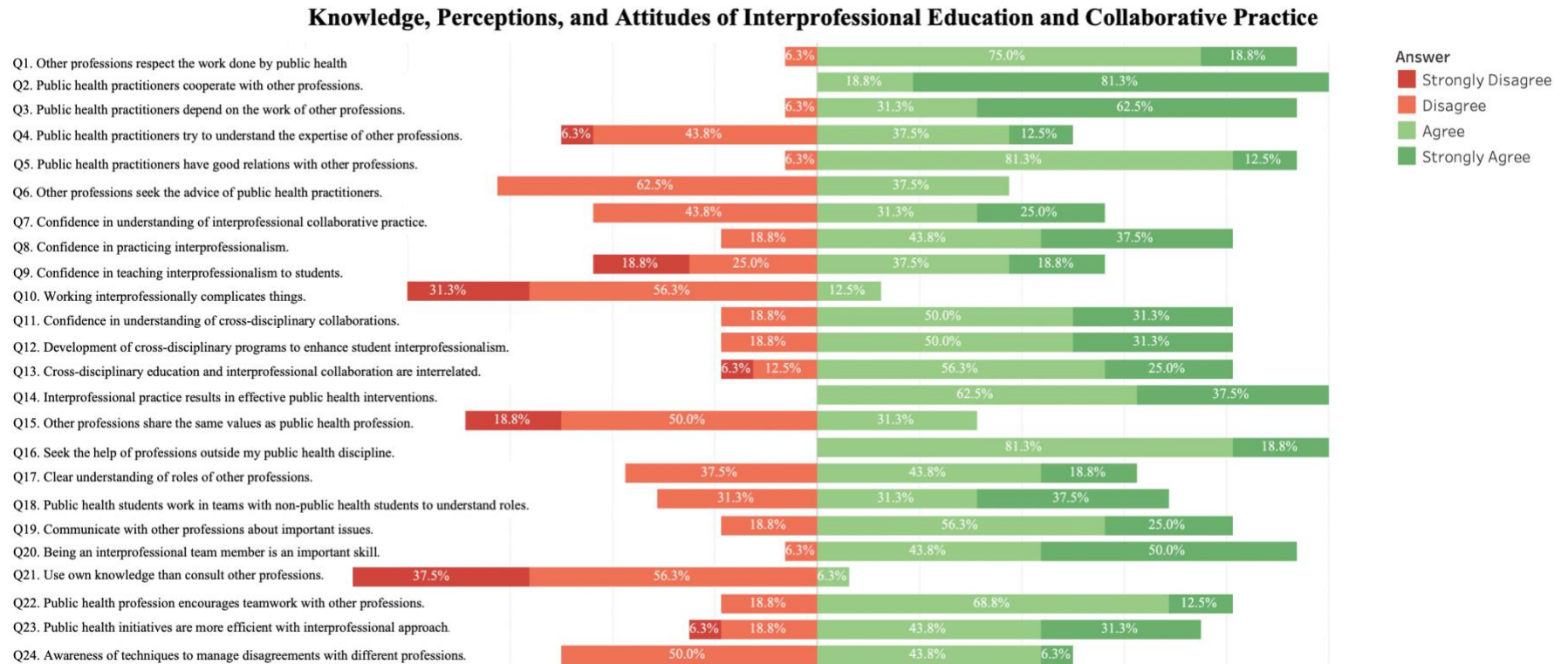
Divergent stacked bar chart demonstrating the Likert scale data from "Section B: Knowledge, Perceptions, and Attitudes Related to Interprofessional Education and Collaborative Practice" of the online questionnaire. (Corresponding questions paraphrased in chart. Refer to Appendix II for full questions.

Discussion

1) *Scope and knowledge of interprofessional and cross-disciplinary collaborations*:

- In regard to faculty members' general thoughts of IPECP, the majority of online questionnaire and in-depth interview participants had favorable viewpoints. Participants agreed that interprofessional practice ultimately results in more effective public health interventions. They believed public health practitioners should cooperate with other professionals when working with complex populations.

- Many public health initiatives of the HDGH faculty involve dynamic collaborations with non-academic stakeholders (e.g. community members), institutions, and entire sectors (industry, governmental bodies, etc.). This is in contrast to the WHO definition of interprofessional collaborative practice that solely references different professions as the collaborating entity.

- Although the majority of online questionnaire participants felt confident in their understanding of cross-disciplinary collaborations (multidisciplinarity, interdisciplinarity, and transdisciplinarity), interviewees' responses revealed conflicting degrees of understanding. Only one interviewee accurately defined the three types of cross-disciplinary collaborations. The remaining either felt the terms were interchangeable or simply "confusing" (P03, female). These interviewees also thought they were defining the characteristics of one type of cross-disciplinarity when in reality their definition better described another. Furthermore, every faculty member used multidisciplinarity, interdisciplinarity, and transdisciplinarity interchangeably with interprofessional.

2) *Key aspects of successful collaborations*:

- HDGH faculty members believed that building social capital is key to successful collaborative practice (Figure 3). Based on the results of this assessment, social capital may be described as the comradery that develops over time as consistent positive interactions occur on an interprofessional team.

Figure 3: Thematic network for "Key aspects of successful collaborations" core theme
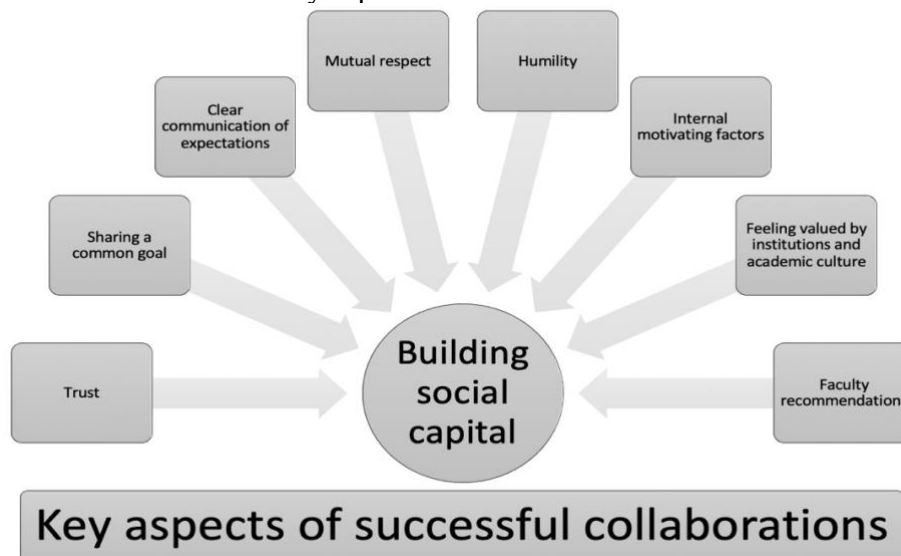
- Clear communication of expectations related to research processes, task assignments, and overall goals at the beginning of a collaboration is key to abating issues related to conflict and understanding team member roles.

- Humility, trust, and mutual respect are paramount to facilitating healthy collaborative practice and strong team dynamics.

  > I recognize that, you know, as much as I'd *like* to think that I know everything*, I don't* [laughs]. Um…you know, and…if I try to do everything on my own, I'm probably going to mess…*a lot of it up*. Um…you know, so I—I would rather, you know, spread more of those efforts across these larger teams to make sure that things are being done…correctly. Because, you know, just—I'm one person. I have my perspectives. And I even know that *my* perspectives have to get checked sometimes. Um, and having people with those different…*mindsets* I think really helps, um…you know, helps balance and improve the effectiveness of the work that we do. (P02, male)

- When humility, trust, and mutual respect are lacking in interprofessional teams, HDGH faculty members do not feel valued.

  > Well…I think with like physicians it's *always…*a challenge [feeling valued in an interprofessional collaboration] . Like you are always having to *prove* that…like you *understand* health and that you have a broader perspective in some parts. And…um…so I think *that* has been some of the struggle[...] You'll have to *prove* yourself…um, so they know that you are in—at a similar, um, level. (P04, female)

- HDGH faculty welcome collaborations, not only for the more obvious benefits of contributing to scientific knowledge but also for the intellectual enjoyment that accompanies learning new information.

  > Um, and honestly, it's a little—especially when I started both in my previous job for /intervention/ and then this job, um…it's really exciting at the beginning—the huge learning curve…learning so much. I'm learning from people from other fields who have different terminology and different ways of thinking—that I definitely really enjoy. And even though I'm eight years into this work, there's still, you know—I'll go to a conference and I may have heard that person speak many times before but I still get gems out of what they say. So, um… it's very exciting to learn something new. (P03, female)

3) *Power dynamics*:
- Power dynamics was largely an inductive core theme that was further divided into two subthemes: a) intersectionality between gender and collaborative practice and b) hierarchy.

- The intersectionality between gender and collaborative practice is heavily influenced by gender-based stereotypes surrounding social and professional constructs in public health practice. Two of the female faculty members expressed these feelings without probing from the interviewer. None of the male faculty members mentioned gender relations.

- The female faculty members expressed how social and cultural aspects of being male or female impact a person's degree of credibility, the ability to work in certain positions or settings, and the defined roles on a collaborative team.

  > [...] I don't know if this is really true, it's just my perception, is that interdisciplinary work is like a feminine thing…that women are better at talking, and women are better at working with other people, and like making compromises, and… there is this kind of like stereotype about women being like better at that kind of thing. I've experienced this a couple of times in academic public health research where…ah…there will be, like, a high-power, like, male who will be like, "Well, like, that's great, like, that they're doing that work. Like, I just don't do that work." (P01, female)

  > I think that's just how things are, right? The older generation…um, of professionals are mostly men and a few women who have been able to work under that system and who probably have already internalized some of that [men predominantly holding positions of power]. Like they think, "The rules are the rules," and it's hard for them to change that. So…um…and it's interesting how…like in Rollins, for example, it's like…the students are mostly women, right? The [laughs] young faculty is... mostly women. And […] as you go up the ranks, it's harder to find, um, women. (P04, female)

- Issues surrounding hierarchy were primarily revealed through the code "credibility and acknowledgement", which faculty members described as the reputation behind a person's ability to be believable and influential that is mainly fueled by gender, expertise, money, resources, and accolades.

- Interviewees shared how their lack of credibility, especially in the early years of their public health careers, resulted in negative experiences when working with other professions, sectors, and/or organizations.

  > So, there have definitely been times where people have taken my ideas and put them into their own documents. And so, there's a part of me that's a little bit *flattered* that they thought it was good enough to just pretty much steal it. [...] But there is a little bit of that kind of…from the *professional researcher* perspective of, 'It would have been great if someone had given me *credit* for this idea that they went on to…put out.' So…again, I'm not sure—in the end I think the ideas were valued. They may not have been in a—they didn't…value *my name* necessarily being attached to those ideas. (P03, female)

- Of note, the lone post-doctoral fellow interviewee, who is younger in her career compared to the other faculty members, referenced the credibility code almost three times as much as any other participant. Additionally, although the issue of credibility was mentioned among both men and women, the code was applied more among the women (seventeen times) compared to the men (six times).

4) *Culture of academic public health*:
- The culture of academic public health was not addressed in the online questionnaire but evolved into a very dynamic and complex inductive core theme which was further divided into three subthemes: a) education and training, b) reward structure and logistical

considerations in research, and c) discipline-specific beliefs and practices. Codes within the sub-themes largely overlapped and/or built off each other.

- Overwhelmingly, this core theme revealed how the academic, research, and discipline-specific practices of public health actually dissuade interprofessional and cross-disciplinary collaborations. This discordance between what is believed to be integral components of public health practice versus what is actually done, or "lip-service," (P01, female), was summarized in one remark.

> …And I think that we…*love* the terms [multidisciplinary, interdisciplinary, transdisciplinary] because they're, ah, you know…they're *aspirational*…and I think we *rarely* accomplish them. (P05, male)

a) <u>Education and Training</u>:
   - In general, online questionnaire and in-depth interview participants believed there is a link between IPE and IPCP and that academic institutions should develop cross-disciplinary educational programs to enhance future collaborative practice as public health professionals; however, the implementation of such initiatives proved difficult for HDGH faculty.

   - Research responsibilities as well as lack of appropriate salary compensation ultimately hinder faculty members from devoting their efforts toward incorporating IPE in the classroom.

> I think the reality is that people who teach at Emory—unless they're paid full-time to teach—they are *stretched*…because they also have to bring in money for their research[…] there are *a lot* of resources on campus to help you *plan* your courses, um…but you need *time* to do that. And so, time…is money and…if the university *pays* that time—*great.* But if you're spending your research time doing *teaching* then you'll get upset and you don't want to do that. So, I think *the system* is really screwed up in the way—what we value— that we don't value education as much as we value research. So, I think that makes it *harder* for people who are *younger* in their careers 'cause they *have* to get tenure or they *have* to get that next grant. Makes it harder for more established, um, people, um, if they're running really big labs or research programs because they *need* to keep on bringing in money 'cause they now have a—people's livelihoods depend on them. So, I just think it's a system that's really difficult to, um…to…value any innovations in [interprofessional] education…especially if it takes time. And they're all going to take time if it's something different and new. (P03, female)

   - In relation to RSPH's involvement in ITTD, three interviewees were familiar with the annual ITTD, one of them recently serving as a facilitator in the Fall 2019 event. In his opinion, the ITTD was "*almost* there" in terms of what is needed for IPE to yield future IPCP; however, he noted that the lack of time allotted and the "independent" structure of the case scenarios ultimately made achieving the goals of the event very difficult.

> …it seemed like for the amount of time that we got to spend with all the students and the amount of things that they were asking us to do in that short period of time……just the administrative burden of introducing a *new scenario* and doing some of that, rather than

finding ways to just sort of *build naturally* off of something, um…I think made it a little *difficult*. Um, and that was even some of the feedback that we got from the students that we worked with…that, you know, it didn't…you know—if we're supposed to be talking about interprofessional collaboration and we have two scenarios that we're working on and one is this like very sort of *high-level* public health piece and the other is this very *clinical* piece…um, but they're independent scenarios that we're working through, then how do we really find a way to do sort of…*interprofessional work*. You know, and [laughs]…so that, you know, that's why I'm saying like, you know, I see the concepts—I see what it's going for. Um. I think that…it could be very, very useful…um, but I think as it's currently structured it needs to be…tweaked a little bit to really fully embrace what's needed to address those needs.

b) <u>Reward Structure and Logistical Considerations in Research:</u>
- In regard to logistical concerns, HDGH faculty noted lack of time and administrative support as barriers to participating in interprofessional collaborations.

- Lack of availability is largely due to having "other priorities" (P04, female) and conflicting work and/or traveling schedules.

- The need for more time is also directly related to administrative support in terms of paperwork and communicating amongst various individuals and organizations.

    > …administratively…it's just a pain in the butt to—any big organization has a lot of—hiring people just takes weeks. Um…getting a payment, getting a new contract established—like you've gotten money from a donor and you need to set up an account within the University—that takes weeks and tons of emails and phone conversations [...] because we're a big organization at Emory, all the admin takes a long time. (P03, female)

- The majority of online questionnaire participants felt the public health profession encouraged teamwork with non-public health professionals. Despite this, all but one of the faculty members interviewed noted that the current "reward system" in academic public health does not support interprofessional collaborations since priority needs to be given to the individualistic effort to build an academic career.

    > I…have relatively little faith that…um, *true* interdisciplinary work is, like, sustainable beyond, like, individual projects. With the […] reward structures that are currently in place in academia [focused on] credibility, papers…ah, tenure-track positions in academic institutions…ah, to a lesser extent travel to conferences, being able to represent your work…um, to an even lesser extent, being, like, science-Twitter famous. (P01, female)

- Competitiveness in research leads to distrust of others and fears that they may try to "steal" their ideas.

    > …well I think the *underlying* fear is that we are in a very *competitive*, um, environment. So, like I mentioned…our salaries depend on the papers that you can write and the grants that you can get. And if someone takes…your *idea*, or your *space*, or your *opportunity*, um…and doesn't *include you* then—like it affects *your entire*, um, *life* and way of living. And so, all this…like *competitiveness*. And the fact that everything depends on getting

grants and funding, I think it's *not* very conducive to collaborating and being open. (P04, female)

- The availability of money is another key determinant of whether individuals choose to participate in interprofessional collaborations. Much of this influence is fueled by the financial precarity of research, which appeared to coincide with the participants' lack of awareness of the WHSC Strategic Plan for IPECP at Emory University.

    …my job, you know, if I have to describe it…as a single thing—it's looking for money [...]there's such a…um, a drive now to go out and find money…that I think it's…it really has become a powerful shaping influence on the way that we are even able to pay attention to things in our environment[...] So, even questions like this, "Do you know about that [WHSC Strategic Plan for IPECP]?"—a part of me thinks, "It would be awesome to know about that—to be able to go and hang out and hear talk about that; to hear more about how people were making sense of that; to read that strategic plan and think for a while about what the implications are." It's not even possible anymore. (P05, male)

c) <u>Discipline-specific Beliefs and Practices:</u>
- When HDGH faculty members were asked about common pitfalls in interprofessional collaborations, the general lack of commonality across disciplinary lines in regard to discipline-specific terminology/language, expertise, and perspectives proved difficult. These various constructs keep professionals of different disciplines siloed and less likely to work interprofessionally.

- Additionally, participants believed silos are the result of "distrust" when research grants and projects are at stake (P03, female). Silos also promote a false sense of expertise which ultimately makes him/her a more "credible" researcher.

    I think that in academic sciences um…there is like a temptation to think that you're like on your own. Not necessarily in a bad way. We are like *siloed* because that is the thing that allows us to pretend like we are the experts [laughs]…and stuff. So, if like I am the only person who does what I do, then *"I'm* the expert" and *"I'm* special" and *"I* get the Nobel Prize" and "Good job *me"* and, you know…there's like an incentive a little bit to, like, do that. (P01, female)

- Finally, HDGH faculty members expressed that silos are cyclically linked to egocentrism, which participants described as "hubris" (P03, female) and having "worldviews" (P05, male) that ultimately discourage reflexivity.

    Um, you know, if people feel like they're always, you know, they're always correct or they're always *right*, you know, without necessarily a perception around…you know…a willingness to listen or even sort of, you know, vulnerability, for lack of a better term, you know, to sort of let themselves be open to other ideas or other concepts. Um. I think that's one of the biggest issues [that hinders the successful implementation of interprofessional collaborations]. (P02, male)

- There is a "religious devotion" (P05, male) that disciplines have to their own ways of thinking and doing things. This "we know best—we *must* know best" mentality is so

historically and pedagogically engrained from education to professional practice that individuals lose their identity whenever their worldview is challenged. The field of public health is especially fixated on the spread of its own worldview because of the field's historical contributions to disease prevention and control.

Conclusion

This mixed-methods study assessed the knowledge, perceptions, and attitudes of IPECP among the HDGH faculty members of the RSPH. The data revealed that although HDGH faculty members have overall positive feelings toward participating in interprofessional collaborations, there is a significant gap in knowledge of the meaning of IPECP and how it differs from cross-disciplinary collaborations. HDGH also faculty expressed similar perceptions of barriers and facilitators of interprofessional collaborations that are also evidenced in the literature, in addition to some nuances specific to public health culture that should be studied further to gain better understanding. Finally, HDGH faculty members' had little knowledge of the WHSC 2018-2022 strategic plan for prioritizing IPECP among the health sciences at Emory University, which could lessen the perceived benefit and impact of WHSC-led collaborative initiatives involving RSPH faculty moving forward.

HDGH faculty members who participated in the interviews shared a few suggestions to improve their ability to incorporate interprofessionalism in their daily practice:

- Development of training workshops or seminars to learn more about IPECP, how it differs and overlaps with cross-disciplinary collaborations, and the implications for both when preparing to work in diverse teams.

- Prioritization of protected time and opportunities to participate in collaborations via more structured administrative processes and Emory-sponsored interprofessional case competitions for faculty.

- Hiring public health faculty only designated for teaching so they can devote the necessary time to develop interprofessional curricula that is innovative and relevant to public health learners.

- Allotment of more time to facilitate ITTD discussions and the development of case scenarios that better integrate the different disciplines represented.

- Availability of technological support that provides a central location for researchers to readily find answers to questions related to collaborative research and to track what other professionals are doing at Emory University.

In addition to faculty suggestions, there are a few themes that were revealed in the data that may need to be further studied in order to better understand the role of IPECP in public health practice:

- Given the often diverse teams involved in public health interventions, "interprofessional" collaboration may not be an adequate term to describe public health practice. Efforts should be made to fully describe the scope of public health practice and then apply these findings

to establishing a definition that better encompasses the depth of collaborative practice that occurs among public health professionals. Based on the literature review conducted and the data revealed through this study, the WHO definition of IPCP may be adapted in the following way to better describe the diversity in collaborative public health interactions and interventions among HDGH faculty members: *Public health collaborative practice occurs when multiple local, national, and/or global workers from different professional backgrounds or sectors work together with patients, families, communities, and governmental and non-governmental organizations to prevent disease, injury, and disability, eliminate health disparities, and correct injustices.*

- The intersectionality of gender and interprofessional collaborations is a relatively new subject in the literature and requires more study that is specific to public health practitioners.

- The reward system of external incentives (i.e. tenure/promotion, grants, etc.) is a significant component of public health practice that may negatively impact the extent in which HDGH faculty members participate in interprofessional collaborations. Interprofessional collaborations are difficult, time consuming, and may not garner the acknowledgement and recognition often sought after for career advancement in public health academia thus influencing HDGH faculty members to remain siloed. A study with a larger sample size and more targeted questions related to public health academic culture is paramount to further revealing the intricacies of this core theme.

With more research dedicated to the relationship between public health practice and IPECP at Emory University and beyond, public health may serve as a leading model for collaborative practice in the health and social sciences.

APPENDIX II: ONLINE SURVEY

An Assessment of the Knowledge, Perceptions, and Attitudes of Interprofessional Education and Collaborative Practice Among Faculty of the Hubert Department of Global Health

THE FOLLOWING STATEMENT APPEARED BEFORE THE RESPONDENT BEGAN THE SURVEY:

This survey is completely voluntary and will require approximately 15 minutes of your time. Survey data will be collected anonymously and neither your email nor IP addresses will be recorded or traced. In addition, survey data will be stored in a password-protected file.

Should you choose to participate in the survey and want to stop at any time, you may withdraw your participation by exiting the survey and your prior responses will not be saved. Otherwise, your responses will be captured after you click "Submit" at the end of the survey.

Your participation is greatly appreciated!

By continuing with this survey, I am indicating that I am 18 years of age or older and that I consent to participate in this research.

Section A: Demographic & Professional Information / Scope of Interprofessional Collaborative Practice			
NO.	QUESTION	RESPONSE OPTIONS	SKIP
A1	With what gender do you identify?	Female Male Non-binary Other Prefer not to answer (CHOOSE ONE ANSWER)	
A2	What is your age?	21–35 36–50 51-65 66-80 80 and over (CHOOSE ONE ANSWER)	
A3	Please choose the **general academic area***(s)* that best describes your primary academic background.	Humanities (performing & visual arts, history, languages & literature, law, philosophy, theology) Social Sciences (anthropology, archeology, economics, human geography, political science, psychology, sociology, social work) Natural Sciences (biology, chemistry, earth science, space sciences, physics) Formal Sciences (computer science , mathematics, statistics) Applied Sciences (business, engineering & technology, medicine & health) Other (please specify): _____ (DROP DOWN LIST; SELECT ONE)	
A3a	[OPTIONAL] If you wish to share, please choose the *specific discipline(s)* that best describe your primary academic background.	Prefer not to answer Performing & visual arts, History, Languages & Literature, Law, Philosophy, Theology, Anthropology, Archeology, Economics, Human Geography, Political Science, Psychology, Sociology, Social Work, Biology, Chemistry, Earth Science, Space Sciences, Physics, Computer Science , Mathematics, Statistics, Business, Engineering & Technology, Medicine & Health	

		Other (please specify): _____ (DROP DOWN BOX; SELECT ALL THAT APPLY)	
A4	Where is your **primary** *appointment* within the Emory University system?	Emory Healthcare Emory University School of Medicine Rollins School of Public Health Nell Hodgson Woodruff School of Nursing Winship Cancer Institute Yerkes National Primate Research Center Candler School of Theology Laney Graduate School Emory University School of Law Goizueta Business School Emory College of Arts and Sciences Oxford College Other (please specify): _____ (DROP DOWN BOX; SELECT ONE)	
A5	Do you have a **joint or secondary appointment** within Emory University?	Yes No Prefer not to answer	→A5a → A6 → A6
A5a	**Where** is(are) your *joint or secondary appointment(s)* at Emory University?	Prefer not to answer Emory Healthcare Emory University School of Medicine Rollins School of Public Health Nell Hodgson Woodruff School of Nursing Winship Cancer Institute Yerkes National Primate Research Center Candler School of Theology Laney Graduate School Emory University School of Law Goizueta Business School Emory College of Arts and Sciences Oxford College Other (please specify): _____	

		(DROP DOWN BOX; SELECT ALL THAT APPLY)	
A6	Are you affiliated with any academic schools/departments/institutions **outside** the Emory University system?	Yes No Prefer not to answer	→ A6a → A7 → A7
A6a	Please type which schools/departments/institutions outside the Emory University system you are affiliated with. **(Please do not use abbreviations)**	Free response	
A7	Which is your ***primary department*** at Rollins School of Public Health (RSPH)?	1) Behavioral Sciences/Health Education (BSHE) 2) Biostatistics and Bioinformatics (BIOS) 3) Environmental Health (EH) 4) Epidemiology (EPI) 5) Global Health (GH) 6) Health Policy and Management (HPM) Prefer not to answer (CHOOSE ONE ANSWER)	
A8	Do you have a ***joint or secondary appointment*** within RSPH?	Yes No Prefer not to answer (CHOOSE ONE ANSWER)	→A8a → A9 → A9
A8a	In which department(s) is(are) ***your joint or secondary appointment(s) at RSPH***?	Prefer not to answer 1) Behavioral Sciences/Health Education (BSHE) 2) Biostatistics and Bioinformatics (BIOS) 3) Environmental Health (EH) 4) Epidemiology (EPI) 5) Global Health (GH) 6) Health Policy and Management (HPM)	

		(DROP DOWN BOX; SELECT ALL THAT APPLY)	
A9	What is your *faculty role at RSPH*?	Full-time Faculty Jointly/Secondarily Appointed Adjunct Visiting Professor Emeritus Prefer not to answer Other (please specify): _____ (CHOOSE ONE ANSWER)	
A10	How long have you been a faculty member of Rollins School of Public Health?	Less than 1 year-5 years 6-10 years 11-15 years 16-20 years More than 20 years Prefer not to answer (CHOOSE ONE ANSWER)	
A11	*IPCP happens when multiple health workers from different professional backgrounds work together with patients, families, caregivers and communities to deliver the highest quality of care. IPCP can occur in various fields including practice, administration, education and research.* Do you have any experience with interprofessional collaborative practice (IPCP)?	Yes No Not Sure Prefer not to answer (CHOOSE ONE ANSWER)	→ A11a → B1 → B1 → B1
A11a	With which disciplines have you collaborated in your IPCP experiences?	Prefer not to answer Performing & visual arts, History, Languages & Literature, Law, Philosophy, Theology, Anthropology, Archeology, Economics, Human Geography, Political Science, Psychology, Sociology, Social Work, Biology, Chemistry, Earth Science, Space Sciences, Physics, Computer Science , Mathematics, Statistics, Business, Engineering & Technology, Medicine & Health Other (please specify): _____	

		(DROP DOWN BOX; SELECT ALL THAT APPLY)	

Section B: Knowledge, Perceptions, and Attitudes Related to Interprofessional Education and Collaborative Practice

NO.	QUESTION	RESPONSE
B1	<u>Overall Perceptions:</u> To what extent do you agree with the following statements:	Strongly Agree Agree Disagree Strongly Disagree
	Q1. Practitioners in other professions respect the work done by public health practitioners.	
	Q2. Practitioners in public health should cooperate with other professions.	
	Q3. Practitioners in public health depend upon the work of those in other professions.	
	Q4. Practitioners in public health make every effort to understand the capabilities and contributions of other professions	
	Q5. Practitioners in public health have good relations with people in other professions.	
	Q6. Practitioners in other professions often seek the advice of practitioners in public health.	
B2	<u>Interprofessional Collaboration:</u> To what extent do you agree with the following statements:	Strongly Agree Agree Disagree Strongly Disagree
	Q7. I feel confident in my understanding of interprofessional collaborative practice.	
	Q8. I feel confident in my abilities to practice interprofessionalism.	
	Q9. I feel confident in my abilities to teach interprofessionalism to public health students.	
	Q10. Working in an interprofessional manner unnecessarily complicates things most of the time.	
	Q11. I feel confident in my understanding of cross-disciplinary collaborations. *Cross-disciplinarity is defined as multidisciplinary, interdisciplinary, and transdisciplinary collaborations.*	
	Q12. Academic institutions should develop cross-disciplinary educational programs to enhance collaborative practice.	

		Q13. Cross-disciplinary education and interprofessional collaboration are not linked to one another.	
B3		Values/Ethics To what extent do you agree with the following statements:	Strongly Agree Agree Disagree Strongly Disagree
		Q14. Interprofessional practice results in more effective public health interventions.	
		Q15. Non-public health professions share the same values as the public health profession.	
B4		Roles/Responsibilities: To what extent do you agree with the following statements:	Strongly Agree Agree Disagree Strongly Disagree
		Q16. When working with complex populations/community, I seek the help of professionals outside my public health discipline.	
		Q17. I have a clear understanding of the roles of non-public health professionals with whom I interact on a regular basis.	
		Q18. During their education, all public health students should have experience working in teams with non-public health students in order to understand their respective roles.	
B5		Communication: To what extent do you agree with the following statements:	Strongly Agree Agree Disagree Strongly Disagree
		Q19. I can easily communicate with non-public health professionals about important issues.	
		Q20. Being able to work as an interprofessional team member is an important skill in my profession.	
		Q21. To promote the best interest of the population/community, public health professionals should use their own judgment rather than consulting their colleagues in other disciplines.	
B6		Teams and teamwork: To what extent do you agree with the following statements:	Strongly Agree Agree Disagree Strongly Disagree
		Q22. The public health profession encourages teamwork between non-public health professionals.	
		Q23. An interprofessional approach makes the implementation of public health initiatives more efficient.	
		Q24. I am aware of techniques that can be used to constructively manage disagreements that occur between different professions.	

Section C: Closing			
NO.	QUESTION	RESPONSE	SKIP
C1	Are you interested in being considered for a key informant interview?	Yes No	→ redirected to new survey to answer C2 → END SURVEY
C2	Enter your name and contact email.	_____	→ END SURVEY

END OF SURVEY
You have completed the survey
Your time and responses are invaluable . Thank you for your participation!

APPENDIX III: IN-DEPTH INTERVIEW GUIDE

Participant ID: ___ ____

Participant characteristics:
Interviewer: Taylor Hayes
Transcriber: Taylor Hayes
Location:
Date of interview:
Duration of interview:

Introduction & Guide:

Hello. Thank you for agreeing to be interviewed today.

My name is Taylor Hayes. I am a dual degree Public Health and Physician Assistant student at Emory University and the principal researcher of this special studies project, which is equivalent to a thesis for my Master of Public Health. The purpose of this study is to describe the scope of interprofessional collaborations that might be occurring among faculty of the Hubert Department of Global Health (HDGH) and to assess the perceptions, knowledge, and attitudes of Interprofessional Collaborative Practice (ICP). Once this study is complete, I will submit a formal report to Dr. Usha Ramakrishnan, Chair of the HDGH, with suggestions to improve future collaborations. Therefore, it is important to understand the perspectives and experiences of key stakeholders in this setting, such as you, on interprofessional collaborative practice at Rollins School of Public Health.

The interview will last between 30 and 45 minutes and your responses will be confidential. Everything you tell me during the interview will only be used for this project and will not be shared with anyone outside of the project team. I will be the only person who knows your name and other personal details. I will de-identify the interview information during transcription and before I share it with my thesis chair and committee. Personal information will not be shared in any report.

I would like to emphasize that there are no right or wrong answers. During this interview I will ask you some questions, but please be free to share your thoughts about things I have not asked you. I also appreciate any advice on additional questions you think I should ask other faculty I interview in the future. If you wish to not answer a question or would like to take a break at any time, please let me know.

I would like to record the interview so that I can refer back to it as I analyze the data. Do I have your permission to record?

Do you have any questions before we begin?

[BEGIN RECORDING]

FACILITATOR:
"My name is (Taylor Hayes), and today I am interviewing (Participant Name & Surname).
The date today is (Month, Day, Year) and our location is (building)"

Opening Questions:
How would you like me to address you during the interview?
What is your age?

1. What is your faculty title at Emory University?
Probe: Are you an assistant, associate or full professor?

2. Are you in a tenure or a non-tenure (clinical & research) track?
    Probe: How long have you been at Emory?

3. Could you please tell me about your educational and professional backgrounds?
    Probe: What is your academic background?
    Probe: What did you do before serving in your current role at Emory?

Topic 1: Scope of IPCP
4. In your own words, how would you describe interprofessional collaborative practice (ICP)?

5. Have you ever collaborated interprofessionally? If yes, can you please tell me about your most recent interprofessional experience?
    Probe: At Emory?
    Probe: Outside Emory?
    Probe: Which sectors and/or professionals other than public health were involved in this collaboration?
    Probe: Were non-professionals involved in the collaboration? E.g. community members/patients/families?
        If yes, what role(s) did they play?

6. What role(s) did YOU play in that interprofessional activity?

7. How did you go about understanding other team members' roles? Were the role(s) that other team members played clear to you?
    Probe: What were the barriers/facilitators to understanding the capabilities and contributions of your team members?

8. What did you do to clearly communicate important issues with non-public health professionals?
    Probe: What techniques have you used?
    Probe: How do you constructively manage disagreements that occur between different professions?

Topic 2: Perceptions, Knowledge, and, Attitudes toward ICP

9. In your own words, how would you describe "cross-disciplinary collaborations"?
   Probe: How do you understand/Can you describe the difference between multi, inter and transdisciplinary collaborations?

10. In your own words, how would you describe the core values of the public health profession?
   Probe: What is the purpose/mission of the public health profession?

11. Some of your colleagues believe that non-public health professions do not share the same values as the public health profession. What is your perspective on this?
   Probe: How do you think differences in values affect the ability to work interprofessionally?

12. In your experience, what factors have facilitated the successful implementation of interprofessional collaborative practice?
   Probe: Clear communication with professionals in the field and with community members/patients/families? What are examples of clear communication?
   Probe: Maintaining a climate of mutual respect and shared values?
   Probe: Clear understanding of roles and responsibilities?
   Probe: Teamwork strategies to plan, deliver, and assess public health programs and policies?

13. What factors do you think hinder the successful implementation of interprofessional collaborative practice?
   Probe: How can these factors affect the overall efficiency of the collaboration/initiative?

14. Can you tell me about a time when you felt valued during an interprofessional collaboration?
   Probe: Have you had an experience during a collaborative experience when you felt practitioners from other professions were interested in your perspective as a public health practitioner? Explain.

15. Can you tell me about a time when you felt undervalued during an interprofessional collaboration?
   Probe: Have you had an experience during a collaborative experience when you felt practitioners from other professions did not seek or ignored your perspective as a public health practitioner? Explain.

16. What role, if any, do you feel gender plays in relation to feeling valued or undervalued during an interprofessional collaboration?

17. Are you familiar with the Woodruff Health Sciences Center Strategic Plan for interprofessional education and collaborative practice (IPECP)? If yes, what do you know about it?
   Probe: How did you hear about it?

18. How would you describe the relationship between interprofessional education and interprofessional collaborative practice?

Probe: Do you feel public health students should be exposed to opportunities to work with non-public health students? Explain.

19. What resources do you feel public health faculty need in order to effectively teach interprofessionalism to public health students?
    Probe: What changes may need to be made to the public health curriculum or to current initiatives such as the Interprofessional Training Day?
    Probe: Could you describe how student exposure to interprofessional collaborative practice should happen (short trainings, courses, workshops, practicums)?

<u>Closing questions:</u>
20. What resources do you feel faculty need to be able to confidently incorporate interprofessionalism in their own public health practice?
    Probe: Where/from whom should these resources come?

21. What has motivated you (what would motivate you) to participate in interprofessional collaborations?
    Probes: E.g. Incentives/compensation, support from leaders or department heads? Or has it been a strategic/practical reason?
    Probe: A belief about the importance of interprofessional collaborations?

22. Is there anything else that you would like to add?

Thank you for your time and participation.

[END RECORDING]

APPENDIX IV: CODEBOOK FOR TRANSCRIPT ANALYSIS

Core Themes	Sub-themes	Code	Type of Code	Definition	Example
Scope and Knowledge of Interprofessional and Cross-disciplinary Collaborations		Understanding of cross-disciplinary collaborations	Deductive	Participants' understanding of multi/inter/transdiciplinarity.	I think they are all kind of referring to like people—like...trying to find like a little Venn diagram overlap with something else or someone else. P01, female, p.5
		Purpose of IPC	Inductive/Deductive	The perceived purpose and benefits of interprofessional collaborative practice and working in diverse teams.	I personally think that it's a—it's a very...ah...good way to do scientific inquiry. Um...if you do it all by yourself, I think you're bound to miss something because we all have—we're all just like filling different parts of an elephant. P01, female, pp.4-5
		Discordance between theory and practice	Inductive	An admission of agreement, support, adherence, or commitment to working in interprofessional or cross-disciplinary teams but not reflected in the collaboration.	And I think that we...*love* the terms [multi/inter/transdiciplinary collaborations] because they're, ah, you know...they're *aspirational* ...and I think we *rarely* accomplish them. P05, male, p.5
		Role of non-academic stakeholders	Inductive/deductive	The perceived role of any non-academic stakeholders who are foreseen as the beneficiaries of an intervention or project.	[The beneficiaries] are *strong* advocates[...] so *that* is very powerful...to bring in a parent and a child who's been affected by this and for the parent to describe, you know, "This is what my life is like. I need to change the catheter on that baby." Um...you know, "I need to wipe their butt because they can't do it themselves." [...] So...just giving the human face to a problem... P03, female, pp.6-7

Core Themes	Sub-themes	Code	Type of Code	Definition	Example
Power Dynamics	Hierarchy	Credibility and acknowledgement	Inductive	The reputation behind a person's ability to be believable and influential that is mainly fueled by gender, expertise, money, resources, and accolades.	So, there have definitely been times where people have taken my ideas and put them into their own documents. And so, there's a part of me that's a little bit *flattered* that they thought it was good enough to just pretty much *steal* it. [...] But there is a little bit of that kind of...from the *professional researcher* perspective of, 'It would have been *great* if someone had given me *credit* for this idea that they went on to...put out.' So...again, I'm not sure—in the end I think the ideas were valued. They may not have been in a—they didn't...value *my name* necessarily being attached to those ideas. P03, female, p.9
		Sphere of influence	Inductive	The degree to which a discipline is able to influence beliefs and actions among individuals and institutions.	[...] one discipline, um, is almost always saying, "We're a better discipline than you. We're more powerful than you. We actually know better than you, " um...and I won't name any names. But you know, there's a kind of hierarchy and that hierarchy also I think gets reflected in power and in the ability to command resources[...] If you're in an anthropology department at a university, the likelihood that you'll have more power, influence, and money than a medical school or law school is *very low* . Um, and I think in part because it's the way that those disciplines can *wield* their influence in the world in meaningful ways. P05, male, p.6
	Intersectionality of gender	Gender-based roles/responsibilities	Inductive	The idea that being male or female determines the role you play in an interprofessional or cross-disciplinary collaboration.	[...] I don't know if this is really true, it's just my perception, is that interdisciplinary work is like a feminine thing...that women are better at talking, and women are better at working with other people, and like making compromises, and ah... there is this kind of like stereotype about women being like better at that kind of thing. And ah...I've experienced this a couple of times in academic public health research where...ah...there will be, like, a high-power, like, *male* who will be like, "Well, like, that's great, like, that they're doing that work. Like, I just don't do that work." P01, female, p.18
		Gender-bias and inequities	Inductive	The social and cultural aspects of being male or female that impact a person's degree of credibility and/or ability to work in certain positions or settings.	I think that's just how things are, right. The older generation...um, of professionals are mostly men and a few women who have been able to work under that system and who probably have already internalized some of that [men predominantly holding positions of power]. Like they think, "The rules are the rules," and it's hard for them to *change* that. So...um...and it's interesting how...like in Rollins, for example, it's like...the students are mostly women, right? The [laughs] young faculty is... mostly women. And as people—like as you go *up* the ranks, it's harder to find, um, women. P04, female, p.6

Culture of Academic Public Health	Education and training	Incorporating IPE into traditional teaching curricula	Inductive/deductive	The experience of being a professor at an academic research institution and the various difficulties with incorporating interprofessionalism into the curriculum.	There are a lot of resources on campus to help you, you know, plan your courses, um…but you need time to do that. And so, time…is money and…if the university pays that time—*great*. But if you're spending your research time doing *teaching* then you'll get upset and you don't want to do that. So, I think the *system* is really screwed up in the way—what we value—that we don't value *education* as much as we value research[…] So, I just think it's a system that's really difficult to, um…to…value any innovations in [interprofessional] education…especially if it takes time. And they're all going to take time if it's something different and new. P03, female, p.15
		Mentorship influences future collaborative practice	Inductive	The idea that being taught the "soft skills" of public health practice (e.g., communication, teamwork, conflict resolution, etc.) by an older mentor aid in practicing interprofessionalism.	I mean I *hate* the word *soft skills*, but some of those things I think sometimes gets deprioritized a little bit in mentorship…um, but I've been lucky enough to have, you know, mentors who saw the value of that [how to work best in interprofessional teams] and have really, you know, encouraged kind of best practices around that. So, that to *me* has made it easier to work in these very collaborative teams across disciplines[…] whether it be, you know, within academic public health, or the community, or how we interact there…um, you know, to do that the most effective way possible. P02, male, p.9
	Reward structure and logistical considerations in research	Financial precarity of academia	Inductive	Feelings about the typically precarious financial situation of researchers (including securing tenure and promotion) and how that affects participating in interprofessional collaborations both professionally and academically.	[…] my job, you know, if I have to describe it…as a single thing—it's looking for money […]there's such a…um, a drive now to go out and find money…that I think it's…it really has become a powerful shaping influence on the way that we are even able to pay attention to things in our environment[…] So, even questions like this, "Do you know about that [WHSC IPECP Strategic Plan]?"—a part of me thinks, "It would be awesome to know about that—to be able to go and hang out and hear talk about that; to hear more about how people were making sense of that; to read that strategic plan and think for a while about what the implications are." It's not even possible anymore. P05, male, p.11
		Prestige in interprofessional practice	Inductive	Percieved prestige and promotion (or lack thereof) related to interprofessional practice e.g. publications, accolades, funding, etc.	I…have relatively little faith that…um, *true* interdisciplinary work is, like, sustainable beyond, like, individual projects. With the, again, with the, like, ah… reward structures that are currently in place in academia[…] credibility, papers…ah, tenure-track positions in academic institutions…ah, to a lesser extent travel to conferences, being able to represent your work…um, to an even lesser extent, being, like, science-Twitter famous. P01, female, pp.23-24
		Lack of time	Inductive	The inability to participate in interprofessional and cross-disciplinary collaborations/activities because of other professional obligations.	I've been *trying* to collaborate with…a professor from the Department of Economics here. And I *think* we can do things that are very interesting but it's just so difficult to…find times and projects where we can like…talk to each other. And then like there are other priorities *always* that keep like—we keep postponing this. P04, female, pp.13-14
		Need for administrative support	Inductive	The underlying processes or activities that support the management of an institution and the individuals/teams that operate within the institution.	[…] administratively…it's just a pain in the butt to—any big organization has a lot of—hiring people just takes weeks. Um…getting a payment, getting a new contract established—like you've gotten money from a donor and you need to set up an account within the University—that takes weeks and tons of emails and phone conversations […] because we're a big organization at Emory, all the admin takes a *long time*. P03, female, p.14
		Mutual exchange/reciprocity	Inductive	The mutual exhange of Information, resources, and risks that ultimately results in net gain of benefits to individual members on a team and may influence individuals to work on a team.	They [members on the team] all like had very valuable and important perspectives, but it was very, very hard for them to see the overlap[…] for example, I had like…explained, like, what immunogenicity is… like what the regression discontinuity design is. That…wedge would have gotten bigger, but it also takes a lot of effort on their part, and it's not, like, immediately obvious what a direct benefit to them is. And so…they just—they're not selfish people. Like, they are invested in my success, but they ah…it just wasn't like an incentive for them to—to learn that [discipline-specific terminolgy]. P01, female, p. 11
		Not feeling valued	Deductive/Inductive	Absence of feelings of usefulness, importance, or worth when working on an interprofessional or cross-disciplinary team.	Well…I think with like physicians it's *always* …a challenge [feeling valued in an interprofressional collaboration] . Like you are always having to *prove* that…like you *understand* health and that you have a broader perspective in some parts. And…um…so I think *that* has been some of the struggle[…] You'll have to *prove* yourself…um, so they know that you are in—at a similar, um, level. P04, female, p.5
	Discipline-specific beliefs and practices	Core aspirational values of public health	Inductive/deductive	The overall purpose and end-goals of public health and how they relate to interprofessional collaborations.	[…] within my team, we do a lot of qualitative research to understand perspectives [related to health promotion and receiving health information]…um, and some of the research that we've done, for example, we did within a large mega-church in Metro Atlanta. Um…[sucks teeth] but from my perspective, that's not, you know—the sort of issues around, you know, religion and public health—that's not something that I necessarily have a *strength* in…but I'm going to *pull* in people who are, you know, who work in those areas to have them, kind of, within that interdisciplinary team, making sure that we're getting—we're hearing those voices. P02, male, p. 6
		Silos	Inductive	The constructs (e.g. geographical, historical, pedagogical, incentives, disciplinary culture etc.) that keep professionals of different disciplines isolated and less likely to work interprofessionally.	[…] I think that in academic sciences um…there is like a temptation to think that you're like on your own. Not necessarily in a bad way. We are like siloed because that is the thing that allows us to pretend like we are the experts [laughs]…and stuff. So, if like I am the only person who does what I do, then "*I'm* the expert" and "*I'm* special" and "*I* get the Nobel Prize" and "Good job *me*" and, you know…there's like an incentive a little bit to, like, do that. P01, female, p.7
		Egocentricism	Inductive	Personal belief or attitude of heightened self-importance when compared to other disciplines, professionals (both within and outside one's discipline), and beneficiaries (e.g., community members) that discourages self/awareness reflexivity and keeps someone from working effectively in an interprofessional setting.	Um, you know, if people feel like they're always, you know, they're always correct or they're always *right*, you know, without necessarily a perception around…you know…a willingness to listen or even sort of, you know, vulnerability, for lack of a better term, you know, to sort of let themselves be open to other ideas or other concepts. Um. I think that's one of the biggest issues [that hinders the successful implementation of interprofessional collaborations]. P02, male, p.11
		Lack of commonality across disciplinary lines	Inductive	The difficulty in finding commonality and understanding across different disciplinary perspectives, expertise, and terminology/language.	[…] I think people really get hung up on terminology. And they—like once they see a word they don't know, they kind of shut down and they're like, "This is not a thing that I know about. I'm just not going to even dip a toe in this water"[…] But the—the um dissertation research- very, very similar to um…what I'm doing for the fellowship[…] The nutritionist was like, "What does immunogenicity mean?" Um…the vaccine epidemiologist was like, "What the hell is serum ferritin?" The biostatistician was like, "You're using the regression discontinuity design, but I don't understand, like, how you're going to implement it." No one else knew what that was… P01, female, p.11

		Trust	Inductive	Confidence in the words, actions, and character of individuals on a team.	Another really important part I think is trust. So, like…if you are working with someone that you don't think is a good scientist, you're going to try to take over, like, what it is that they're doing. That's like not [laughs]…that's not really collaboration. P01, female, p.7
Key Aspects of Successful Collaborations	Buidlng social capital	Mutual respect	Inductive	Shared feelings of admiration for team members that is elicited by their abilities, qualities, and achievements.	[…] basically, all of these groups came together…um, had a conference, you know, would go have conversations with different entities in the government to kind of sell them on this idea. And so, it was really—you can't sell the nutrition idea to the ag people without bringing ag people along. So, from my very narrow nutrition perspective, I knew I had to bring in—we had to bring in the ag people. And then for the ag people, while they could speak some to the nutrition issues within the ag community, they found that it was stronger if they brought in nutrition people to talk to the ag people…um, bringing that expertise. So, it was a nice complementation of…um, skills. P03, female, p. 5
		Clear communication of expectations	Inductive	Clear discussion of processes/goals/roles/etc. before, during, and after an interprofessional or cross-disciplinary collaboration.	I mean a lot of it was just a lot of…kind of *upfront* discussion…you know, really sort of laying out—I mean, we created, you know, kind of summary documents for study; provided that to people as we were going through to try to introduce some of that…um, and you know, just really had a lot of discussion about, you know, "These are the things that we're looking to do," you know. "Are they feasible? Are they something that you can help us with? You know…do they align with your goals?"[…] You know, letting them know where we're at with the process, you know…even as we go through data analysis and manuscripts, making sure the everybody is aware of what's coming out of all of that. P02, male, p. 8
		Sharing a common goal	Inductive	The importance of team members having a similar desired outcome of an interprofessional or cross-disciplinary collaboration.	[…] we don't go to industry and say, "Hey! If you do this, you're going to have more market share." Um…and then go to the health and say, "Oh! If you do this, you're going to reduce your…medical cost." And then go to the parents and say, like…a different message. *No. Everyone's* got to be given the same message, which is, "If we do this, we can have healthier people…you know, improve economy overall, etcetera, etcetera." So, having that common goal is super important… P03, female, p.7
		Humility	Inductive	Personal understanding that an individual's area of expertise may not be sufficient to solve a problem.	[…] if you look at, um…care teams, you know, where—I think they might be a good example of interdisciplinary practice—where you may have a nurse practitioner…maybe the nurse practitioner is the front end, right? So, he sees the patient first and there's, you know, it has *really* high level of competency around a whole bunch of areas. But then says, "You know…I'm a little anxious about this one dimension that I don't feel confident"—passes it off to the attending physician and then she looks at it and says, "Good call. I think this could be a leukemia or something and we got to investigate that deeply." P05, male, p.5
		Internal motivating factors	Deductive/Inductive	The internal "why" behind working interprofessionally amongst members of an interprofessional or cross-disciplinary team, e.g. learning new things, wanting to be challenged, the desire to work with others, etc.	Um, and honestly, it's a little—especially when I started both in my previous job for /intervention/ and then this job, um…it's really exciting at the beginning—the huge learning curve…learning *so* much. I'm learning from people from other fields who have different terminology and different ways of thinking—*that I* definitely really enjoy. And even though I'm eight years into *this* work, there's still, you know—I'll go to a conference and I may have heard that person speak many times before but I *still* get gems out of what they say. So, um… it's very exciting to *learn* something *new*. P03, female, p.10
		Feeling valued by institutions and academic culture	Deductive/Inductive	Feelings of usefulness, importance, or worth when working on an interprofessional or cross-disciplinary team.	So, two years ago…um…they—Parliament was going to be having a debate roughly in April. They called me like in February, "Could you come in March and help us understand what would be the cost of /intervention/? 'Cause we want to have the costing information…for Parliament…for their debate." So, I came in and worked with them for a week on doing a costing exercise. And so, um…it was just—it was great. I mean, for me personally, it was great to just…be able to…*meet their need*. P03, female, p.8
		Recommendations	Deductive/Inductive	Recommendations and feedback provided by faculty to improve interprofessional collaborations at RSPH.	I've been trying to collaborate with…a professor from the Department of Economics here. And I think we can do things that are very interesting but it's just so difficult to…find times and projects where we can like…talk to each other. And then like there are other priorities always that keep like—we keep postponing this. So, having *spaces* […] like the Global Health Case Competition…*but for faculty* with real case, um, studies that you can just see it and try to…solve that problem. Um, and maybe that can lead to other collaborations. I think that would be a way to—to try to *practice that* [interprofessionalism] and to try to engage with other people. P04, female, pp.13-14