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Concept analysis of dispositional humility in professionals and expanding the understanding of the concept in a multidisciplinary primary care environment: A mixed methods study

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Abstract

Concept analysis of dispositional humility in professionals and expanding
the understanding of the concept in a multidisciplinary primary care environment:
A mixed methods study

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Dispositional humility of healthcare professionals balances self-centered occupational drive and the needs of other professionals, and may contribute to effective collaboration. After the concept of dispositional humility was analyzed by a literature review, a study surveying dispositional profiles and attitudes toward integrative medicine was conducted among primary care professionals working in interdisciplinary community-based healthcare clinics. In this exploratory sequential mixed method design study, the initial phase of quantitative survey was followed up by the qualitative study of individual interviews which was analyzed by directed content analysis.

It was observed that the: 1) honesty-humility trait ($p<0.01$), conscientiousness ($p<0.01$), and openness ($p<0.05$) of primary care clinicians were statistically significantly higher than the reference norms of collage students; 2) attitudes toward integrative medicine were not different among the three different clinician types with different professional healthcare training backgrounds and credentials (MD/DO, NP, ND); and 3) the summative coding counted themes

such as 'patient-centeredness' (other-oriented rather than self-oriented), 'humility', and 'trust', that were considered as attributes of dispositional humility. The directed content analysis identified the dynamic elements of the concept map of dispositional humility, which theoretically connected to functional collaboration among professionals.

Dispositional humility allows clinicians to have an accurate self-assessment, be open to new ideas, appreciate the contribution of others, and develop generosity. Dispositional humility in leaders can facilitate character development of team members and create an environment characterized by fairness and equality, transparency, non-punitive consequences for reporting errors and near-misses, and a safe and encouraging environment for performing work. However, dispositional humility must be nurtured and developed through professional training because high educational attainment, career and financial success, and busy schedules may lead to a sense of self-importance and entitlement that can promote separation of team members into hierarchies based on professional disciplines and specialties. To maintain high quality patient care while working as a team, limiting self-interest while focusing on the needs of others may be necessary and in the best interest of patients. People who display high levels of honesty-humility as well as conscientiousness tend to place trust in other people and act themselves as trustworthy individuals.

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DEDICATION

During the journey of this academic work, two of my fathers passed away, Jim Jacks in 2016 and Giichi Sasagawa in 2017. I felt their spirits and energy are within me, which strengthened my mental faculty to carry out this work. I would like to dedicate this dissertation to my fathers.

Chapter 1. Concept analysis of dispositional humility among professionals in an interdisciplinary healthcare environment

Introduction

This paper discusses the concept of dispositional humility, and whether or not the concept is applicable to creating collaborative environments in an interdisciplinary healthcare setting. In the book, *Critical Thinking: Tools for taking charge of your professional and personal life*, Paul and Elder (2002) systematically illustrated the process of critical thinking and discussed the dual nature of the human mind: An instinctive tendency toward irrationality and a native capacity for rationality. While our irrational mind is not concerned with the rights and needs of others, i.e. is self-centered, our rational mind seeks to monitor our own tendency toward egocentric or irrational thinking and modifies such thinking with corrective rational thought[1](p289). The social scientists' and educational psychologists' views of the irrational and rational duality of the human mind provide a framework for this paper, because to collaborate we must show concern for the rights and needs of others. If our instinctive tendency is to work against these requirements for collaborative work, then we need to maximize our native capacity toward rationality. The word collaboration derives from the Latin *collaborare* and is found referenced in the French literature of 1860 (http://www.etymolline.com, accessed 29 Oct 2017). Collaboration connotes not only working together, but is also used for 'traitorous cooperation with an enemy', implying working together with a party of opposing interest.

In the healthcare setting an opposing interest may be associated in the clinician's mind with a different discipline, specialization, healthcare philosophy or perspective. The concept of specialization or discipline was developed from classical Greek philosophy, the product of

Plato's account of the principle of specialization and its extension to the design of the state and its educational institutions[2]. When considering the creation of a flourishing society, the principle of specialization entered the Republic (state) with the creation of the first city, the City of Pigs. "The creator of this first city is our need for food, housing, clothing, shoes, and so on. Isolated individuals are unable to provide for these needs and so band together to remedy their lack."[2](p139) Later, one's aptitude to a particular specialization became evident by demonstrating easy comportment of one's mind and body to the acquisition of a specific task. Hence the specialization of tasks due to the nature of the individual and/or the background and training of the individual may be found in the social structure we observe today. It is not difficult to speculate that this was the philosophical basis of the concept of the division of labor to increase productive efficiency discussed in the Wealth of Nations[3].

As economic and political forces drove the development of occupations in modern industrial society, some disciplines succeeded in achieving a hierarchical status more than others. "The professions occupy a position of importance in our society which is, in any comparable degree of development, unique in history."[4](p457) Parsons (1939) analyzed the creation of social structures seen through the lens of motivational factors of people in different occupations and observed that 'professionals,' as groups associated with specific occupations, tend to be motivated by altruism and service to society, while 'business people' are motivated by more self-serving behaviors, such as the pursuit of personal profit[4]. Furthermore, an individual’s interest in making a large income was not only the desire for purchasing power but also a symbol of their own perception of self-worth and value in the society. "Comparison of the professional and business structures in their relations to the problem of individual motivation is furthermore a very promising avenue of approach to certain more general problems of the relations of

individual motivation to institutional structures with particular reference to the problem of egoism and altruism."[4](p467) If egoism and self-interest dominate among professionals, we may favor the instinctively irrational mind, and instead of monitoring our own irrationality, we may use rational thoughts to help justify the creation of an egocentric and self-serving social structure that includes biased political ties, administrative connections and the promotion of a hierarchy of professions and a separation of disciplines that safeguards the social, financial, political and economic interests of one profession over another. However, as clinicians, the overarching philosophy remains the same: Healthcare professionals are supposed to be altruistic rather than egoistic and self-serving[5]. While we claim productive efficiency and improved care as the rationale for dividing healthcare systems into disciplines and specializations, we may be hiding this bottom line of 'enlightened self-interest.'

Humility may be a dispositional factor of an individual that makes the person aware of the irrational mind and may help them utilize rational thoughts in a more auspicious way. Neither the tendencies of the mind nor the personality disposition has been a focus of scientific investigation for model development on collaboration in the healthcare work environment, perhaps because we assume that education and rigorous professional training can modify our irrational instinct. For example, trained professionalism through the means of education was defined by the American Board of Internal Medicine's commissioned *Project Professionalism* as: altruism, accountability, excellence, duty, honor/integrity, and respect[6]. If educational training alone can help someone attain the professionalism described above, then there is no need to worry about the irrational and egoistic instinctive tendency of our mind in professional interactions. Can professional education alone be sufficient to maintain collaborative work? This concept paper is part of an overarching research question about whether or not dispositional

humility is an important factor in an interprofessional collaborative environment. As we engage in teaching healthcare professional students, an awareness of and a focus on dispositional humility for ourselves and for our student clinicians may facilitate creating a favorable interprofessional collaborative environment. This study investigating dispositional humility is the first exploration of personality factors that enhance professional collaborative relationships.

1.1 METHODS

Walker and Avant's eight-step concept analysis is delineated as: 1) select a concept, 2) determine the aims or purpose of analysis, 3) identify all uses of the concept that can be discovered, 4) determine defining attributes, 5) identify a model, 6) identify comparative cases, 7) identify consequences, and 8) define the term[7]. A systematic literature search has been conducted using Medline, PsychINFO, EMBASE and CINAHL for articles published from 1997 to 2017 using various Boolean terms. To be selected for review, either the title, keyword or abstract of the searched articles had to show relevance to humility.

1.2 RESULTS

1.2.1 *Concept to be analyzed*

The concept under discussion is 'dispositional humility' in the professional work setting. A dispositional factor in an interpersonal relationship may be defined differently from one in a professional relationship. In the professional setting, dispositional humility is not meekness or the lack of self-esteem. A description of the psychological construct may include non-judgmental open-mindedness to respect different points of view while maintaining the virtue of a positive

psychological character[8]. Dispositional humility is negatively associated with arrogance-related concepts such as egotistical, high-and-mighty, closed-minded, and conceited[9].

1.2.2 *Aims and purposes of defining dispositional humility*

One purpose of this analysis is to investigate to what extent the concept of dispositional humility is relevant to professional relationships among clinicians from different healthcare trainings, philosophies and perspectives. One of the assumptions is that the different healthcare trainings, philosophies and perspectives are represented by different specialties or disciplines institutionalized in our society, and that these different specialties may compete with each other socially, politically, and economically, and try to maintain professional and hierarchical power over each other. Can the above-discussed issues surrounding people with different self-interests be resolved by training in professionalism? The aim also discusses whether or not a dispositional characteristic is modifiable by rigorous ethical and professional training.

1.2.3 *Identifying the terms used in different contexts*

A literature search to identify the concept of 'humility' found in medicine, nursing, sociology and psychology did not differentiate between humility as a personality factor in social relationships[10, 11] and humility in the interaction of a professional working relationship. The concepts of humility discussed here are: leadership humility, religious humility, cultural humility, intellectual humility, organizational humility, relational humility, and the personality factor presented in the HEXACO inventory, i.e. the honesty/humility (HH) domain.

Leadership humility. Leadership humility is a term found in the science of workforce management and administration[12, 13]. One of democratic leadership styles is ‘shared

leadership' where the team members' input is maximized[14] and creativity enhanced[15] because of the flexibility of the leader in accepting opinions of other members of the team. In the context of leadership, narcissism often comes up because we often choose leaders with this seemingly contradictory personality attribute[16]. Individuals displaying 'hubris' or individuals with excessive pride and self-confidence often wish to become leaders to claim self-importance and control[17]. However, humility referred to in the context of leadership literature is often defined as a negative attribute because leaders cannot be humble and are required to be charismatic to instill confidence in the working group[12, 14]. Charisma is often associated with extravert characteristics, with strong convictions that are attractive to others. In the professional environment, leadership humility is characterized by being open to admitting one's limitations and mistakes, and showing appreciation as well as giving credit to others[15]. Leadership training requires teaching humility because insufficient self-awareness with power may have devastating consequences for a team. "An inability to display introspection and self-examination may lead to overestimation of one's own capabilities, especially if one is in a position of power."[18](p98). In an educational setting, leadership humility is relevant to the student-teacher relationship and classroom environment; however, how a teacher's dispositional factors influence the future healthcare professional is beyond the scope of this paper.

Religious humility. Religious scriptures often teach humility as a central virtue. When research participants were primed by reading stories depicting humility before being criticized as part of an experiment, religious people tended to maintain less retaliatory intentions toward criticism, when compared to non-religious people[19]. This study showed that religious people might pick up the cue to become humble (self-aware and open to criticism) more than their non-religious counterparts[19]. Another study hypothesized that humility is enhanced in older

individuals (age >66 years old) by interaction with like-minded others in the religious (Christian) community because people jointly construct their social view of the world[20]. Krause (2010) defined humility as obedience to God and God's teaching, and 'pride' was considered the antonym of humility. This conclusion is concerning to a society with people of diverse beliefs because of the phenomena known as 'in-group favoritism'[21, 22]. People with the same beliefs have the same social identification and this makes it easier for them to cooperate[21] while people who are not identified as the same group may find it difficult to cooperate or may be actively excluded. Krause's definition of humility may appear detrimental to enhancing interdisciplinary collaboration; however, other researchers explain (spiritual) humility differently. Fostering greater humility is considered a part of character development for juvenile offenders, and the act of helping others flows from a spiritually grounded humility[23]. Lee et al (2017) viewed the treatment of addictive behaviors through the spiritual virtues of humility and altruism. Humility and teachability are characterized by having an accurate sense of one's self and abilities, along with an openness to accepting input from others[23]. If such humility is extended outside a group identified as self, inter-professional interaction will be benefitted.

Cultural humility. 'Cultural humility' evolved from the term 'cultural sensitivity' and is the preferred term to describe an environment or attitude that accepts and respects diverse cultural beliefs and practices[24-26]. 'Cultural humility' was defined as a lifelong process of self-reflection and self-critique, to redressing the power imbalances in interpersonal dynamics, and to developing mutually beneficial and mutual advocacy partnerships[26]. Cultural humility demonstrates “a willingness and openness to reflect on one’s own self as an embedded cultural being, having an awareness of personal limitations in understanding the cultural background and viewpoint of others.”[27](p661) To become a member of a diverse healthcare team, the life-long

journey of self-awareness and reflection is the first step because "our health profession's graduates would walk across the stage without knowing what graduates from other health professions do or how they contribute to the healthcare team"[28](p1). Alsharif (2012) urges healthcare training curricula to assure the acquisition of cultural humility as one of the educational competencies. However, he does not define whether everyone can acquire cultural humility by training or whether those who fail to acquire the educational competency due to the lack of a dispositional factor are eliminated from the pool of future practitioners. In regards to creating an environment that facilitates cultural humility, "some leadership teams are exceptionally humble, which theoretically enhances transparency, engages fairness and equality, facilitates reporting of errors and near misses, and sustains a safe environment for staff members to excel."[29](p28). Similar concepts found in the published literature include intellectual humility and organizational culture characterized by humility (organizational humility). Intellectual humility emphasizes the awareness of our own intellectual limitations despite high achievement, and displays an ability to accept different points of view[30, 31]. Organizational humility explains the combination of cultural humility and leadership humility with the principle of servant leadership[29].

Relational humility. Relational humility implies humble characteristics displayed or perceived by others in any (interpersonal or professional) relationship. Interpersonal modesty refers to "the tendency to moderate praise or recognition in socially acceptable ways."[32](p225) The Relational Humility Scale[32] was developed to assess the presence of human virtue that was rooted in religion to foster belief and obedience to God[20]. However, some authors mentioned that the self-reporting form of the humility scale may not quantify the true nature of a person because "the truly humble person has a natural tendency to underestimate the presence of

virtue and acclaim of the presence would be immodest."[10](p2). Three attributes discussed about humility in relationships are: 1) accurate assessment of self, 2) modest social portrayal, and 3) other-oriented rather than self-focused[33]. These attributes are believed to reduce dyadic stress[33] and enhance commitment in romantic relationships[34]. "When people see their partners acting selfishly and arrogantly, they view their partners as less humble, which leads them to see the relationship as a riskier investment, which causes lower commitment and relationship satisfaction."[34](p16) Clearly, the perceived humility resulting from the actions and mannerism of others will enhance the chance of success in a relationship. So what types of actions and mannerisms are culturally perceived as humble? For instance, time is a critical and limited commodity for working professionals. If a professional demands work from another professional without respect to the other's time, this interaction may be perceived as 'not humble' or 'non-collaborative' behavior.

Humility as a personality factor. Personality dispositions are features or qualities of a person's nature as opposed to a trained skill. As Paul and Elder (2002) define human minds as having an instinctive tendency toward irrationality and a native capacity for rationality, a dispositional factor (humility) may be described by both instinctive tendencies and rational thoughts. A caution is needed in describing this duality because we are also capable of legitimizing the irrational instincts of selfishness and egotism by using the rational mind, i.e. by justifying the formation of, for example, professional membership, social or institutional hierarchy, and social, political or financial advantage. Furthermore, the western clinician's professionalism overlaps with the aforementioned definitions of various humility attributes[35]. Whether or not rigorous professional training can modify personality dispositional factors is debatable. Trained skills may be perceived by others as fake or inauthentic; however, patient-

clinician interactions based on authentic positive dispositional characteristics (humility, for example) do enhance the therapeutic alliance in psychotherapy[36]. Another good example is the fact that patients tend to form personal bonds with nurses instead of physicians, often due to a lingering perception of physician paternalism[37]. Medical paternalism is considered caring and protective, but may also include the attitude that patients are not competent to assist in making treatment decisions[38], which may be perceived as arrogant and egotistical behavior on the part of the physician. Because expression of dispositional characteristics by physicians and nurses seems different, patients may feel a sense of humility from nurses more than they feel humility from physicians. Humility was also found to be a robust predictor of generosity toward close friends, strangers, and even enemies[39]. To quantitatively measure the level of dispositional humility, the HEXACO personality questionnaire (with six domains of personality) was developed, which includes an Honesty/Humility (HH) factor as one of the personality domains[40]. The HH domain is subdivided into four facets: sincerity, fairness, greed-avoidance, and modesty[41]. The HH unfolds the subject's basic prosocial orientation and behaviors and the expectation that others are (also) prosocial and trustworthy[42]. By combining the concept of honesty with humility, the HH domain quantifies the dispositional character of individuals toward developing trusting relationships. Even though clinicians are trained to be professionals, the impression of trustworthiness may be transmitted through dispositional factors, which may also be important in intercollegial interactions.

1.2.4 *Determine the attributes of dispositional humility*

The recurring or common attributes observed in the previous section were also summarized in several publications[23, 33, 39, 43]:

1. Accurate assessment of one's abilities and achievements
2. Ability to acknowledge one's mistakes, imperfections, gaps in knowledge, and limitations
3. Openness to new ideas, contradictory information and advice, teachability
4. Keeping one's abilities and accomplishments in perspective
5. Modest social portrayal of self as a part of the larger universe
6. Appreciation of the value of all things, as well as the many different ways that people and things can contributes to our world
7. Other-oriented rather than self-focused
8. With respect to self-preservation in competitive society (finances, pride, recognition), people with humility are more generous by giving accolades and benefits to others
9. The lack of entitlement and willingness to work hard to earn by achievement

The quality of a relationship is affected by the displayed and/or perceived humility. In order to gain a deeper understanding about quality of relationships, 109 college students were enrolled in a study investigating the level of humility and social relationship quality, and dispositional humility was found positively correlated with social relationship quality[11].

Humility counters selfish inclinations such as entitlement and narcissism, and is considered the opposite of arrogance—the belief that we are wiser or better than others[43]. The following terms showed divergent validity for humility during the creation of the Dispositional Humility Scale[44]:

1. Arrogant
2. Egotistical
3. High-and-mighty
4. Closed-minded

5. Conceited
6. Selfish
7. Entitlement

Narcissism and pride were discussed as antagonizing concepts of humility with some attributes not necessarily antonymous. Certain attributes of narcissism such as self-absorption and lack of empathy toward others are antagonistic; however, humility of professionals should never include self-loathing or an inferiority complex. Some level of self-love and pride must be present. Unless professionals possess a pathological level of narcissism or overbearing pride, these attributes may co-exist with the concept of humility. In other words, some level of pride and self-esteem can strengthen the maintenance of humility; however, at the same time, those individuals might also be considered arrogant due to an overbearing humility.

1.2.5 *Identify the model case of dispositional humility*

The Chief of Vanderbilt's Division of Obstetric Anesthesiology, David Chestnut, described the decline of publications containing terms such as honesty, truthfulness, humility, modesty, honor and sacrifice[35]. He reflected about his own professional success by describing how he learned humility in the context of his professional life. After his academic and professional training, he was bursting with confidence to the level of arrogance and overbearing. One day his senior fellow conveyed to him the feelings expressed by the head nurse, where she talked about how much she hated working with him, and the senior fellow informed Dr. Chestnut that he must change or lose his position. Apparently this prompted him to change his attitude and mannerisms toward nurses. He realized how much nursing staff could teach him about the essentials of good teamwork. This case describes the duality of the human mind: Self-centered irrationality and the

corrective rational nature prompted by the prospect of professional failure. His natural reaction to become self-aware and admit his shortcomings demonstrated his dispositional humility. If he was not in fact a humble attending physician, he could have retaliated against the head nurse; however, he did not. Dr. Chestnut states, "I immediately started saying 'please' and 'thank you' more often. When I needed to make a clinical decision, I would often ask the nurses for advice. They taught me a lot."[35](p780) He also noted that "Arrogance and pride are self-destructive. Ironically, a person who possesses true humility does not have the slightest idea that he or she is humble."[35](p781) This is an interesting characteristic of humility, despite the fact that it enhances self-awareness, and humble clinicians may not realize their own virtue. Chestnut went on to quote Duffy (2009), stating that in teaching professionalism, we should include the care of the doctor's soul, by practicing social displays of gratitude and humility and observing that healing miracles occur by working together as a team[45]. The commitment to lifelong learning is a hallmark of medical professionalism[35]. As Chestnut advanced in his professional career toward a greater leadership role, he explained the value of servant leadership and stated the importance of treating team members well by learning their names, treating them with respect, and by expressing gratitude for their work[35].

1.2.6 *Identify comparative cases*

What is not dispositional humility in relationships is discussed in this section. Dispositional humility is explored in personality psychology and operationalized by psychometrical instruments including the HEXACO personality inventory. By combining humility and honesty, the HH domain in the HEXACO incorporated the propensity toward developing positive and trustworthy relationships in social interactions. To identify what is not dispositional humility, those who are characterized by having low HH scores presented behavioral characteristics in the

workplace called 'Impression Management Behaviors (IMB)'[46]. Five types of IMB were "1) *ingratiation* (doing favors and using flattery and opinion conformity to be seen as likeable by the target), 2) *self-promotion* (playing up one's own accomplishments to be seen as competent by the target), 3) *exemplification* (going above and beyond what is expected to be seen as dedicated by the target), 4) *intimidation* (signaling power or the potential to punish in order to be seen as dangerous by the target), and 5) *supplication* (advertising one's weaknesses to be seen as needy by the target)"[46](p537) Low HH and associated IMB present characteristics of manipulation, deceit, and exploitation. Bourdage (2014) described the dispositional basis of IMB, and although coworkers may not accurately perceive it, it is confirmed by having low HH scores. Extraverts are sociable and if they are high in the approval-seeking behaviors, they may place strong emphasis on gaining the acceptance of others by creating positive images of themselves. These portrayals of a positive self are not humility, even though it is directed at gaining acceptance and being liked by others[47].

Other researchers raise a concern about the direction of humility research because humility has been defined mainly by academic researchers as a 'virtue' and the lay person's input has not been incorporated[48]. Weidman et al (2016) conducted five series of studies with a total of 1,479 participants that identified two kinds of humility: 'appreciative humility' and 'self-abasing humility'[48]. Personal success elicits appreciative humility, which generates actions to appreciate others and is positively associated with psychological dimensions like pride, guilt, and prestige-based status. Self-abasing humility comes from personal failure and involves negative evaluation of self and actions to hide from others' evaluation; psychological states such as shame, low self-esteem, and submissiveness are associated with self-abasing humility[48]. They called these definitions of humility the 'darker side'[48]. However, this study was based on the

'experimental induction of a momentary humility experience.' A momentary humility experience may be different from dispositional humility, which is the dispositional element elicited by the momentary experience. Other terms for this momentary humility may be a 'reality-check' or a 'humbling moment,' in which the person's dispositional humility is awakened, and the internal change occurs in the attitude of how one relates to others. Emotional readiness and mental maturity may be needed to elicit dispositional humility by these reality-check moments. Productive criticism or an environment that provides the reality-check, like Chestnut being told that he would lose his professional position unless he changed his arrogant attitude toward nurses, should be further explored. Criticism can be given kindly and thoughtfully rather than in a rude and hurtful manner, and constructive criticism coming from outside may be perceived differently if the receiver feels the critic is humble versus arrogant.

1.2.7 *Consequences of dispositional humility*

Dispositional humility is not likely to be exhibited saliently and with the awareness of the person. The common characteristic traits are people who like to learn from others[35], do not exhibit their status or accomplishment excessively[43], express gratitude to others and are able to apologize for mistakes[35]. In the professional work setting, these humble characteristics must be accompanied by competency and the fulfillment of professional responsibilities. Without the ability to perform professional roles effectively, these characteristics may be perceived as incompetence and submissiveness, which does not benefit the professional collaborative relationship. The humble character must also be accompanied by a sense of morality and ethical behavior. Without being supported by ethical principles, workers may exhibit IMB (for example, ingratiation and supplication) in order to manipulate others for selfish reasons. The HEXACO inventory also contains the domain called 'conscientiousness', which reflects the level of ethical

strength[40]. This domain must be high along with HH domains for professionalism with dispositional humility.

Competent individuals know their self-worth. Professionals accompanied by a track record of accomplishment working in a complex and stressful environment, as in the example of David Chestnut, may express so much self-confidence and overbearing pride that their capacity for dispositional humility is hidden. It may be the case that their capacity for dispositional humility has not been awakened because they have not been exposed to the 'reality-check' or ‘humble moment’ of self-reflection. Not only dispositional characteristics but also emotional readiness and mental maturity may also play a role in character development. Chestnut found that being the department chair made him more unkind, demanding and impatient. He found that interpersonal relationships became more mechanical and respect was more of an entitlement rather than being genuinely earned. Chestnut believes strongly that professional training is not finished at the end of formal education. "Professionalism is not something we learn once, and no physician is perfectly professional at all times, in all circumstances. Professionalism is both a commitment and a skill—a competency—that we practice over a lifetime."[35](p780) Being self-aware, not overestimating one's own ability, being committed to learning and working toward other-oriented goals are the consequences as well as characteristics of dispositional humility.

As mentioned earlier, dispositional humility makes an individual aware of the good intentions of critics, causing less retaliatory behaviors[19]. Professional success as well as financial entitlement due to the amount of education and training may cause clinicians to forget the sense of humility. Furthermore, if you cannot be fully present in the moment of communication with other professionals, and handle such moments in a rushed manner, it may

give the impression of arrogance and self-absorption, which is detrimental to developing trusting relationships. As a consequence of humility, a person is able to adopt the value of inclusiveness[28], providing an environment that facilitates the reporting of medical errors, transparency, fairness and equality[29], generosity to others[39], improved quality of relationships[11], and a reduction of dyadic stress[33].

1.2.8 *Definition of dispositional humility*

Dispositional humility is a socially desirable trait and converged to a concept that includes: humble, modest, tolerant, down-to-earth, respectful, and open minded[44]. The concept also has separation (divergent validity) to concepts like arrogant, egotistical, high-and-mighty, closed-minded, conceited[44] and entitled[35]. Dispositional humility is a character trait of lifelong learning to improve the self, to improve relationships with others, to be aware of the limitations of self, to appreciate and accept others and their values, and to be generous.

Dispositional humility of team leaders can create an environment that facilitates character development and the growth of the team members' dispositional humility. An example of such facilitative environments that can develop the team members' character are fairness and equality, transparency, dedication, non-punitive consequences for reporting errors and near misses, and a safe and encouraging environment for performing work[29]. Hufmann (2015) described these requirements as "the organization's moral fabric as reflected by its values statement and code of conduct"(p28). Professional training should not only provide knowledge and behavioral skills but also focus on nourishing the 'soul' of professionals.

1.3 DISCUSSION

Due to the complex nature of the U.S. healthcare system, interprofessional collaboration by healthcare providers may involve cooperation between professions that might have developed with different social, political and economic interests, and also with different perspectives and philosophies; this is represented by different clinical credentials, types of training, schools and disciplines. For instance, the school of medicine and the school of nursing train clinical professionals with distinct healthcare philosophies and roles in the healthcare system. During the course of professional training, students invest considerable personal resources for the success of their profession. It is not surprising that individuals may form an affinity for his/her own professional kind, which can unfortunately develop into the 'in-group favoritism' that creates barriers to collaboration with different professionals for a common purpose, for example in serving patients. The number 6 attribute of dispositional humility is meaningful in this regard as it states 'appreciation of the value of all things, as well as the many different ways that people and things can contribute to our world'[43]. Dispositional humility has attributes that promote collaboration across professions with different social, political and economic interests, and also different philosophies and perspectives.

The commitment to lifelong learning and care for the 'soul' of clinicians should be a part of training in professionalism[35]. During the teaching of students or the mentoring of younger faculty members, the seeds of dispositional humility can grow in a nurturing environment. At times, providing the ‘moment of humility’ or 'reality-check' may benefit those successful professionals who may have neglected their 'soul'. Duffy (2009) wrote as he reflected on his medical education and professional success, "I had lost any humility and gratitude I might have had, and replaced these attitudes with self-righteous pride, entitlement, and disregard for the

feelings or welfare of others."[45](p24) Perhaps we need to remind ourselves that we are working in a complex healthcare system that may change our minds but not our soul. The interprofessional collaborative model proposed by Mulvale et al. (2016) uses individual healthcare professionals as the foundation for making adjustments in different types of interprofessional collaborations, and the ability of the individual to make adjustments is mediated by team attitudes, group processing, team structure, policy-level restrictions and patient characteristics[49] that ultimately lead to high-quality and cost-effective healthcare. However, this model does not address the dispositional factors that each healthcare professional inevitably brings to the workplace.

Dispositional humility cannot be safely expressed in an environment which lacks mutual respect. In other words, dispositional humility is a fertilizing factor for developing meaningful and cooperative relationships; however, prerequisites may be necessary and are described by Hofmann (2015). Dispositional humility shines in healthy organizational culture, but is fragile. As a consequence of being fragile, humble professionals may be exploited and may leave the organization before burning out. The level of empathy expressed and perceived by individuals is very much dependent on the context and social environment[50]. Humble individuals may give others the benefit of the doubt for maltreatment or perceived inequality, but a recurrent pattern of workplace stressors cannot become the norm of the work culture. Dispositional humility is a psychometrically defined facet of personality that is beneficial for developing cooperative and functional professional relationships; however, it is fragile in a dysfunctional organizational environment. Whether or not professionals consider this characteristic an important factor will be investigated in future research studies.

1.4 Conclusion

Disposition is a core feature of relationships with students, clinicians, teachers, patients, and other stakeholders in the healthcare environment. Professional relationships rely on the skills and competency of partners; however, dispositional factors will come into play in a stressful and demanding work environment. Regardless of whether professional skills are mastered, relationships without genuine interactions may be perceived as false. It may be the case that professional and business relationships are often defined as inauthentic, where people interact without exposing each other's true dispositional factors. In academic settings or among highly educated professionals, our instinctive irrational mind is suppressed or superseded by the rational mind. However, relying on professional training to control instinctive irrational behavior may not work in the long run if it does not include education about the importance of dispositional factors such as humility. In a complex healthcare setting, time is limited and the overwhelming demands of work must be handled while providing care to patients. In such stressful work environments, dispositional humility can relieve dyadic stress and also moderate collaborative group stressors. As discussed, if our instinctive tendencies have created institutions and hierarchies that work against the requirements for collaborative work, then we must foster our native capacity toward rationality. Dispositional factors are natural tendencies of individuals, and some individuals may possess dispositional humility before entering into professional healthcare training. However, most students and clinicians in training develop their professional character in the context of their training and work environment. It would be of great value to create environments and professional training curricula that are conducive to the development of dispositional humility in order for professionals with different training and credentials to work collaboratively, regardless of their social, political, economic, and philosophical differences.

Chapter 2. Dispositional humility of clinicians in an inter-professional primary care environment: A mixed methods study

Introduction

Background and Significance

A multidisciplinary professional team care approach increases the satisfaction of patients leading to better health outcomes [51]; however, power dynamics and trust among clinicians with different professional healthcare training backgrounds and credentials can become unstable [52]. To maintain high quality teamwork, limiting self-interest and focusing on the needs of others may be necessary for the best possible care of patients. "Being too arrogant or self-focused could negatively affect relationship quality" [11]. This has led to an exploration of the role of dispositional humility in enhancing the performance and function of integrative health care teams. Dispositional humility in professionals is not meekness or the lack of self-esteem. Dispositional humility is defined as a native capacity to self-monitor and to achieve a balance between self-interest and the needs of others. A description of the psychological construct may include non-judgmental open-mindedness leading to respect for different points of view and also maintaining other positive psychological characteristics [44]. Patient-clinician interactions that include positive dispositional characteristics such as dispositional humility enhance the therapeutic alliance in psychotherapy [36], and this is most likely also true between primary care clinicians and patients. The importance of dispositional humility in primary care interactions is revealed by the fact that patients tend to form close personal bonds with nurses instead of physicians due to a lingering perception of clinical paternalism seen in physicians [37].

Primary care clinicians who serve patients in community health clinics may possess certain occupational characteristics like altruism. One of the assumptions of this study was that

clinicians who choose to serve underprivileged populations (Medicaid, for example) may naturally possess dispositional humility because people who work in difficult situations and still fulfill obligations may be linked to the trait of dispositional humility. In the midst of largescale healthcare reforms, clinicians serving Medicaid patients must face many stressful issues, such as patient demands and an unstable job climate, all while maintaining integrity as healthcare professionals. The Association of Family Medicine Residency Directors (AFMRD) Board, Mark Robinson et al (2008), wrote that "Faculty, staff, and residents spend many hours carefully scrutinizing dean's letters, transcripts, USMLE scores, letters of recommendation and interview data" for the National Match process for residency positions. The AFMRD Board looks for character traits consistent with what one would expect in a good family physician, traits that include being trustworthy, loyal, helpful, friendly, courteous, kind, obedient, cheerful, thrifty, brave, clean and reverent [53]. Some of these character traits are also strongly associated with dispositional humility.

A psychometrically validated dispositional assessment tool was developed to measure the six domains of personality: Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to experience (HEXACO personality inventory), and one of the six, the Honest-Humility (HH) domain, was found to have four facets (subdomains): sincerity, fairness, greed-avoidance, and modesty. The HH domain has been positively correlated with work productivity behaviors and negatively associated with feelings of job insecurity and work counter-productivity, even when gender, age, type of contract, and other HEXACO traits were controlled for [54]. Thus, dispositional humility can be evaluated as a factor of resiliency in a stressful work environment by reducing unfair subjective bias and enhancing objectiveness. Politics and favoritism may become problematic with group interactions, and the challenging,

time-constrained and stressful inter-professional interactions that are required of primary healthcare clinicians inevitably brings the disposition of individuals to the surface. In-group favoritism and increased empathy among those who identify as part of the same group is a well-known social phenomenon, along with tribalism or clique formation [21]. In contrast, dispositional humility promotes integration of different beliefs, perspectives and ideologies, and consequently, it is worth investigating the role this character trait might play in integrative and collaborative care. Because expression of dispositional characteristics in physicians and nurses appears different, exploring the dispositions of primary care clinicians, including clinicians with diverse professional training backgrounds, may help to explain previous research findings. Many studies on professionalism have focused on building skills and creating organizational structures to facilitate inter-professional collaboration rather than evaluating the personality dispositions of professionals. This mixed methods study investigating dispositional humility is the first exploration of character traits of individuals that may enhance the professional collaborative relationship.

Research Question: Are the attributes and consequences of dispositional humility perceived as important factors in the inter-professional collaborative environment of primary care clinicians?

Specific Aims

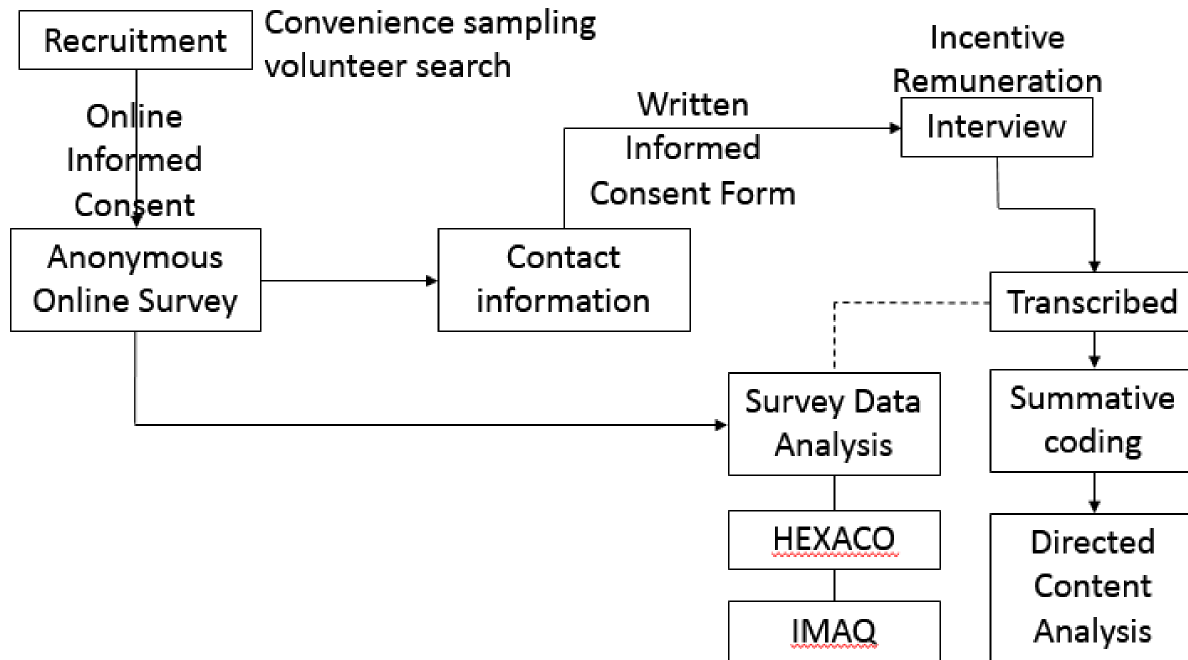
1. To assess the dispositional traits of clinicians including the attitude toward integrative medicine in primary care clinics serving Medicaid patients

2. To expand understanding of the trait of humility as measured by quantitative instruments and using qualitatively analyzed interview data

2.1 METHODS

An explanatory sequential mixed methods design required the collection of quantitative data first followed by explaining the quantitative results with in-depth qualitative data [55]. In the quantitative phase of the study, the HEXACO personality questionnaire and Integrative Medicine Attitude Questionnaire (IMAQ) were used. Specific aim 1 was addressed by quantitative analysis of the above two instruments. In the qualitative phase of the study, data obtained by individual interview were qualitatively analyzed by directed content analysis, in which codes are deductively categorized into themes based on a model or hypothesis [56]. The concept analysis of dispositional humility defined the predetermined coding and themes used for the directed content analysis [57]. Two researchers extracted codes and categorized them according to the directed content. The study was approved by the Bastyr University Institutional Review Board (IRB: 16-1558) and deferred by the University of Washington Institutional Review Board. The overview of the study design is depicted in Figure 2.1: Study Diagram.

Figure 2.1: Study Diagram



Caption: Volunteers were recruited by convenience sampling and searching for volunteers by flyer and email. The survey was anonymous until the end where the participant could leave contact information. The written informed consent was completed before the interview, which was then transcribed and analyzed. A tentative analysis of the survey data and interview data (dotted line) was not performed.

2.1.1 *Participants and method of sampling*

The target population was primary care clinicians serving Medicaid patients in the greater Puget Sound Area. Primary care clinicians were stratified based upon professional healthcare training background and credentials in medicine, nursing, and naturopathic medicine. Medicaid-serving clinics were chosen for two reasons: 1) to seek clinicians with dispositional humility that might be shown by working in such inherently stressful and demanding healthcare environments; and 2) naturopathic clinicians are licensed to serve Medicaid patients as primary care clinicians. Specifically, MD/DOs were board certified family medicine physicians, nurse practitioners (NP)

were master's level ARNPs, and naturopathic clinicians (ND) had two to three years of residency training after the completion of the doctoral degree.

Purposive sampling and recruitment of volunteers took place at community clinics through email advertisements, flyers, and personal contacts. The inclusion criteria were: 1) current or past primary care clinicians who practice(d) in the state of Washington; and 2) current or past experience interacting with other healthcare professionals. The exclusion criteria were individuals: 1) who did not acknowledge online informed consent for the survey; 2) who did not sign the written consent form for interview; or 3) who for the interview, failed scheduling three times. A volunteer could access the online survey link, which contained a link to the informed consent for the survey questionnaire. At the end of the survey, the participants were provided an option to be contacted for an interview. Participation in the interview required a written informed consent form. Recruitment started in July of 2016; however, due to a low response rate, a $50 remuneration was offered for participation in the interview at the end of 2016. The protocol modification was approved by the IRB.

The stratification of subjects based on the type of professional healthcare training and credentials (medical, nursing, and naturopathic medicine) was proposed to accommodate an analysis of in-group favoritism or a "group-heuristic" assumption [58]. Based on this assumption, dispositional characteristics for each type of clinician with different professional healthcare training and credentials could be analyzed.

2.1.2 *Standardized survey instruments*

- The HEXACO personality trait questionnaire (6 domains, 60-item) [59] was self-administered. The domains are further divided into subdomains (facets). The associated

internal consistency for each domain (Cronbach's alpha--internal consistency--reliability) was [60]:

1) Honesty-Humility Domain (sincerity, fairness, greed avoidance, modesty): 0.76

2) Emotionality Domain (fearfulness, anxiety, dependence, sentimentality): 0.80

3) Extraversion Domain (social self-esteem, social boldness, sociability, liveliness): 0.80

4) Agreeableness Domain (forgiveness, gentleness, flexibility, patience): 0.77

5) Conscientiousness Domain (organization, diligence, perfectionism, prudence): 0.76

6) Openness to Experience (aesthetic appreciation, inquisitiveness, creativity, unconventionality): 0.78.

The reference values were collected from 691 female and 429 male college students (total of 1,126) reported by Lee and Ashton in 2015 [60]. The HEXACO's Honesty-Humility domain was analyzed for correlation to established Schwartz's personal values, and found positively correlated to values such as Tradition, Benevolence, and Universalism, and negatively correlated to values such as Hedonism, Achievement, and Power [41]. These value terms and the antonyms of these terms could be considered as attributes of humility.

- IMAQ, Integrative Medicine Attitude Questionnaire (29-item) showed an internal consistency of 0.91 for Factor 1 and 0.72 for Factor 2 in a sample of 111 internal medicine physicians and 85 healthcare providers who attended an integrative medicine conference [61]. A gender effect was not observed for the IMAQ. The first factor was embedded in 21 questions as, "openness to new ideas and paradigms" and explained 38% of the variance, with factor loading from 0.79 to 0.3. The second factor was embedded in

eight questions describing, “value of both introspection and relationship to patient” and explained 12% of the variance, with factor loading from 0.91 to 0.42 [61].

- The individual interview was focused on exploring two themes: 1) environment; and 2) interpersonal factors conducive to collaborative work. During the interview, collection of descriptions of dispositional humility was a covert operation, and questions were focused on exploring desirable characteristics of coworkers and the environment that facilitated collaborative work. (Appendix D: semi-structured interview guide)

2.1.3 *Power calculations*

HEXACO: The HH domain has a reference mean and standard deviation of 3.23 and 0.66, respectively [59]. The coefficient of variation (CV) was 20.4. By assuming the same CV and 15% difference between the mean of the sample and the reference point, a sample size of 14 was necessary to obtain a power of 0.8 with an alpha level of 0.05, using G*Power 3.1.2 [62].

Validation of the 29-item IMAQ [61] showed separation between conventional versus integrative clinicians with a t score of 12.05 (df = 191). If the same effect size was expected between the MDs/DOs/Nurse Practitioners (conventional educational training) versus NDs (alternative health training), a sample size of 7 would be sufficient to achieve a statistical power of 0.8 at an alpha level of 0.05 (G*Power 3.1.2).

2.1.4 *Data Analysis*

Data on psychometrically validated instruments (HEXACO and IMAQ) were collected in the Research Electronic Data Capture (REDCap) system. REDCap is an application developed by

Vanderbilt University and collects virtually any type of data in a 21 CFR Part 11, FISMA, and HIPAA-compliant environment. The data in REDCap was downloaded and analyzed using SPSS version 25 [63].

1) HEXACO domains were explored using aggregates of clinicians compared to the reference values in order to determine the level of deviation from the reference norm (Z-score). For multiple t-test comparisons, the alpha level was adjusted accordingly. The facets (subdomains) of HEXACO were also analyzed between clinicians with different professional healthcare training and credentials by four one-way ANOVAs.
2) IMAQ scores were compared between two types of clinicians, conventional versus alternative. Two one-way ANOVAs were performed without alpha level adjustment.
3) The interview responses were transcribed verbatim and loaded into the HyperResearch (v3.5.2) software for coding and summative data analysis. Representative samples of the interviews were used for the directed content analysis conducted by two investigators independently (PA and MS). PA is Administrative Director of the Bastyr University Research Institute with a PhD in Pharmacology from the University of Washington and has worked on numerous research grants and manuscripts in the field of healthcare. MS is the Principal Investigator (PI) of this study. Codes were then categorized according to pre-determined groups for directed content analysis.

2.2 Results

2.2.1 *Participants*

The first survey response was collected on September 14th, 2016 and the last survey response was collected on October 6th, 2017. A total of 32 consented responses were obtained; however,

11 were excluded due to the absence of or an incomplete HEXACO questionnaire, leaving 21 survey responses. Out of the 21 participants who completed the survey, three of them declined to be interviewed, leaving a maximum of 18 interviews. Out of the 18, one volunteer did not return the informed consent form and an additional three failed to call for scheduled interview appointments, leaving 14 interviews from the surveyed group. One additional interviewee was contacted directly, signed the consent form and was included. A total of 15 interviews was completed. The initial seven survey participants were volunteers from Bastyr Center for Natural Health (BCNH) and all held the ND credential and were licensed. During the initial recruitment, monetary incentive payments were not offered. Instead, a light refreshment was offered and all interviews were conducted face-to-face (Table 2.1).

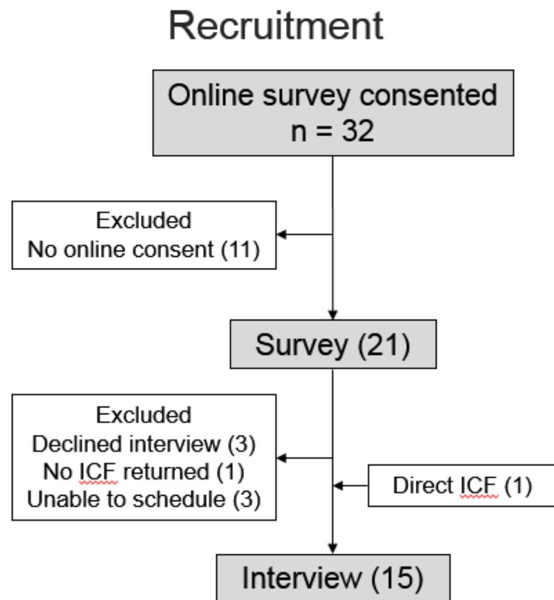
Table 2.1: Recruitment ('S'=Survey; 'I'=Interview)

Month	MD/DO	NP	ND
Sep 2016			5S 4I
Oct 2016			1S
Nov 2016			1S
Dec 2016			
Jan 2017			
Feb 2017	2S 2I	1S 1I	
Mar 2017	2S 1I		4S 4I
Apr 2017	1S 1I	1S	
May 2017			
Jun 2017			
Jul 2017			
Aug 2017			
Sep 2017	1S 1I		
Oct 2017		2S 1I	
total	6S 5I	4S 2I	11S 8I

In 2016, due to the absence of volunteers recruited outside of BCNH, two modifications were made to the protocol and approved by the IRB. First, upon participation in both components (survey and interview), a $50 remuneration was paid, and second, because scheduling a face-to-face interview was difficult for busy primary care clinicians, a phone interview was allowed. The

phone interview was recorded and transcribed. A summary of recruitment is diagrammed in Figure 2.2.

Figure 2.2: Recruitment



Caption: Figure 2.2 shows the overall participation in the two phases of data collection. A phone number was provided by an MD who did not complete the survey, but was willing to be interviewed. The interview data was

Based on the "group-heuristic" assumption, the goal of recruitment was to reach ten participants for each clinical credential; however, the results were six MDs/DOs, four NPs, and eleven NDs (Figure 2.2: Participants). This biased recruitment might be indicative of the group-heuristic because the PI (MS) holds an ND degree.

2.2.2 *Missing Values / Imputation*

Because a missing value prevents statistical analysis of facets (each facet has only two to three values), missing values were imputed by identifying the analogous response for the same factor or facet for that particular individual. The average value of the HEXACO facet or IMAQ factor

was used for imputation. Three missing values were found and each came from different participants as indicated below:

- SID #11: HEXACO Question 24 (facet: Modesty).
- SID #9: IMAQ Question 12 (factor: Openness).
- SID #45: IMAQ Question 17 (factor: Openness).

Modesty was measured by two questions, 24 and 48. The other response of SID #11 for the same facet (48) was 4. The mean of the factor for openness for SID #9 excluding question 12 was 5.65. The mean of the factor for openness for SID #45 excluding question 17 was 5.10.

- SID #11: HEXACO Question 24 ➔ 4
- SID #9: IMAQ Question 12 ➔ 5.65
- SID #45: IMAQ Question 17 ➔ 5.10

The SPSS scripts for calculation of HEXACO and IMAQ are shown in Appendices B and C, respectively.

2.2.3 *Characteristics of Participants*

The following table (Table 2.2) shows the breakdown of clinical credentials for the survey respondents and their group median years of practice.

Table 2.2: Credential and Years of Practice

Table 2.2: Credential and Years of practice

		Frequency	Median Year of practice
Valid	MD/DO	6	7.0
	NP	4	8.5
	ND	11	10.0
	Total	21	7.0

Table 2.3 shows the cross tabulation of clinical credentials by clinic. The clinicians in private practice still interacted with other primary care providers in a shared office environment or in a network provider environment. Two data values showed a 'larger than' symbol before the number, i.e. >25, and for calculation the number was conservatively estimated as the given number, i.e. 25. HealthPoint and University of Washington Clinics have several sites in the community and the different sites are composed of different numbers of primary care providers.

Table 2.3: Crosstabulation of Clinics and Education / Credential

Table 2.3: Crosstabulation of Clinics and Education / Credential		Education / Credential			Total count of subjects	Mean number of PCP coworkers
		MD/DO	NP	ND		
clinic	HealthPoint	1	2	4	7	7.29
	University of Washington Clinic	2	0	0	2	9.00
	Bastyr Center for Natural Health	0	0	4	4	25.00
	Other community clinic	1	1	0	2	25.00
	Private practice	2	0	3	5	6.00
	Hospital	0	1	0	1	30.00
Total		6	4	11	21	13.57

2.2.4 *Dispositional Humility*

Two survey instruments, HEXACO (Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience) and IMAQ (Integrative Medicine Attitude Questionnaire) were analyzed by domains or factors. The interview data were transcribed and analyzed by the summative and directed content analyses.

HEXACO

The subdomains of HH are sincerity, fairness, greed avoidance and modesty [64], which may reduce unfair subjective biases and enhance objectiveness. The concept of humility promotes integration of different beliefs and ideologies, and consequently, it is worthwhile to investigate this concept in the healthcare environment. At the facet (subdomain) level, there were no statistical differences in dispositions among clinicians with different professional healthcare

training and credentials. Three items that showed a tendency toward significance were: 1) lower sentimentality of MD/DO clinicians; 2) higher prudence of ND clinicians; and 3) higher inquisitiveness of MD/DO clinicians. These inclinations must be interpreted cautiously because the number of facets (twenty four) require a large number of samples to provide sufficient statistical power due to the required alpha level adjustment. Overall, one-way ANOVA indicated that none of the facets was statistically significantly different among clinicians with the three types of training and credentials (p>0.138 and observed power <0.39 for all facets). (Table 2.4)

Table 2.4: Facets of Each HEXACO Domain (mean ± SD)

Honesty-Humility	MD/DO (6)	NP (4)	ND (11)	Significance
Sincerity	3.67 ± 0.87	3.92 ± 0.42	4.15 ± 0.50	0.319
Fairness	4.44 ± 0.54	4.50 ± 0.43	4.36 ± 0.59	0.902
Greed-Avoidance	3.67 ± 0.98	3.75 ± 0.29	3.32 ± 0.75	0.531
Modesty	4.08 ± 0.74	3.50 ± 0.41	3.78 ± 0.93	0.538
Emotionality				
Fearfulness	2.61 ± 0.88	2.92 ± 0.50	2.36 ± 0.60	0.380
Anxiety	3.58 ± 0.74	3.38 ± 0.63	3.68 ± 1.01	0.839
Dependence	3.17 ± 0.82	3.12 ± 0.85	2.95 ± 0.90	0.876
Sentimentality	2.83 ± 1.01	3.67 ± 0.47	3.52 ± 0.60	0.138
Extraversion				
Social Self-Esteem	4.00 ± 0.70	3.83 ± 0.79	3.73 ± 0.68	0.751
Social Boldness	3.11 ± 0.75	3.75 ± 0.96	3.03 ± 1.02	0.428
Sociability	3.50 ± 0.89	3.88 ± 0.48	3.64 ± 0.87	0.782
Liveliness	3.50 ± 1.10	4.13 ± 0.25	3.73 ± 0.88	0.554
Agreeableness				
Forgiveness	3.75 ± 0.61	3.38 ± 0.48	3.14 ± 1.16	0.457
Gentleness	3.06 ± 0.93	3.58 ± 0.50	3.18 ± 0.69	0.535
Flexibility	3.39 ± 0.44	3.25 ± 0.83	3.18 ± 0.60	0.802
Patience	3.83 ± 0.68	4.00 ± 0.00	3.50 ± 0.74	0.374
Conscientiousness				
Organization	3.75 ± 1.17	3.50 ± 0.41	4.23 ± 0.72	0.282
Diligence	4.42 ± 0.49	4.38 ± 0.48	4.41 ± 0.58	0.992
Perfectionism	4.17 ± 0.75	3.75 ± 0.32	3.85 ± 0.97	0.686
Prudence	3.67 ± 0.82	3.33 ± 0.27	4.00 ± 0.49	0.150
Openness to Experience				
Aesthetic Appreciation	3.67 ± 0.88	3.50 ± 0.91	3.77 ± 0.75	0.847
Inquisitiveness	4.50 ± 0.45	4.00 ± 0.41	4.05 ± 0.52	0.167
Creativity	4.28 ± 0.57	3.83 ± 0.88	3.79 ± 0.64	0.354

Unconventionality	4.00 ± 0.67	3.50 ± 0.19	3.88 ± 0.34	0.225

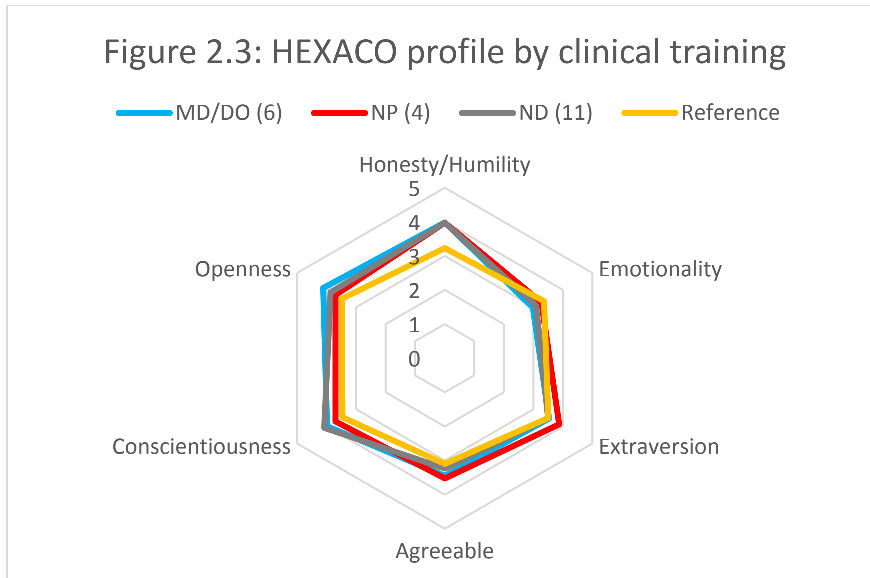
At the domain level, one-way ANOVAs indicated that none of the six domains was statistically significantly different among clinicians with the three types of professional healthcare training and credentials ($p>0.27$ and observed power <0.26 for all domains). Table 2.5 shows the differential dispositional characteristics of clinicians based on type of professional healthcare training and credentials. Note that some of the groups contained only 4 subjects, which did not generate sufficient statistical power. For this reason, testing for dispositional profile differences among the three types of clinicians was not performed.

Table 2.5: HEXACO Profile of Three Different Clinical Training and Reference Value

Table 5: Mean ± SD	MD/DO (6)	NP (4)	ND (11)	Reference Value
Honesty/Humility	3.98 ± 0.56	3.98 ± 0.10	3.97 ± 0.53	3.23 ± 0.66
Emotionality	2.98 ± 0.55	3.28 ± 0.38	3.09 ± 0.58	3.36 ± 0.70
Extraversion	3.53 ± 0.73	3.88 ± 0.57	3.50 ± 0.64	3.51 ± 0.62
Agreeable	3.45 ± 0.43	3.53 ± 0.36	3.24 ± 0.56	3.10 ± 0.63
Conscientiousness	3.98 ± 0.51	3.70 ± 0.14	4.08 ± 0.43	3.47 ± 0.61
Openness	4.12 ± 0.55	3.70 ± 0.21	3.86 ± 0.35	3.49 ± 0.67

The above table's absolute values (means) for each type of clinician and the reference value for each domain are depicted in a hexagonal plot for better visual inspection (Figure 2.3).

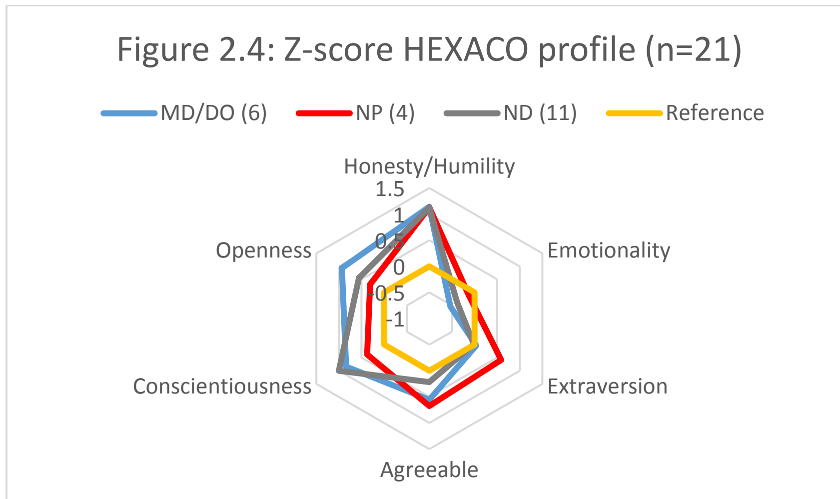
Figure 2.3: HEXACO profile by clinical training



Clinicians in this sample generally demonstrated: 1) higher honesty-humility scores; 2) higher conscientiousness scores; and 3) lower emotionality scores relative to the general population means.

Figure 2.4: The Z-score HEXACO profile shows the standardized scores for each group. The reference values (all 0s) are shown as a perfect hexagon (yellow) and the standard deviation is 1 as defined by the z-distribution. As seen in Figure 2.4, the HH domain score for clinicians was 1 standard deviation higher than the reference value. MD/DO clinicians had a profile demonstrating high HH, high openness, high conscientiousness, and high agreeableness, but average extraversion and low emotionality. NP clinicians tend to show high HH, moderately high openness and conscientiousness, high agreeableness and extraversion, and average emotionality. The ND clinicians also have high HH and conscientiousness, moderately high openness and agreeableness, average extraversion and low emotionality.

Figure 2.4: Z-score HEXACO profile (n-21)



Although the dispositions were not statistically different among clinicians with different professional healthcare training and credentials, these community-serving clinicians showed a unique dispositional profile relative to the reference values. Table 2.6 shows the p-values of multiple one-sample t-test comparisons between the reference means and each group mean. The statistical tests were adjusted by the Holm-Sidak method to reduce alpha error. The statistical significance (alpha level 0.05 or 0.01) is indicated by an asterisk (* or ** respectively) symbol after the number. As predicted, clinicians from this sample showed higher Honesty/Humility and Conscientiousness domains for the ND group (n=11). The MD/DO group was statistically significant in the HH domain only (n=6) . Statistical significance was not reached for the NP group (n=4).

Table 2.6: p-values on HEXACO profiles of three different clinical credentials

Table 2.6: p-value	MD/DO (6)	NP (4)	ND (11)
Honesty/Humility	0.031*	0.137	0.001*
Emotionality	0.437	0.835	0.496
Extraversion	0.927	0.666	0.958
Agreeable	0.437	0.625	0.724
Conscientiousness	0.150	0.835	0.005*
Openness	0.107	0.835	0.236

* Statistical significance was calculated in relative to the reference norm of the college students.

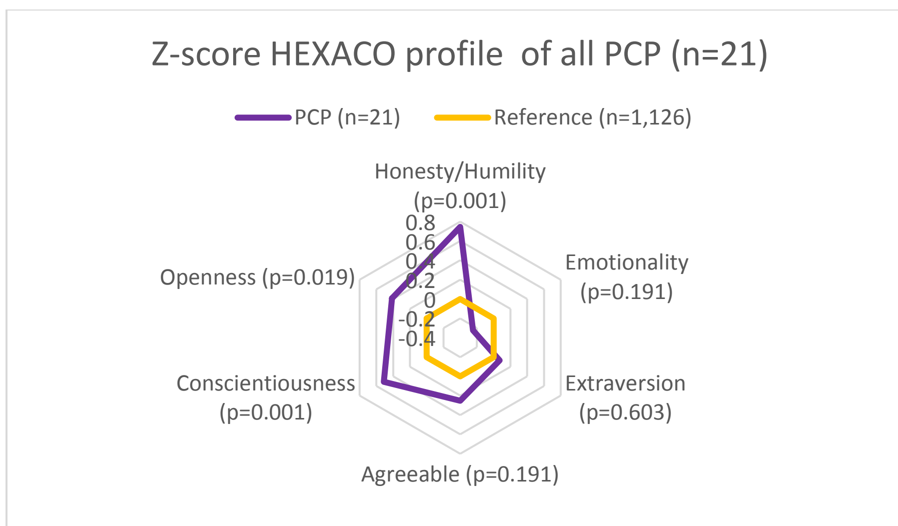
When the aggregate scores of all clinicians (n=21) were used, the three HEXACO domains showed statistical significance relative to the population mean score, i.e. Honesty-Humility, Conscientiousness and Openness domains. The multiple t-test comparisons were adjusted by the Holm-Sidac method (Table 2.7), and described in the hexagonal figure by the z-score (Figure 2.5).

Table 2.7: HEXACO Profiles on Statistically Significant Domains

Table 2.7: All clinicians	Difference between the reference value	t-ratio	Adj p-value
Honesty/Humility	0.746**	5.156	0.000**
Emotionality	-0.247	1.724	0.191
Extraversion	0.071	0.520	0.603
Agreeable	0.252	1.825	0.191
Conscientiousness	0.511**	3.820	0.001**
Openness	0.415*	2.826	0.019*

* statistical significance at the alpha level 0.05
** statistical significance at the alpha level 0.01

Figure 2.5: Z-score HEXACO profile of all PCP (n=21)



The combination of high HH and Conscientiousness describes a character that is more resilient against work stresses, an ability to behave conscientiously under stressful conditions, and being

truthful and not deceptive in relationships. It may also indicate the tendency to trust others as well as to become trustworthy individuals themselves. The openness domain also indicates the ability to accept new ideas and criticism from others. By combining these characteristics, these clinicians are consistent with the attributes and consequences of having dispositional humility.

IMAQ

The scores for two factors of the IMAQ among the three types of clinicians with different professional healthcare training and credentials did not show a statistical difference. Table 2.8 shows the mean, standard deviation, and 95% confidence intervals for each type of clinician. The value and benefits of integrative medicine have been actively incorporated into healthcare professional training. Clinicians with an active license must fulfill annual continuing healthcare professional education requirements, and they may be exposed to the ideal of integrative medicine frequently. A publication from the University of Wisconsin Integrative Medicine Elective Rotation in January 2013 lists learning objectives and defines IM as healing-oriented care for the whole person that focuses on the least invasive, least toxic, and least costly methods to help facilitate self-care, and emphasizes the personal quality of the doctor-patient relationship [65]. The scores from the three groups were hardly distinguishable, and these results demonstrate there are no differences in attitude toward integrative medicine by the three groups of clinicians with different professional healthcare training and credentials.

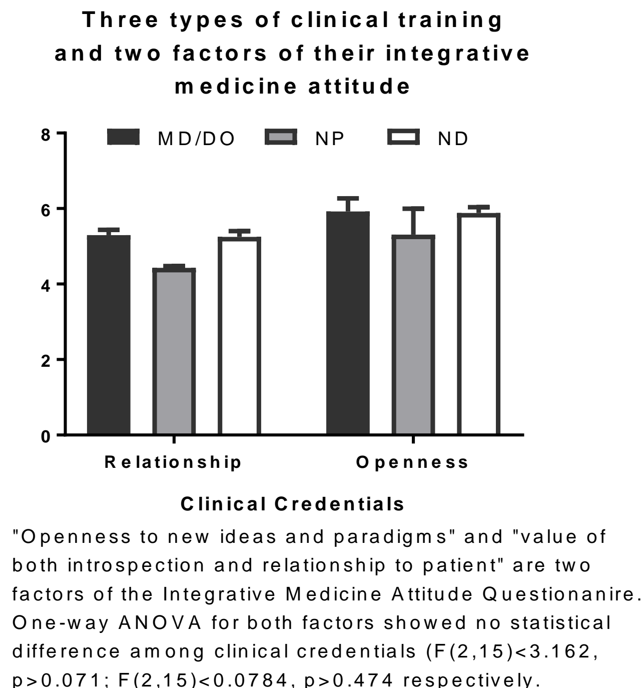
Table 2.8: IMAQ Subscales by Different Clinical Training

Table 2.8: IMAQ subscales by different clinical training		N	Mean	Std. Dev.	95% CI for Mean Lower Bound	95% CI for Mean Upper Bound
Openness	MD/DO	6	5.151	0.452	4.6763	5.6253
	NP	4	4.798	0.428	4.1160	5.4792
	ND	11	5.251	0.507	4.9104	5.5918
Relationships	MD/DO	6	5.813	0.745	5.0309	6.5941

NP	4	5.813	0.820	4.5082	7.1168
ND	11	5.886	0.505	5.5474	6.2253

One-way ANOVA showed that the IMAQ scores among clinicians with different professional healthcare training and credentials were not statistically different for the two subdomains: 1) "openness to new ideas and paradigm" F(2.18)<1.314, p>0.293; and 2) "value of both introspection and relationship with patients" F(2,18)<0.035, p>0.966 (Figure 2.6: Three types of clinical training and two factors of integrative medicine attitudes). In the conventional healthcare training of medicine and nursing, medical doctors might be more 'progressive' in accepting new ideas and paradigms than their nursing counterparts. This hypothesis can be tested by having a sufficient sample size for both medical and nursing primary care practitioners.

Figure 2.6: IMAQ



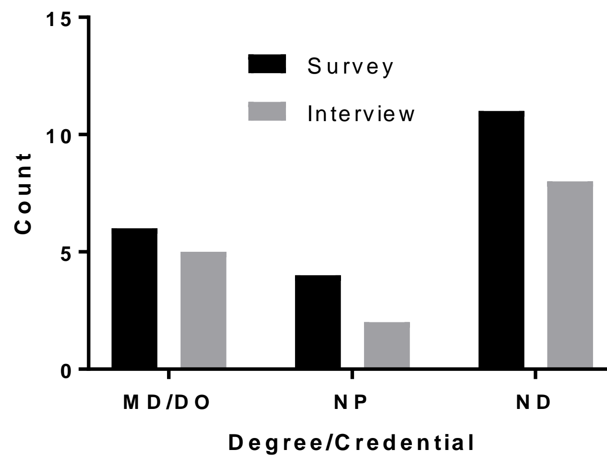
"Openness to new ideas and paradigms" and "value of both introspection and relationship to patient" are two factors of the Integrative Medicine Attitude Questionanire. One-way ANOVA for both factors showed no statistical difference among clinical credentials (F(2,15)<3.162, p>0.071; F(2,15)<0.0784, p>0.474 respectively.

Qualitative Data

This section is supplemented with two additional papers. The first paper is a concept analysis of dispositional humility and the second paper is a directed content analysis of interview data. The

paper on concept analysis of dispositional humility produced a framework for the directed content analysis used to extract codes. This section reports the summary results for the overall qualitative analysis and discussion. The proportion of the survey participants and interview participants were depicted in Figure 2.7.

Figure 2.7: Survey and Interview Participants by different clinical credentials



As a step to examine whether dispositional humility is considered important in collaborative work in the healthcare environment, functional environments were characterized by humility, while dysfunctional environments were characterized by an antonym of humility: arrogance. Then prior to the directed content analysis, the transcripts (fifteen interviews) were coded by the PI. The coding relied on *in vivo* coding or direct quote without the interpretation of the PI. Table 2.9 contrasts working environments characterized by either humility or arrogance.

Table 2.9: Humility versus Arrogance

HUMILITY	ARROGANCE
Inter-professional Collaboration	
Functional	Dysfunctional
Perception	
Respected	Undermined
Heard	Presumed
Accepted	Attacked

The coding was performed by HyperResearch (v3.5.2), which produced a code book as summative content results. Table 2.10 below shows the codes in alphabetical order. The codes were categorized into two basic themes of interview questions posed directly during the interview: 1) dispositional; and/or 2) environmental factors that were facilitative (or disruptive) to collaborative work in clinics occupied by health professionals with different professional training backgrounds and credentials. During the interview the impression of searching for descriptions of humility were avoided in order to prevent leading their responses until these words were mentioned by the interviewees.

Table 2.10: Codebook compiled from fifteen interview scripts

Dispositional factors of collaborator:

- Approachable, friendly, willingness for dialogue
- Caring
- Colleagues who feel respected or not judged
- Compassionate
- Creative and people who can think out of the box
- Data-driven and know the limitation of data too
- Down-to-earth
- Easy-going, relaxed and flexible
- Friendly
- Having a sense of humor
- Humble
- Inviting attitude, not discouraging to contact
- Open to new ideas or open-minded
- Organized people
- People who can say they do not know
- People who do homework before consultation
- People who know collaboration can serve patients better
- People who my patient can trust
- People with a good reputation
- Person who can communicate concisely and quickly
- Personable and trusting relationships
- Positive attitude
- Team player and sense of shared responsibility
- Want to share knowledge
- Willing to do extra things for other people

Facilitative environment for collaboration:

- Academic excellence
- Be able to do warm-handoffs
- Become specialized or expert in an area
- Common base knowledge of medicine and language
- Culture or awareness of the importance of collaboration
- Demonstration or experience of good collaboration
- Education or cross-training on collaboration
- Evidence-informed practice principles
- Financial stability or stable position
- Used to consult and being consulted
- Good or model leadership for collaboration
- Having a busy practice and money flow for practice
- In-person interactions discussing/venting outside cases
- Knowing others skills and specialty
- Opportunity to develop network resources
- Patient-centered principles
- Physical proximity, sit close, share space
- Reality check opportunity to experience humility
- Safe work environment to be vulnerable
- Time to collaborate or sufficient admin time
- Training that makes me humble or a humbling experience

The frequency associated with the above codes are discussed in the supplemental paper. The expressions seem diverse due to the nature of asking open-ended questions about collaborative personalities and environments; however, some of the expressions were coherent with the attributes and consequences of having dispositional humility.

For the directed content analysis, an initial concept map of dispositional humility was created from another paper entitled: Concept analysis of dispositional humility among professionals in an interdisciplinary healthcare environment (Figure 2.8).

Figure 2.8: Concept Map of Dispositional Humility

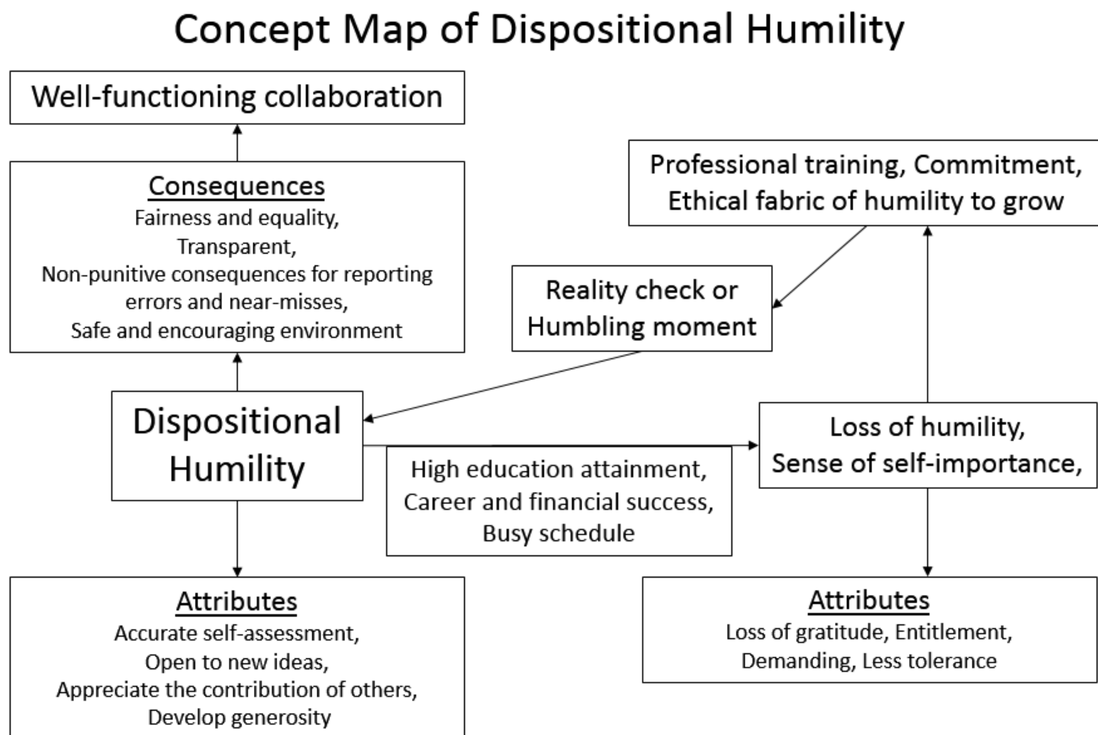


Figure 7 Caption: "Dispositional humility allows clinicians to have an accurate self-assessment, be open to new ideas, appreciate the contribution of others, and develop generosity. Dispositional humility in leaders can facilitate character development of team members and create an environment characterized by fairness and equality, transparency, non-punitive consequences for reporting errors and near-misses, and a safe and encouraging environment for performing work. However, dispositional humility must be nurtured and developed through professional training because high educational attainment, career and financial success, and busy schedules may lead to a sense of self-importance and entitlement that can promote separation of team members into hierarchies based on professional disciplines and specialties." (Sasagawa, manuscript submitted for review) Note: this is not structural equation modeling, and the pathways were not statistically analyzed.

A high score on the HEXACO honest-humility domain with a high conscientiousness score reflects the individual's trait characteristic of creating prosocial and trusting relationships with others. However, high educational attainment, career and financial success, busy schedules and stressful environments may lead to a loss of humility, leading to a sense of self-importance, entitlement, and disregard for the needs of others. Professional training is not only competency-based skill building but also a life-long commitment to a continual reinterpretation and appraisal of what defines professionalism and the development of an ethical culture that promotes a sense of humility. Professionals who lose their sense of humility may face a reality check or humbling moment that awakens the sense of humility; however, how one faces and reacts to a reality check or humbling moment will depend upon the mental and emotional maturity of the individual. Retaliatory behavior and counter-attack against fair and constructive criticism may indicate a lack of dispositional humility combined with a lack of mental and emotional maturity. Ultimately, the consequence of having collaborative care teams that display high levels of dispositional humility is a work culture of fairness, equality and transparency that includes non-punitive consequences for reporting errors and near-misses, and a safe and encouraging work environment, which leads to a well-functioning collaborative environment.

Interpretive process

Six representatively selected interviews out of fifteen were analyzed by two investigators independently (PA and MS). The in-depth analysis process for the qualitative interpretation will be discussed in a separate paper. Below is a list of bullet points of the descriptors of humility extracted by two investigators. For detailed discussion, see the supplemental paper entitled, "Exploration of dispositional humility expressed by primary care clinicians working in an interdisciplinary healthcare environment: Directed content analysis."

Humility components that emerged as a desirable factor by clinicians

- Friendly, open, and approachable
- Patient-centered (other-oriented and professional duty orientated)
- Humility
- Trust
- Modest self-portrayal (accurate self-assessment)
- Be responsible / respectful of other people's time

Dispositional factors that emerged as a barrier, making the person hard to work with

- Egotistical
- Arrogance
- Closed-minded
- Dogmatic, self-interest medicine (not evidence-based)
- Questionable value (colleagues who hold non-evidence-based beliefs about particular modalities)

Helpful factor / environment for collaboration

- Opportunity to develop trust and collegial relationships
- Open common space to communicate, not separate rooms
- Increase knowledge of other professional colleagues
- Warm handoffs and fact-to-face interactions
- Developing a culture of mutual respect
- Having a Reality Check

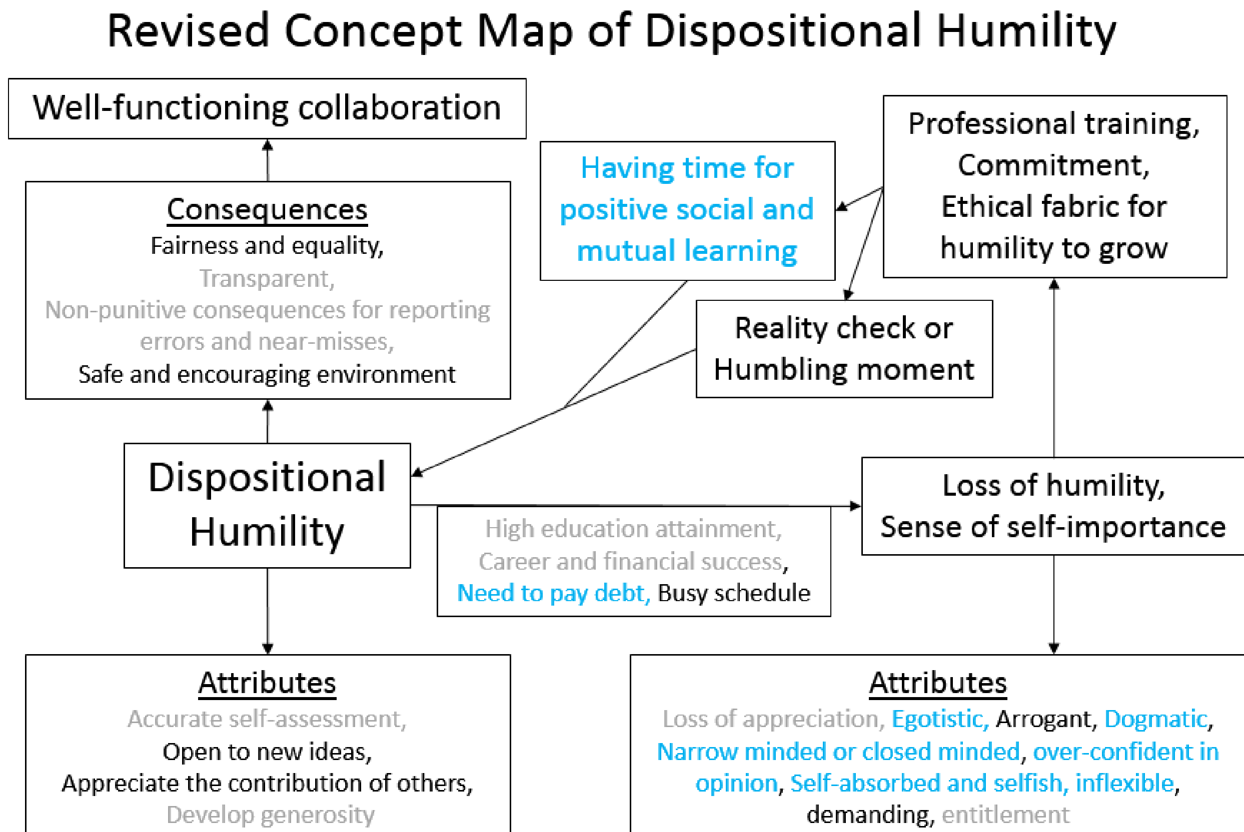
Environmental or situational hindrance for collaboration

- Unfairness
- Lack of resources
- Knowledge gap about other professionals

Refined concept map of dispositional humility

Figure 2.9 shows a modified version of the initial concept map. Details of the qualitative analyses are discussed in another paper entitled, "Expanding the understanding of dispositional humility in primary care clinicians working in an interdisciplinary healthcare environment: Directed content analysis." The themes or dynamic elements that were not confirmed during the summative and directed content analyses are in grey scale.

Figure 2.9: Revised Concept Map of Dispositional Humility



2.3 Discussion

This mixed methods research study employed both quantitative instruments and qualitative methodologies. The validation of the quantitative data was supported by the appropriate administration and analyses of the validated instruments. The qualitative analysis required the proper use of methodological perspectives and the involvement of procedural techniques to increase scientific rigor.

2.3.1 *HEXACO*

Honesty-Humility (HH) and Conscientiousness domains measured by the HEXACO personality test were higher in the three types of primary care clinicians than that of the reference means. The HH domain was positively correlated to work productivity behaviors [54]. Chirumbolo (2015) also reported HH was negatively associated with the feeling of job insecurity and work counter-productivity when gender, age, types of contract, and other HEXACO traits were controlled [54]. Because primary care clinicians experience a highly stressful job environment [66], this dispositional humility may reduce compassion-fatigue and increase the clinician’s job satisfaction. Thus, dispositional humility can be evaluated as a factor of resiliency. For all clinical disciplines (medicine, nursing, and naturopathic medicine), the high HH and Conscientiousness scores indicated that these clinicians were resilient to occupational stress and maintain a high degree of ethical behavior. The findings for the quantitative results were consistent with the expected results of professionals with dispositional humility.

2.3.2 *IMAQ*

Two subscales that measured the attitude toward integrative medicine were not different among clinicians with different professional healthcare training and credentials. The *a priori* power calculation was based on the separation between the conventional (MD/DO/NP/DNP) versus the complementary and alternative medicine practitioners (ND). The twenty-one participants were divided into 10 conventional clinicians (MD/OD, NP) and 11 alternative clinicians (ND), respectively. These numbers should provide sufficient statistical power to distinguish them based on the published IMAQ scores; however, both IMAQ subscales (Openness and Relationship) were indistinguishable in this sample. The IMAQ was created fifteen years ago in 2003 [61], and the incorporation of integrative medicine into professional healthcare training curricula has been rapid. Furthermore, because the mean years of practice of the participants in this study was 7 years, many of them have already been exposed to integrative medicine healthcare curricula in their training.

2.3.3 *Qualitative analysis*

Methods to increase the scientific rigor (design, data collection, analysis and drawing of conclusion) of this qualitative analysis are summarized in Table 2.11. The left-hand column indicates the components of scientific rigor discussed by previous researchers, and the right-hand column indicates the process used for this study.

Table 2.11: Scientific rigor of this qualitative analysis (partly from [67]):

Rigor component	Collection and analysis of interview data
Credibility (internal validity)	Obtain positive and negative data (easy/hard, facilitative/disruptive personality and environment), empower participants with positive interactions during the interview,

	hiding the real agenda (dispositional humility) in ethical ways (IRB approved per protocol)
Dependability (reliability, consistency or stability of data)	(weakness) short interview session (20 -30 min interview time), attempt to weight the input from different clinical credentials, expanding the subject of humility when it was brought up by participants, repeated coding for interpretive saturation referring to the repetition of coding on different days
Confirmability (objectivity)	Inductive content analysis but based on the created concept map, offering modest incentive for busy subjects, conscious effort at reflexivity during the interview
Transferability (external validity)	Sample from different clinical credentials or training backgrounds, clinics, and no other stratification
Neutrality [68], page 19	Ann Oakley in 1981 [69] argued that Neutrality makes the interviewee an object, however, the PI found that rather than creating a cooperative engagement relationship, as stressed by Ann Oakley, it was necessary to separate the interviewer's self-portrayal of humility from that of the interviewee.

Qualitative findings by both summative and directed content analyses extracted the descriptions, attributes, and some consequences of dispositional humility predicted by the model. Professionals clearly feel that dispositional humility characteristics are important for inter-professional collaboration.

2.3.4 *Future studies*

Two directions for future research are: 1) outcomes research on the relationship between the clinician's dispositional humility and the outcomes of patients. These outcomes are not only limited to biomedical improvement of health conditions but also the tendency toward self-care and self-management of health. Because dispositional humility promotes a trusting relationship and genuine partnership, the recognition of the contribution of patients toward successful outcomes may influence shared responsibility in healthcare; and 2) educational curricular development. The Association of Family Medicine Residency Directors wrote that the character traits that they look for in the National Match are trustworthy, loyal, helpful, friendly, courteous,

kind, obedient, cheerful, thrifty, brave, clean, and reverent [53]. Many of these character traits are consistent with the concept of dispositional humility, and humility traits in highly determined and intelligent candidates could be facilitated by designing appropriate curricula in professional healthcare training programs.

2.4 LIMITATIONS

Recruitment

The stratification of sampling by professional healthcare training backgrounds and credentials was proposed *a priori*; however, due to a low recruitment rate of conventionally trained clinicians, some of the statistical analyses between clinician groups and the reference mean did not reach sufficient power. The generalizability of the findings of this study is limited to primary care clinicians as a whole, regardless of each clinician's professional healthcare training background and credentials.

Timing of the study

The presidential election and political climate of 2016 brought uncertainty and instability to the safety-net healthcare system, namely Medicaid and the Affordable Care Act. Some community clinics were threatened with a loss of funding. This study coincided with this period of job instability among primary care clinicians and community clinics. This might have had a negative influence on recruitment and/or responses regarding environments that support collaboration. In fact, some clinicians mentioned financial stability as a facilitative factor for collaboration; therefore, the potential effect of the political climate, healthcare policy and healthcare economics on the expression of humility may need further exploration.

2.5 CONCLUSIONS

This study demonstrated that the character trait of humility was perceived important to facilitate productive and successful interprofessional collaboration by primary care clinicians working in a community healthcare environment. The attitude toward integrative medicine as measured by two subscales did not show a difference among clinicians from three types of professional healthcare training backgrounds and credentials (medicine, nursing and naturopathic medicine). Dispositional characteristics between these clinicians as measured by the HEXACO showed some differences; however, they were not statistically confirmed by this study. The aggregate means of all three types of clinicians indicated that the primary care clinicians possess statistically higher dispositional characteristics on Honesty-Humility, Conscientiousness, and Openness to experience domains. The HH domain represents the tendency to be fair and genuine in dealing with others, while agreeableness represents tolerance and forgiveness. Non-collaborative behaviors are harmful to an organization by directly affecting its functioning or physical property, or by hurting employees [54]. Interpersonal modesty refers to the tendency to moderate praise or recognition in socially acceptable ways, while humility refers to interpersonal qualities such as respect and empathy during conflict, and openness toward different cultures or worldviews; thus, humility extends the concept of modesty [32]. Understanding the concept of humility is valuable for developing effective interprofessional collaborative healthcare teams. This study is a first attempt to explore the importance of dispositional humility as perceived by primary care clinicians working in community-based healthcare systems.

Chapter 3. Expanding the understanding of dispositional humility in primary care clinicians working in an interdisciplinary healthcare environment: Directed content analysis

Introduction

Background and Significance

Having humility as a character trait promotes tolerance for different beliefs and the ideologies of others [44]; consequently, it may alleviate interpersonal stress [70] and generally create mutually trusting relationships [42]. This character trait is worth investigating in the professional healthcare field because healthcare professionals work in demanding and stressful environments while maintaining collaborative relationships with other professionals in order to serve patients [66]. Dispositional humility is also negatively associated with arrogance-related concepts such as being "egotistical," "high-and-mighty," "closed-minded," and "conceited" [9].

A truly humble individual may not proclaim him or herself to be humble. Therefore, along with validated self-reported survey results, other methods to evaluate such characteristics were explored. This study provides a better understanding of dispositional humility by investigating how humility-related terms are expressed by clinicians describing desirable character traits and environments conducive to collaborative work. If the stress resulting from interprofessional relationships is reduced due to the character trait of humility, it may also help reduce compassion-fatigue and increase job satisfaction. Dispositional humility may also be evaluated as a factor of resiliency by increasing work productivity despite occupational stress [54].

Humility is also important for clinicians to work cooperatively with patients. Dispositional humility is defined as a character trait of an individual who has an accurate and modest

assessment of himself and his contribution to the success of a project or task relative to the contribution of others. As an example, when working with patients, clinicians should encourage and applaud their patients for successful outcomes. Importantly, in order to provide successful clinical services to patients from different ethnic, linguistic and cultural backgrounds; along with different socioeconomic status, lifestyles, religions, and sexual orientations, curricula for healthcare professionals have undergone major revisions in order to increase the knowledge, skills and abilities of professional healthcare trainees to non-judgmentally work with others and to increase tolerance [71]. These educational improvements are in line with the attributes or consequences of clinicians having dispositional humility.

Research Question: Do primary healthcare clinicians consider the components of dispositional humility desirable when describing the collaborative attributes of other professionals? What are environmental factors that facilitate the expression or perception of humility in order to develop trusting relationships with other professionals?

Specific Aims

1) To expand the understanding of dispositional humility examined by a precedent quantitative study through analyzing interview data by both summative and directed content analyses
2) Based on the results from 1), conduct concept mapping to refine the conceptual model of dispositional humility

3.1 METHODS

The initial examination of the expressions of humility in the interview data was performed without identifying the interviewee's professional healthcare training background or credential,

or the quantitative survey responses. The summative content analysis resulted in a codebook that was derived using HyperResearch software (v3.5.2). Summative analysis of mostly *in vivo* codes assessed whether the descriptions related to humility came up as attributes or consequences; simultaneously, representative interviewees were identified. Prior to the directed content analysis of selected cases, a concept map was created based on the concept analysis paper entitled: "Concept analysis of dispositional humility among professionals in an interdisciplinary healthcare environment," and the model development is described in detail in that Concept Analysis Paper. The directed content analysis allowed further examination of the coded data by two investigators independently to assess the extent to which the categorizations or pre-determined themes of the interview data would match the concept map. Based on the results from these qualitative data analyses, the concept map was refined.

Participants and method of sampling

The overarching (main) study included the online surveys in which volunteers were recruited by convenience sampling, mass emailing and flyers. Volunteers for the interview were recruited at the end of the online survey, where the participants of the main study were given an option to leave their contact information. The target population was primary care clinicians serving Medicaid patients in the greater Puget Sound Area. Clinicians working in Medicaid-serving clinics face stressful work environments, and in the State of Washington, naturopathic medicine clinicians are allowed to take Medicaid patients and serve as primary care providers. This made the ND clinicians equivalent to nursing or medical primary care clinicians with respect to their right to serve Medicaid patients as the target population.

Participants were consented and a written informed consent form was reviewed and signed before scheduling for an interview. Recruitment started in July of 2016; however, due to a low

response rate, a $50 remuneration was offered for participation in the interview at the end of 2016. The original study design and protocol modification were approved by the Bastyr University Institutional Review Board (IRB: 16-1558) and deferred by the University of Washington Institutional Review Board.

Semi-structured interview

Interviews focused on asking: 1) interpersonal questions; and 2) questions concerning environmental factors conducive to working collaboratively. Within the interview, the covert aim was to observe descriptions of how the concept of dispositional humility was expressed (Appendix D: semi- structured interview guide).

Data Analysis

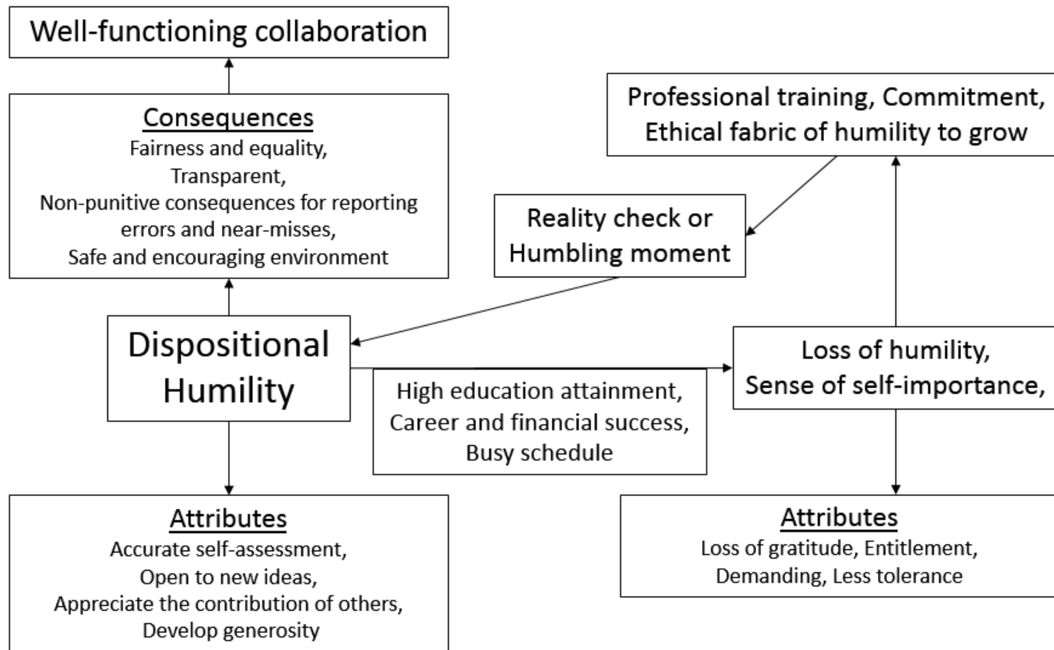
The recorded interviews were transcribed verbatim and loaded into HyperResearch (v3.5.2) software for coding. Summative codes were produced as a codebook, and the coding was performed one case (individual) at a time without identifying their professional healthcare training or clinical credential. The directed content analysis was performed by two investigators independently (PA and MS). PA (Paul Amieux) is Administrative Director of Research at the Bastyr University Research Institute and has a Ph.D. from the University of Washington Department of Pharmacology. MS (Masa Sasagawa, ND) is the PI of this study.

Perspectives of the qualitative data analysis of this study

A concept map of dispositional humility was created from a systematic literature search on the subject of humility, and reported in the Concept Analysis Paper. The written descriptions of the findings of the concept analysis are diagramed in Figure 3.1. The elements this concept map presents were also confirmed by the directed content analysis.

Figure 3.1: Concept Map of Dispositional Humility

Concept Map of Dispositional Humility



"Dispositional humility allows clinicians to have an accurate self-assessment, be open to new ideas, appreciate the contribution of others, and develop generosity. Dispositional humility in leaders can facilitate character development of team members and creates an environment characterized by fairness and equality, transparency, non-punitive consequences for reporting errors and near-misses, and a safe and encouraging environment for performing work. However, dispositional humility must be nurtured and developed through professional training because high educational attainment, career and financial success, and busy schedules may lead to a sense of self-importance and entitlement that can promote separation of team members into hierarchies based on professional training background and credentials." (Sasagawa, manuscript submitted for review)

Along with using the predetermined concept map of dispositional humility created by the literature search, there were two more assumptions involved in the design of this study. The first assumption was based on the model of in-group favoritism or the "group heuristics" model, where professionals expect reciprocation of favoritism from their same group members due to the perception of shared values [58]. This favoritism tendency might be observable among individuals with the same professional training backgrounds and clinical credentials or in academic cliques. Therefore, recruitment stratification was determined *a priori* by grouping clinicians into three distinct professional healthcare training backgrounds and credentials, i.e.

medical, nursing, and naturopathic medicine. The coding scheme focused on nuances due to group-bias or generalization of one clinician group compared to others. The second assumption relates to the expression of 'humbleness' or humility as an antagonistic character trait to self-express, i.e. truly humble people do not rate themselves as humble and individuals with low humility (a bragging personality) may report a higher a humility score due to social desirability [72]. Therefore, the assumption was that when an individual describes the types of people who they would like to collaborate with, they express character traits they would like to see in themselves [21]. If the clinician identifies humility as a desirable character trait in a professional colleague, this character trait also reflects that individual's personal aspiration. If the individual does not express humility as important when describing a desired trait in collaborators, it is then assumed that their humility level is low or that they consider dispositional humility unimportant.

The script of coding instructions provided to coders was as follows:

> This coding method is called "directed content analysis." Directed content analysis validates theory-based themes which are often predetermined prior to data collection; this is different from a coding method that avoids preconceived notions when abstracting codes and emerging themes as the interpretation becomes saturated [56]. Overt interview questions were set up to discover the types of people (personality or work style) they felt easy or difficult to work with. The participants were also asked about facilitative or disruptive environments for collaborative work. A covert operation was to extract the components of humility and/or arrogance expressions from the interview data. Humble individuals are unlikely to describe themselves as possessing the character trait of humility [32]. However, those individuals may describe humble characteristics in other people, describing them as likable or individuals they would like to work with [72]. The

predetermined themes to explore are "dispositional factors, particularly humility" and "environmental factors for displaying/perceiving humility."

So the interpretative method of this study for the directed content analysis has two components: 1) how do they describe dispositional factors (particularly in terms of humility or the opposite of humility) of other workers with respect to being comfortable or difficult to work with; and 2) how do they describe environmental factors that they feel are facilitative or disruptive to collaborative work, and how do these environmental factors interact with dispositional humility in coworkers.

The left column of the table contains transcribed data from six participants (1 NP, 3 MDs, and 2 NDs). Please: 1) underline the text; 2) write a corresponding code about dispositional or environmental factors describing the underlined text in the right column; 3) if thematic messages emerge from the collection of coding for that particular person, write the themes down; and finally 4) write a paragraph about the each participant's overall impression of dispositional humility (perception, awareness, importance or absence of such).

Three MD's, two ND's, and one NP's interview data (40%) were a representative sample of the fifteen interviews.

3.2 Results

3.2.1 *Participants*

Eighteen volunteers left their contact information and were contacted by phone or email to explain the study. For the in-person interview, the informed consent form was signed before the

interview. For the phone interview, the consent form was emailed or faxed for signature. The signed consent form was returned with the available date/time for the interview indicated. Out of the 18 volunteers, four volunteers did not complete the consent form or failed the scheduling of an interview, leaving 14 completed interviews. One volunteer contacted the PI directly without taking the online survey, and the interview was included in the total number of 15 interviews. Because the protocol did not require all participants to complete both phases of data collection, the data from this clinician was included. Interviews began in September of 2016. At the end of 2016, the protocol was modified to allow a phone interview and a $50 incentive payment. The protocol modification was approved by the IRB. Interview conversations were recorded and transcribed.

3.2.2 *Characteristics of Participants*

The median years of practice of interviewed participants did not differ from those who completed the survey (Table 3.1).

Table 3.1: Credential and Year of Practice

Table 3.1: Credential and Year of practice

		Frequency	Median Year of practice
Valid	MD/DO	5	7.0
	NP	2	8.5
	ND	8	10.0
	Total	15	7.0

Unfortunately, no clinicians in the University of Washington Clinic system (MD) volunteered for the interview (Table 3.2). One MD participant was not linked to the survey information, and although survey information for this participant was not available, a MD credential was confirmed from the interview data and a signed informed consent form obtained.

Table 3.2: Crosstabulation of Clinical and Credential

Table 3.2: Crosstabulation of Clinic and Credential

		credential			Total count of subjects
		MD/DO	NP	ND	
clinic	HealthPoint	1	1	3	5
	University of Washington Clinic	0	0	0	0
	Bastyr Center for Natural Health	0	0	3	3
	Other community clinic	1	0	0	1
	Private practice	2	0	2	4
	Hospital	0	1	0	1
	Unknown	1	0	0	1
Total		5	2	8	15

3.2.3 *Dispositional Humility*

Summative content data

The interview contents were fairly concise and the participants usually did not repeat the same information at different points in the interview session. For some interviews, the same code was repeated and this emphasized the importance of that code. By and large, the total code counts in the summative data reflected the number of clinicians providing that particular code. For instance in Table 3.3, the Summative Codebook showed the importance of the "patient-centered principle" because it was mentioned by 13 clinicians out of a total of 15 as an important factor for collaboration. "Approachable, friendly with willingness for dialogue" and similar descriptions of friendliness were mentioned by 11 clinicians and so forth. The descriptions were expressed positively or negatively and must be interpreted accordingly. "Egotistical" was mentioned by six clinicians as a characteristic of individuals who are difficult to work with, while "arrogant" was mentioned by four clinicians--both of these terms are considered antonyms of humility. "Humility" was mentioned by two clinicians; however, a caution must be made that the two clinicians who used the word "humility" might be people who also used "arrogant" and "egotistic" as antagonistic dispositions for collaboration. "People who know collaboration can better service patients" (3) was uttered most likely by clinicians who also mentioned "patient-

centered principle" (13) as well; therefore, the numbers are not additive. The table was also mixed for dispositional and environmental factors and needs to be interpreted from that context. The excerpt table of the codebook representing the most frequent (13) to a frequency of (3) is found below (Table 3.3). The entire table including frequencies of 1 and 2 is found in the Appendix E.

Table 3.3: Summative Codebook (Excerpt table for the most frequent items)

Table 3.3: Code	Total
Patient-centered principle	13
Approachable friendly with willingness for dialogue	11
Like working as a PCP	10
Open to new ideas or open-minded	10
Being thought of as antagonistic medicine rather than complementary medicine	9
Narrow-minded or closed-minded	9
Knowing others knowledge, skills and specialty	8
Opinionated on things they don't really understand – dogmatic	8
PCP is not compensated enough	8
Education cross-training on collaboration	7
In-person interactions discussing/venting outside cases	7
Person who can communicate concisely and quickly	7
Time to collaborate or sufficient administrative time	7
Egotistic	6
Over confident in opinions	6
Self-absorbed and selfish	6
Team player and sense of shared responsibility	6
Cultural change or awareness of importance of collaboration	5
Receiving adequate administrative support	5
Referral is not collaboration	5
Who does not communicate or acts busy	5
Arrogant	4
Colleague who feels respected and not judged	4
Nice to have opportunity to develop network resources	4
Caring	3
Evidence-informed practice principle	3
Inflexible	3
People who know collaboration can better serve patients	3
Problem with conflict of interest - biased opinion	3
Willing to do extra things for other people	3

Attributes of dispositional humility or its antonyms were observed in different expressions. Environmental (administrative, structural, suggestive, educational or training) factors may be considered consequences or dynamic elements for facilitating collaboration.

Directed Content Analysis

Six interviews out of fifteen were analyzed by two investigators independently (PA and MS). The many themes extracted by the two investigators were in agreement; however, a disagreement table (Table 3.5) is found in a later section of this paper. Table 3.4 below shows the HEXACO profiles of the six selected interviewees. This study could compare individual HEXACO profiles to their interview data; however, individual 30-minute interviews could not be combined to explain the aggregated HEXACO profile, i.e. it was not appropriate to combine the interview data of two individuals with low honesty-humility domain scores (3.2 and 3.0) and compare them to the interview data of others with high honesty-humility domain scores (4.0, 4.0, and 4.5). The HEXACO data of one MD interviewee was missing but included per the protocol.

Table 3.4: Professional healthcare training background and credential, HEXACO and IMAQ scores of the six interviewees used for the directed content analysis

	H	E	X	A	C	O	Op	R
MD13	4.00	3.10	4.20	3.60	4.40	3.30	5.81	5.88
MD08	3.20	2.90	3.40	3.00	3.50	4.10	5.24	5.00
NP07	4.00	2.90	3.80	3.60	3.80	3.50	4.38	4.63
ND09	4.50	2.00	3.60	3.10	4.00	3.80	5.19	5.63
ND11	3.00	4.00	4.40	2.60	4.70	4.40	5.05	6.50
MD	Missing data							

H=Honesty-Humility domain; E=Emotionality domain; X=Extraversion domain; A=Agreeableness domain; C=Conscientiousness domain, O=Open to Experience domain. IMAQ=Integrative Medicine Attitude Questionnaire. Op=Openness to new ideas and paradigms; R=Value of both introspection and relationship to patient

A model of dispositional humility was developed using a literature review and described in a separate paper, referred to as the Concept Analysis Paper. Figure 1 of this paper is a non-statistical model showing the proposed attributes of dispositional humility (box below) and consequences (box above) which (hypothetically) leads to a well-functioning collaboration. The existence of these dynamic elements located in the boxes were explored in the data from the six interviews.

Components of the model found in the interview (Directed content analysis)

Busy schedule and lack of time

This theme was consistent with previously published data on primary care clinicians [66]. Similar expressions were found within statements such as requesting more administrative time, spending non-working time with colleagues (to get to know each other), having bad timing for a warm handoff, not planning well, not having work organized, and not respecting the time of colleagues. The consequences of this theme were to convey the impression of arrogance and selfishness that was consistent with the model.

Lack of humility or loss of humility

Perceptions such as egotistical, arrogant, closed-minded, dogmatic, inflexible and over-confident could be the result of having busy interactions (above) or dispositional issues; however, lack of humility was confirmed to be a negative factor to collaborative work.

Professional Training

Clinicians were aware of the need for constant learning. Getting to know colleagues, their specialties and capacities was part of a desire to have a smooth working relationship. This was also consistent with the model; however, the interviewees conveyed the message that such learning opportunities did not have to be humiliating; it could be a form of social gathering. Thus, this part of the model was modified.

Reality Check

During professional training, rigorous training curricula and interaction with mentors, teachers and trainers with advanced skills and knowledge seemed to provide a reality check or humbling moment. This element of the model was confirmed by the interview data.

Attributes of Humility

Many attributes were described in a negative manner such as egotistic, arrogant, self-absorbed, selfish, over-confident, inflexible, narrow or closed-minded, rather than a positive manner such as open to new ideas or open-minded.

Consequences

An environment or opportunity to become vulnerable was brought up. This vulnerability may not be a direct consequence of dispositional humility but it signifies an environment in which professionals do not have to be afraid to trust and be trusted. In the model this could be interpreted as a safe and encouraging environment for collaboration because you do not have to be afraid of coworkers who might react negatively to collaboration requests.

Figure 1 was refined by incorporating input from the qualitative analysis above. The themes or predetermined components that could not be directly extracted from the interview are shown in grey scale text (Figure 3.2).

Figure 3.2: Revised Concept Map of Dispositional Humility

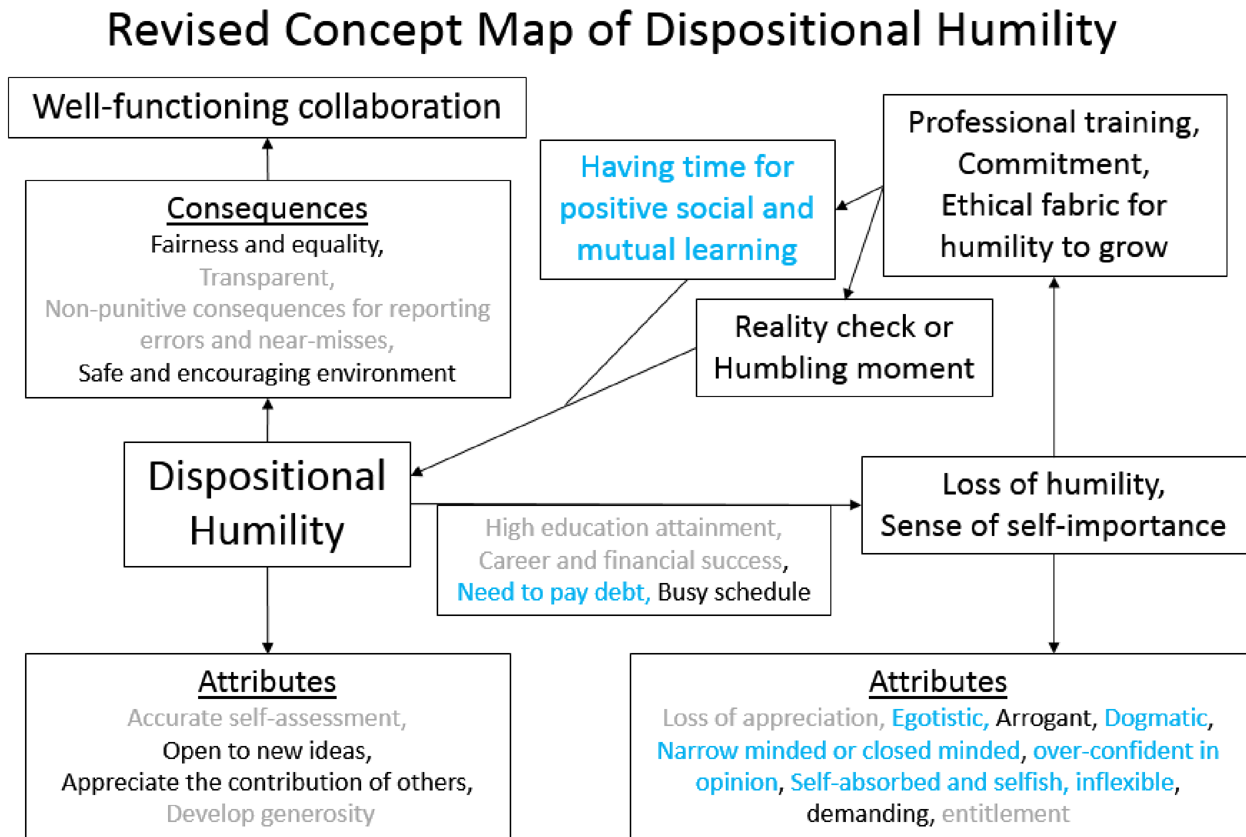


Figure 3.2 was constructed by modifying Figure 3.1. The themes or components that were not extracted during the directed content analysis of the six representative interviews are shown in grey scale. It was interesting to note that attributes for the 'loss of humility' were mentioned frequently by interviewees. 'Professional training', 'commitment (to serve)', and 'ethical fabric for humility to grow' might be reflected in requests to administration and management of the clinics. MDs and NDs mentioned the opportunities for 'mutual learning' as formal trainings, while one NP mentioned that getting to know one’s coworkers could be in the form of positive social activities.

Disagreement of Coders

The following table (Table 3.5) lists the disagreements of the two coders (PA and MS).

Table 3.5: Disagreement summary of qualitative interpretation between two investigators

Table 5	PA	MS	Explanations
MD13	Great work ethics, focus on needs of patients, eager to accomplish same goal	missed	MS missed the information. This theme came out before the main questions.
MD13	respect their specialty field and take their advice	disagreement on patient's treatment plan or diagnosis	PA positively described the factors while MS described the statement as barriers.
MD13	Lack of time	Busy and overwhelmed	While time was a part of work stress issue, MS extracted other stress issues (over-load).
MD13	Value of each professional to effectively contribute to the whole experience of patients	Specialty professionals who I can rely on and pick up the ball and run with it.	PA described the nature of integrative work while MS picked up MD13's sentiment of desiring a multi-modal system, rather than integrative system.
MD13	missed	"the warm handoffs" as skills of referral	MD13 described one of the skills to smoothly refer a patient.
MD08	more about who has the last word/politics	self-centered, self-interest	MD08 described a person who uses politics to gain advantage for self-interest. PA's abstraction is preferred as using politics for self-interest (opposite of dispositional humility). MS extracted the attributes.
MD08	Personal hardship leading to empathy and compassion for others	missed	MD08 spoke of her upbringing as hardship experiences working in the US medical system for her parents who are immigrants.
MD08	Lack of a common EHR system is barrier	An unified EHR system helps collaboration	MD08 spoke of the lack of a unified EHR system. PA took the story as a barrier while MS interpreted by taking the opposite situation as a facilitative factor for collaboration.
NP07	Environment that encourages and fosters relationship, let workers be vulnerable	mutual trust, hard work, good professional standing, trustworthy coworkers, admin support for encouraging collaboration	PA summarized the environment described by NP07 as fostering of the relationship while MS described the environmental components that fostered the mutually trusting relationship that is needed for collaboration.
ND09	Respect of other's time	Do diligence, do your own homework before imposing your needs on others	MS extracted ND09's desire not to waste other professionals' time as a part of responsibility while PA extracted the main message as respecting other's time.
ND11	Need more staff support	missed	ND11 said "short staffed". MS missed
ND11	throwing other professionals under the bus/finding fault	Ego problem	ND11 described the type of workers who try to make themselves look better by finding fault in others.
ND11	being put in your place develops deeper knowledge and understanding and more humility	realize how much you don't know, you work hard to develop professionally	ND11 described the process of humility development through high-level training, accepting challenges and working hard. PA summarized the process as the development of humility.

MD12	accepting responsibility for work	Just do rather than complaining about it	PA and MS both abstracted responsibility as a theme needed by professionals. Responsibility was a part of professionalism in Figure 1 and 2.
MD12	Valuing other professional training to meet patient needs	Physician Extender which can provide stable workforce	MS emphasized the administrative role of creating a stable work environment while PA looked at the environment from the professional's and patient's point of views

Overall Themes and Verbatim

Dispositional factors that emerged facilitative to collaboration

- *Friendly, open and approachable*

NP07: "So personalities, I think it is someone who is open, who can sort of friendly in the sense of when you do approach them for the first time and run a case by them or seek their help, they don't just, their non-verbal body language and their verbal language is not discouraging of that for future even if they're busy. So someone who is friendly in that sense and someone who is open to teamwork. Someone who also seeks out help as well not so it's a one-sided approach. Approachable"

ND09: "It's very few. I mean I really haven't even met that many barriers in people. I mean, if you yourself are friendly and open and respectful to people's time, and do your own research before asking a bunch of stupid questions, I think people then are very happy to talk about things. But if you're just asking stuff all the time without even doing basic work, then you're gonna ... Nobody's gonna want to talk you."

MD13: "behavioral health may be a little bit more touchy feely, you know, than like some of the other providers. You know a lot of time the physician, they're so busy they can be a little bit less welcoming because they're just swamped, but for the most part everybody's really trying hard. Like I don't know about what a ... Yeah I mean behavioral health pans out the most the sort of people that are more sort of overtly caring and friendly and compassionate I guess. You know? Whereas all of the other providers are just kind of normal, maybe."

NP15: "Some of them I become friends with. The ones that I weren't friends with, it was a very collegial and friendly relationship, but some I actually was friends outside of the clinic."

- *Patient-centered (other-oriented and professional duty)*

ND01: "A constant recognition of, as far as medicine goes that the doctors involved want to best for the patients."

NP07: "Professional role to help meet the needs of the patient. For example, I might have someone come in on my schedule who is following up on depression. And for some reason, they've not been able to connect with behavioral health. I will let behavioral health know that, "Hey, I need one of you guys in case this patient would like to touch base and have a counseling sessions or just to meet you or something like this."

MD12: "I think in pediatrics it's happening probably more than in adult medicine. Because the concept of patient-centered family-centered care has come up over the last five, ten years. But also, the whole concept of the medical home for the pediatric patient. I'm a member of the American Academy of Pediatrics, and they very much advocate for the medical home of the child. Which should be the center of that care. Because again, children with complicated and multiple medical problems, sometimes the care is so fragmented and it

drives up healthcare costs. People are repeating things because they don't talk to each other. We see that all the time in the emergency department."

- *Humility*

ND04: "I mean, yeah. At the same time, I know that I'm ... I know that I don't have it all figured out, and I'm not right about it ... but then again, I'm going to believe where I'm at and be open to change, and so I try to take the perspective of, in teaching, engaging students and these conversations of "Here's all the different practice styles" ... as more information comes, you have to be more able to change and change your beliefs, and what I might see today, research might change, my experience might change. Things may influence me, so you have to maintain openness and humility."

ND11: "I tend to work well with people who are clear and direct in their communications. So I would find people easy to work with who are clear about what they're communicating. And also I think, humility is a big thing, I mean, as you know, I'm sure, with doctors there are a lot of ego problems."

- *Trust*

ND04: "I think that as you share that vision and purpose, that getting outside the clinic helps to solidify and trust each other, when you get to know each other more on a personal basis."

ND05: "You know I think over my career the most important thing has been establishing a personal relationship and the result of that personal relationship building is trust. And I think that's the single most important thing in developing and maintaining collaborative relationships."

NP07: "I think it's building a culture of respect and cultivating this knowledge in people, in the workers that this is a place where you can be vulnerable. Because I think when a provider goes to another provider to ask about something, there's vulnerability in that. And you have to trust that you're not losing faith or respect when you do that and knowing that your colleague is someone you can trust and you respect who also works hard and has good professional standing. I think that's important. So an environment that encourages, fosters those relationships, and that doesn't always come right away. And it doesn't always come from just being in work together, but in non-work activities as well. But it again just depends because non-work activities could be during your break where as you're working on charts there is an open-dialogue. So your actual physical environment helps for that of having an open space where all the providers are together so it's easy access to you, approach and to get, so that collegial spirit as well versus separate rooms where you may not see each other. Then it's less like. The actually built environment but then also just the cultural environment of a workplace to be encouraged by administration and yeah."

MD08: "Yeah I really wanted to establish good relationship with my patients. In particular, so the story I tell everyone: I wasn't born in America. My parents weren't born in America. We first immigrated to South Carolina and my parents- English wasn't our first language and there was a time when I was hospitalized as a child and no one really took the time to explain to my parents, in a language they could understand, what was going on with me and so to this day no one really knows why I was in the hospital. We have no idea. And I think it is so important to- I want to be someone that my patients can trust who will take the time and explain things to them in a way that they understand what's going on with them and to help them through tough times because it's such a shame that something like that in their country, but it happens all the time. So I just really want to establish relationships with my patients and help them with their children, with their own life, help them give birth, be there from beginning until end. I think that's really important to me."

ND10: "Well, people need to have a enough of a relationship so they trust each other."

MD13: "I think knowing their background and training, and because I've worked with behavioral health for so long that I trust them because they've helped me. So I know ... I think it's just that key amount of [inaudible

00:15:07] so that it was helpful. Then also, they report back to me about patients they see. They give me helpful information. Like, "Oh yeah", so then[inaudible 00:15:20] so even though there's kind of a turnover because we've worked with a lot of behavioral health students that only stay for a year, I still feel like I can trust them based my experience with all the other students I've worked with. I know that they're getting good quality position, and that they're trying and they'll get help if they need help."

- *Modest self-portrayal (accurate self-assessment)*

ND01: "I like people who are willing and ready to say that they don't know."

- *Be responsible / respectful of other people's time*

ND09: "..if you, yourself are friendly and open and respectful to people's time, and do your own research before asking a bunch of stupid questions, I think people then are very happy to talk about things. But if you're just asking stuff all the time without even doing basic work, then you're gonna... Nobody's gonna want to talk to you."

Dispositional factors that emerged as a barrier, making the person hard to work with

- *Egotistical*

NP07: "I'm better and I don't need a team."

ND11: "Look at me; I know what I am doing."

NP07: "You should have known this." when approaching for consultation"

ND05: "Coming from the ego, but instead thinking about service and serving others."

ND11: "That's the main thing. If you're really cocky and say you are in advertising, like okay because it's not somebody's life at stake. But if you're cocky and you're a doctor then it is somebody's life at stake, so I do think people need to be reality checked about it." "I think it's good to keep on pushing yourself to be better, humbling, but not just thinking 'oh I have a doctorate, so therefore I know everything'" "I tend to work well with people who are clear and direct in their communications. So I would find people easy to work with who are clear about what they're communicating. And also I think, humility is a big thing, I mean, as you know, I'm sure, with doctors there are a lot of ego problems." "I just see that happening with ... I mean I think the ego problems are true for MD's for ND's, for DO's, it's true for everybody, but I think ... although I will say I see it much more in MD's, ND's and DO's than Nurse Practitioners. In general Nurse Practitioners seem to be more okay with humility, and aren't so concerned with what people think, which is nice. I always find them very pleasant to work with. I see it a lot with my ND colleagues, just really trying to make themselves important, and ... sorry, is this the kind of stuff that you're ... are these the kinds of things you're wondering about or am I getting off course here?"

ND05: "..goal in coming into this field is helping people versus becoming an important for your ego. Yeah, your ego. Coming from the ego, but instead thinking about service and serving others. I think that to me is a very very important trait."

- *Arrogance*

NP15: "somebody who is arrogant is hard to work with"

ND11: "super, super cocky and super arrogant"

ND01: "Overly confident about explanations or conclusions that are inherently shaky. I find that difficult to work with."

NP07: "Someone who then shuts you down or ridicules you or kind of snubs you in a sense of, "you should have known this," or that kind of attitude of, "I'm better and I don't need a team." So both way again.

ND09: "I thought he was too cocky and I thought he was a little disrespectful to patients, and he showed discontent amongst the support staff. So that's what I didn't like, but otherwise actually he was good to consult with cases. I don't like working with people who are loud and obnoxious, let's just say."

NP15: "Somebody who is arrogant is hard to work with or who feels that their role is the most important role and not willing to see other roles as important."

ND11: "I've had more trouble with people who have one of two things, it's either arrogance or extreme insecurity. Because of the insecurity, it comes off as arrogance. So people who are really insecure sometimes they puff themselves up a lot, to compensate, and then it's hard to work with because their objective isn't' really to get anything done, or to treat patients well, or to have a good working environment. It's just to look good (for themselves)"

- *Closed-minded*

ND05: "Closed minded people who are either skeptical or completely dismissive of alternative approaches in health and medicine. I've encountered many of those in my career. Thankfully less as we go forward. And those that are rigid and authoritative would be people that are difficult for me to work with. And negative attitudes. You know, just kind of pessimistic and..."

MD06: " I think that's, I cannot work with an individual like that, with an individual is so closed-minded that they don't think that they can give you equal opportunity to express your ideas, be able to respect your point of view." "Yeah, yeah, sure, sure. For the most part, people that I think I'll be able to work with are those who respect my skillsets and expects me to respect his or her skillsets. There's mutual respect and mutual recognition that we're all experts in our field. It's not like, "Oh, I know better than you or you know better than me," or, "Why are you telling me this?" That's one, having mutual respect. The other piece, of course, is the fact that each individual understands his or her limitation because this is where you say, "My medicine only goes up to this point. Where does your medicine lead you?" And let's have a conversation about it."

- *Dogmatic, self-interest medicine (not evidence-based)*

ND01: "I'm always leery of people who are very confident in questions that have not been well studied...when we are talking about something that has a big gray area."

ND02: "Yeah, I think so. I think some people are ... You can be close-minded, you can be very dogmatic."

ND11: "So things like that, just saying 'oh, I know better, do what I'm saying' and overriding all of the scientific evidence and all of the safety information, and then ... I think some of the major mistakes that ND's have made have been because of that. People have refused to use medication and say 'well instead use this, you can do this instead, because I know better', even though there's overwhelmingly clear evidence for how something should be managed. I see it as being a big ego problem. I know ND's do it too, but it's in a little bit different way."

- *Questionable value*

ND01: "I find it ethically challenging to use my license to tell people that they need this kind of treatment when I'm still unclear about what it is"

Helpful factor / environment for collaboration

- *Opportunity to develop trust and collegial relationships*

NP07: "I think it is someone who is open, who can sort of friendly in the sense of when you do approach them for the first time and run a case by them or seek their help, they don't' just, their non-verbal body language and their verbal language is not discouraging of that for future even if they're busy. So someone who is friendly in that sense and someone who is open to teamwork. Someone who also seeks out help as well not so it's a one-sided approach."

- *Open common space to communicate, not separate rooms*

NP07: "I think it's building a culture of respect and cultivating this knowledge in people, in the workers that this is a place where you can be vulnerable. Because I think when a provider goes to another provider to ask about something, there's vulnerability in that. And you have to trust that you're not losing faith or respect when you do that and knowing that your colleague is someone you can trust and you respect who also works hard and has good professional standing. I think that's important. So an environment that encourages, fosters those relationships, and that doesn't always come right away. And it doesn't always come from just being in work together, but in non-work activities as well. But it again just depends because non-work activities could be during your break where as you're working on charts there is an open-dialogue. So your actual physical environment helps for that of having an open space where all the providers are together so it's easy access to you, approach and to get, so that collegial spirit as well versus separate rooms where you may not see each other. Then it's less like. The actually built environment but then also just the cultural environment of a workplace to be encouraged by administration and yeah."

NP15: "I think in between that. I shared a space with a doctor and there was another that two P.A's shared a space, and there was another one where the, well the medical director has his own office. But I kind of like that we had offices that were partially shared and also we had a space were we could meet together if we wanted to."

- *Increase knowledge of other professional colleague*

NP07: "I think one thing I would say is that getting to know what roles of each professional does in the sense of their training, because before coming to my clinic I didn't know what naturopathic doctors were legally allowed to do and what were they trained to do? So there was a lot of knowledge deficit. And so even if it's, you can just assume someone doesn't know, just to have something that helps to train them. Because I don't think I even really got that in my orientation. It wasn't until I spoke with each of these professionals to know, "Okay." And they try to do an orientation, but I don't know if that comes across clearer enough than when you're actually in practice post-orientation to just have something where we know. But yeah I think just again having those kind of meetings weekly or whatever bi-weekly or I don't know just so you get to know each other, that could help."

MD13: “...trust... Knowing their background and training...they report back to me about patients they see. They give me helpful information...I can trust them based on my experience.”

- *Warm handoffs and fact-to-face*

ND04: "In terms of the environment at Neighbor Care with the homeless youth, it's an excellent and amazing environment. Not too much in terms of improvement. I'd actually highlight that we discuss cases, we do

warm handoffs, meaning patients go between ... they might be in their visit with me, I might want them to talk to one of our nurse practitioners or social worker or mental health councilor, and I'll introduce the patient, and we collaborate all the time."

MD13: "Oh yeah. Yeah so when they're with the dental students, they're learning about you know, the oral screening exam and the Fluoride varnish, and then when I teach them how to ... So I have behavioral health, a representative come and talk to those students about all the different things they offer so that students can understand the warm handoffs and how they can recommend behavioral health and their plan for the patient."

ND01: "Another factor would be face to face..." Misconception and ignorance shy a group of professionals away from mingling with another group of professional. Face to face communication help two members of group to understand each other, which develop into collaborative work. Relationship should be understood, empowered and encouraged, rather than becoming defensive, entrenched and unwilling to work or talk. Get used to consult and being consulted.

- *Developing a culture of mutual respect*

MD06: "Yeah, yeah, sure, sure. For the most part, people that I think I'll be able to work with are those who respect my skillsets and expects me to respect his or her skillsets. There's mutual respect and mutual recognition that we're all experts in our field. It's not like, "Oh, I know better than you or you know better than me," or, "Why are you telling me this?" That's one, having mutual respect. The other piece, of course, is the fact that each individual understands his or her limitation because this is where you say, "My medicine only goes up to this point. Where does your medicine lead you?" And let's have a conversation about it."

NP07: "Building a culture of respect and cultivating this knowledge in people, in the workers that this is a place where you can be vulnerable. Because I think when a provider goes to another provider to ask about something, there's vulnerability in that. And you have to trust that you're not losing faith or respect when you do that and knowing that your colleague is someone you can trust and you respect who also works hard and has good professional standing....environment that encourages, fosters those relationships, and that doesn't come right away. ....being in work together, but in non-work activities as well. But it again just depends because non-work activities could be during your break where....there is an open-dialogue. ....actual physical environment helps for that of having an open space where all the providers are together so it's easy access....collegial spirit as well versus separate rooms."

- *Having Reality Check*

ND11 "I used to work at a hospital and this MD brand new resident came in, and was just super, super cocky and super arrogant, and he was like two minutes out of medical school. My attending said 'let me tell you something, you do not know what you're doing, you do not have any experience, and I'm not giving you a single patient unless you check your attitude'."

ND11: "I think it's good to keep on pushing yourself to be better, humbling, but not just thinking 'oh I have a doctorate, so therefore I know everything'."

Environmental or situational hindrance for collaboration

- *Unfairness*

ND10: "the expectation to do more work then is humanly possible is a little unfair"

- *Lack of resources*

MD13: "..physician, they're so busy they can be a little bit less welcoming..."
ND09: "I'm still working a hundred miles an hour..."
MD12: "...not compensated enough"
MD13: "...are not available right then and there."
MD08: "...working with physicians and naturopaths outside of our system. We don't have any access to their records and we have no idea what they were discussing and that can be really difficult and that can really hinder the communication."
ND11: "we definitely need more administrative support"

- *Knowledge gap about other professionals*

NP07: "there was a lot of knowledge deficit (about other professionals)"
MD13: "(not) knowing their background and training"

3.3 DISCUSSION

This qualitative paper explores the hypothesis that a dispositional characteristic, humility, can enhance interprofessional collaboration among clinicians with differing professional healthcare training backgrounds and credentials working in a community healthcare setting serving Medicaid patients. The importance of this study is two-fold. First, results from this study may explain a previous systematic review supporting better rapport and efficacy in primary care practice by nurse practitioners when compared to physicians [73]. Dispositional investigation of professionals with different professional training backgrounds and credentials, such as family physicians, nurse practitioners and naturopathic clinicians, who engage in the same clinical role, has not been performed. To respond to policy-driven programming concerning patient empowerment, a novel conceptual map of patient empowerment was proposed by Bravo et al (2015). In their complex model, the provider's personal characteristics and values were shown as one of the mediator variables for patient empowerment leading to self-care [74].

Second, in order to serve diverse populations from different linguistic, cultural and ethnic backgrounds; along with different socioeconomic status, lifestyles, religions, and sexual

orientations, professional healthcare training curricula have been revised to incorporate training to non-judgmentally work with others and increase tolerance [71]. The traditional notion of cultural competency in clinical or professional settings refers to the mastery of skills to function in a multicultural environment, while humility refers to a dispositional tendency in genuine relationships [26]. Relational humility is defined by positive psychological virtues such as forgiveness, gratitude, hope, and optimism [32]. Interpersonal modesty refers to the tendency to moderate praise or recognition in socially acceptable ways, while humility refers to interpersonal qualities such as respect and empathy during conflict, and openness toward different cultural or worldviews, thus extending the concept of modesty [32]. The concept map of humility fits well with an increasing emphasis on cultural competency that not only addresses differences in language, culture, ethnicity and worldview, but also addresses differences in professional healthcare training and background.

The survey component of the overarching (main) study demonstrated quantitatively that primary care clinicians possess high scores in honesty-humility and conscientiousness domains when compared to the reference mean. Therefore, this study, which extracts the components of dispositional humility from interview data from this particular sample, appears to be an appropriate approach. This study expands the understanding of dispositional humility beyond the concept map created by the literature search, and the original concept map was modified to incorporate findings from the interview data. The summative codebook contained expressions of humility and its antonyms in a variety of expressions, and a perception of dispositional humility during collaborative work was confirmed (Table 3). Directed content analysis showed the components (elements) of dispositional humility and supported the concept map of dispositional humility (Figure 1).

With respect to the heuristic model of in-group favoritism [58], it was indirectly observable by a biased recruitment directly relating to professional healthcare training and credential, and possibly due to the professional healthcare training and credential of the PI (MS) as an ND. Recruitment access to ND volunteers was considerably easier than that of other clinicians with differing professional healthcare training and credentials. The following observations came from the interview data where clinicians generalized about certain clinical specialties:

1. A MD mentioned that MDs tend to me more perfectionistic than clinicians trained in other schools of health sciences.
2. A MD mentioned that behavioral health workers are more caring and approachable ("touchy-feely").
3. A ND mentioned that NPs are usually nice to work with (compared to MDs/DOs).
4. Two MDs mentioned that they did not have knowledge of ND's capacity and scope of practice before starting to work side by side.
5. A MD mentioned that the friendly (caring, concerned for other people) dispositions of workers were completely opposite between the primary care environment and the emergency room (ER) environment.
6. Many clinicians mentioned the need for orientations to get to know the specialty areas and capacity of other professionals whom they have never worked with. Interestingly, a MD and a ND mentioned such training opportunities as formal training, while a NP mentioned them as social activities.

As mentioned in the protocol, concealment of the study topic "humility" seemed successful throughout the study. No adverse comments about the study were mentioned, but complimentary and encouraging comments were made by several participants.

The scientific rigor of this qualitative study in terms of validity and reliability was discussed in the separate (main) paper. In summary, measures were taken to strengthen the scientific rigor of research components such as credibility, dependability, confirmability, transferability, and neutrality.

3.4 Limitations

This study was limited to the primary care environment. Primary care physicians who are trained in the ER (as a part of a residency rotation) may act completely different from ND or NP primary care clinicians who have never experienced the dynamics of emergency medicine. Therefore, the ER perspective of professionalism and collaboration needs to be studied separately.
Biased recruitment numbers along professional healthcare training and credential lines could be a limitation; however, this observation was also a part of the data indicating in-group favoritism.

In quantitative studies, validity refers to the truthfulness of the finding, and reliability is the stability of the finding. It seemed important for the data collection to occur in a concentrated time-period. As the political climate has changed, health policy changes have resulted in a precarious situation for community clinic employees. The internal validity or credibility of the data may be compromised due to this social factor. In this particular presidential election, possible healthcare policy changes were hotly debated and quite labile. It seems auspicious, therefore, to conclude data gathering within 12 months of major elections before any major healthcare policy changes occur.

For future studies, the components of the concept map of dispositional humility can be broken down by quantifiable psychometric instruments, and the entire model can be tested using structural equation modeling or other appropriate statistical modeling methodologies. As

demonstrated in the main paper, the differentiation of primary care clinicians by professional healthcare training backgrounds and credentials does not seem critical for studies of integrative medicine; furthermore, dispositional humility could be an individual factor rather than being associated with particular professional healthcare training and credentials.

3.5 CONCLUSIONS

In facilitating inter-professional collaboration, dispositional humility and its attributes were perceived as important factors by primary care clinicians with differing professional healthcare training and credentials, working in community health clinics serving Medicaid patients. Confirmation of the pre-conceived concept map of dispositional humility that described the dynamic elements surrounding the interaction with humility and enhanced functional collaboration seems successful. However, further refinement will be necessary to verify the model, to determine how dispositional humility affects patient outcomes, and to determine how to enhance dispositional humility development during professional healthcare training and continuing healthcare education.

LIST OF ABBREVIATIONS

HEXACO Designating six domains of personality as **H**onesty-Humility, **E**motionality, e**X**traversion, **A**greeableness, **C**onscientiousness, and **O**penness to experience

EMBASE **E**xcerpta **M**edica data**BASE**, a biomedical and pharmacological database

CINAHL **C**umulative **I**ndex to **N**ursing and **A**llied **H**ealth **L**iterature, an index of English-language and selected other-language journal articles about nursing, allied health, biomedicine and healthcare

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APPENDICES

Appendix A: semi-structured interview

Interview protocol

1. The purpose of this interview is to ask your opinions and perceptions about inter-professional collaboration at primary care clinics serving the Medicaid patients in Washington.

    1A. May I have your permission to record the conversation?

2. How satisfied are you with your job as a primary care practitioner?

    2A. Are you compensated enough? Are you on salary? How is your performance evaluated?

    2B. Are administrative and office support adequate?

    2C. How's the working environment of your clinic? What areas need improvement?

3. Since the enactment of the Affordable Care Act, did you see any change in the influx of Medicaid patients?

4. Is your clinic composed of clinicians and paraprofessional allied health workers from different backgrounds?

    4A. Tell me about some of these people, who they are, their function in the clinic, and how you interact with them.

    4B. What are the characteristics (personality, work ethics, etc.) of people with whom you feel comfortable working?

    4C. What are the characteristic of people you feel are difficult to work with?

    4D. In general, what factors are important in maintaining successful, collaborative working relationships amongst diverse professionals?

    4E. What do you think are barriers in developing successful collaborative environments?

5. What word or term do you associate with functional or dysfunctional inter-professional collaboration? The following is a word association exercise; please state the word that you most associated with the following:

    "Respected" "Heard" "Accepted"

    "Undermined" "Presumed" "Attacked"

6. Anything else you would like to talk about?

Appendix B: SPSS scripts for HEXACO calculation

```
* Encoding: UTF-8.
* HEXACO reversed item are switched in numbers such as 1, 9, 10, 12,,,59, 60.

RECODE hexaco01_ec23d3_v2 hexaco09_e7c8e1_v2 hexaco10_4d4197_v2 hexaco12_f07218_v2
    hexaco14_06d9e7_v2 hexaco15_9f03cd_v2 hexaco19_dc719b_v2 hexaco20_cf5bf0_v2 hexaco21_de3080_v2
    hexaco24_546044_v2 hexaco26_3848fe_v2 hexaco28_2908f5_v2 hexaco30_7d9228_v2 hexaco31_ac2b42_v2
    hexaco32_36a243_v2 hexaco35_5cb6ce_v2 hexaco41_59c029_v2 hexaco42_6c489a_v2 hexaco44_444d2c_v2
    hexaco46_326901_v2 hexaco48_6cef94_v2 hexaco49_d8ce77_v2 hexaco52_4065d0_v2 hexaco53_a4e01a_v2
    hexaco55_adda97_v2 hexaco56_967012_v2 hexaco57_59786c_v2 hexaco59_a395f1_v2 hexaco60_aa3fc0_v2
    (1=5) (2=4) (4=2) (5=1).
EXECUTE.

COMPUTE Sincerity=(hexaco06_b47cec_v2 + hexaco30_7d9228_v2+hexaco54_b9999a_v2)/3.
EXECUTE.
COMPUTE Fairness=(hexaco12_f07218_v2+hexaco36_689d24_v2+hexaco60_aa3fc0_v2)/3.
EXECUTE.
COMPUTE Greed_Avoidance=(hexaco18_cf0b08_v2 + hexaco42_6c489a_v2)/2.
EXECUTE.
COMPUTE Modesty=(hexaco24_546044_v2+hexaco48_6cef94_v2)/2.
EXECUTE.
COMPUTE Fearfulness=(hexaco05_61d3c4_v2+hexaco29_c7dca9_v2+hexaco53_a4e01a_v2)/3.
EXECUTE.
COMPUTE Anxiety=(hexaco11_0adf96_v2 + hexaco35_5cb6ce_v2)/2.
EXECUTE.
COMPUTE Dependence=(hexaco17_b3a806_v2+hexaco41_59c029_v2)/2.
EXECUTE.
COMPUTE Sentimentality=(hexaco23_461867_v2 + hexaco47_4ace23_v2 + hexaco59_a395f1_v2)/3.
EXECUTE.
COMPUTE Social_self_esteem=(hexaco04_357728_v2 + hexaco28_2908f5_v2 + hexaco52_4065d0_v2)/3.
EXECUTE.
COMPUTE Social_boldness=(hexaco10_4d4197_v2 + hexaco34_74093d_v2 + hexaco58_58c0b6_v2)/3.
EXECUTE.
COMPUTE Sociability=(hexaco16_80268d_v2 + hexaco40_15414a_v2)/2.
EXECUTE.
COMPUTE Liveliness=(hexaco22_c32867_v2 + hexaco46_326901_v2)/2.
EXECUTE.
COMPUTE Forgiveness=(hexaco03_35f70b_v2 + hexaco27_73173e_v2)/2.
EXECUTE.
COMPUTE Gentleness=(hexaco09_e7c8e1_v2 + hexaco33_b854df_v2 + hexaco51_799062_v2)/3.
EXECUTE.
COMPUTE Flexibility=(hexaco15_9f03cd_v2 + hexaco39_415307_v2 + hexaco57_59786c_v2)/3.
EXECUTE.
COMPUTE Patience=(hexaco21_de3080_v2 + hexaco45_8f4fa5_v2)/2.
EXECUTE.
COMPUTE Organization=(hexaco02_343578_v2 + hexaco26_3848fe_v2)/2.
EXECUTE.
COMPUTE Diligence=(hexaco08_e229da_v2 + hexaco32_36a243_v2)/2.
EXECUTE.
COMPUTE Perfectionism=(hexaco14_06d9e7_v2 + hexaco38_23a96e_v2 + hexaco50_8be59c_v2)/3.
EXECUTE.
COMPUTE Prudence=(hexaco20_cf5bf0_v2 + hexaco44_444d2c_v2 + hexaco56_967012_v2)/3.
EXECUTE.
COMPUTE Aesthetic_appreciation=(hexaco01_ec23d3_v2 + hexaco25_e4e0e3_v2)/2.
EXECUTE.
COMPUTE Inquisitiveness=(hexaco07_190756_v2 + hexaco31_ac2b42_v2)/2.
EXECUTE.
COMPUTE Creativity=(hexaco13_3f7fa1_v2 + hexaco37_91def1_v2 + hexaco49_d8ce77_v2)/3.
EXECUTE.
COMPUTE Unconventionality=(hexaco19_dc719b_v2 + hexaco43_deb5f6_v2 + hexaco55_adda97_v2)/3.
EXECUTE.
COMPUTE HONESTY_HUMILITY=(hexaco06_b47cec_v2 + hexaco12_f07218_v2 + hexaco18_cf0b08_v2 +
    hexaco24_546044_v2 + hexaco30_7d9228_v2 + hexaco36_689d24_v2 + hexaco42_6c489a_v2 +
    hexaco48_6cef94_v2 + hexaco54_b9999a_v2 + hexaco60_aa3fc0_v2)/10.
EXECUTE.
COMPUTE EMOTIONALITY=(hexaco05_61d3c4_v2 + hexaco11_0adf96_v2 + hexaco17_b3a806_v2 +
    hexaco23_461867_v2 + hexaco29_c7dca9_v2 + hexaco35_5cb6ce_v2 + hexaco41_59c029_v2 +
    hexaco47_4ace23_v2 + hexaco53_a4e01a_v2 + hexaco59_a395f1_v2)/10.
```

```
EXECUTE.
COMPUTE EXTRAVERSION=(hexaco04_357728_v2+hexaco10_4d4197_v2 + hexaco16_80268d_v2 +
   hexaco22_c32867_v2 + hexaco28_2908f5_v2 + hexaco34_74093d_v2 + hexaco40_15414a_v2 +
   hexaco46_326901_v2 +  + hexaco58_58c0b6_v2 + hexaco52_4065d0_v2)/10.
EXECUTE.
COMPUTE AGREEABLENESS=(hexaco03_35f70b_v2 + hexaco09_e7c8e1_v2 + hexaco15_9f03cd_v2 +
   hexaco21_de3080_v2 + hexaco27_73173e_v2 + hexaco33_b854df_v2 + hexaco39_415307_v2 +
   hexaco45_8f4fa5_v2 + hexaco51_799062_v2 + hexaco57_59786c_v2)/10.
EXECUTE.
COMPUTE CONSCIENTIOUSNESS=(hexaco02_343578_v2 + hexaco08_e229da_v2 + hexaco14_06d9e7_v2 +
   hexaco20_cf5bf0_v2 + hexaco26_3848fe_v2 + hexaco32_36a243_v2 + hexaco38_23a96e_v2 +
   hexaco44_444d2c_v2 + hexaco50_8be59c_v2 + hexaco56_967012_v2)/10.
EXECUTE.
COMPUTE OPENNESS_TO_EXPERIENCE=(hexaco01_ec23d3_v2 + hexaco07_190756_v2 + hexaco13_3f7fa1_v2 +
   hexaco19_dc719b_v2 + hexaco25_e4e0e3_v2 + hexaco31_ac2b42_v2 + hexaco37_91def1_v2 +
   hexaco43_deb5f6_v2 + hexaco49_d8ce77_v2 + hexaco55_adda97_v2)/10.
EXECUTE.
```

Appendix C: SPSS scripts for IMAQ calculation

```
* Encoding: UTF-8.

* Schneider 2003 was used for calculations of two factors 'Openness' and 'Relationships'.

* The word "physician" was substituted by "clinician".

* 'Openness' refers to the role of a clinician playing beyond healthcare provider's roles and recommend CAM.

* 'Relationship' refers to the role of a clinician to establish human connection with a patient beyond physical health care.

* Nagatively written items were: 2, 3, 5, 6, 7, 9, 10, 11, 13, 15, and 18.


RECODE imaq02_838285_v2 imaq03_489dba_v2 imaq05_aff589_v2 imaq06_b71a56_v2 imaq07_17e2dd_v2
    imaq09_22b3b7_v2 imaq10_b8e08e_v2 imaq11_42d6ab_v2 imaq13_1201d4_v2 imaq15_ce3d32_v2
    imaq18_7a8573_v2 (1=7) (2=6) (3=5) (5=3) (6=2) (7=1).
EXECUTE.


COMPUTE Openness=(imaq01_194a25_v2 + imaq02_838285_v2 + imaq03_489dba_v2 + imaq04_9cf6db_v2 +
    imaq05_aff589_v2 + imaq06_b71a56_v2 + imaq07_17e2dd_v2 + imaq08_064941_v2 + imaq09_22b3b7_v2 +
    imaq10_b8e08e_v2 + imaq11_42d6ab_v2 + imaq12_653bcc_v2 + imaq13_1201d4_v2 + imaq14_27ba4e_v2 +
    imaq15_ce3d32_v2 + imaq16_cf831e_v2 + imaq17_b62c7e_v2 + imaq18_7a8573_v2 + imaq19_306d7a_v2 +
    imaq20_fb947e_v2 + imaq21_40da7b_v2)/21.
EXECUTE.
COMPUTE Relationships=(imaq22_b41417_v2 + imaq23_88aa25_v2 + imaq24_cdb8e6_v2 + imaq25_74b254_v2 +
    imaq26_d02fba_v2 + imaq27_d4c974_v2 + imaq28_7c73fa_v2 + imaq29_403867_v2)/8.
EXECUTE.
```

Appendix D:

Interview protocol

1. The purpose of this interview is to ask your opinions and perceptions about inter-professional collaboration at primary care clinics serving the Medicaid patients in Washington.

1A. May I have your permission to record the conversation?

2. How satisfied are you with your job as a primary care practitioner?

2A. Are you compensated enough? Are you on salary? How is your performance evaluated?

2B. Are administrative and office support adequate?

2C. How's the working environment of your clinic? What areas need improvement?

3. Since the enactment of the Affordable Care Act, did you see any change in the influx of Medicaid patients?

4. Is your clinic composed of clinicians and paraprofessional allied health workers from different backgrounds?

4A. Tell me about some of these people, who they are, their function in the clinic, and how you interact with them.

4B. What are the characteristics (personality, work ethics, etc.) of people with whom you feel comfortable working?

4C. What are the characteristic of people you feel are difficult to work with?

4D. In general, what factors are important in maintaining successful, collaborative working relationships amongst diverse professionals?

4E. What do you think are barriers in developing successful collaborative environments?

5. What word or term do you associate with functional or dysfunctional inter-professional collaboration? The following is a word association exercise; please state the word that you most associated with the following:

"Respected" "Heard" "Accepted"

"Undermined" "Presumed" "Attacked"

6. Anything else you would like to talk about?

Appendix E

Summative Codebook

Table of Summative Codebook	Total
Patient centered principle	13
Approachable friendly with willing for dialogue	11
Like working as PCP	10
Open to new ideas or open-minded	10
Being thought as antagonistic medicine than complementary	9
Narrow minded or closed minded	9
Knowing what others skills and specialty	8
Opinionated on things not really understood – dogmatic	8
PCP is not compensated enough	8
Education cross-training on collaboration	7
In-person interactions venting outside cases	7
Person who can communicate concisely and quickly	7
Time to collaborate or sufficient admin time	7
Egotistic	6
Over confidence in opinions	6
Self-absorbed and selfish	6
Team player and sense of shared responsibility	6
Cultural change or awareness of importance of collaboration	5
Receiving adequate admin support	5
Referral is not collaboration	5
Who does not communicate or acting busy	5
Arrogant	4
Colleague who feel respected or not judged	4
Nice to have opportunity to develop network resources	4
Caring	3
Evidence informed practice principle	3
Inflexible	3
People who know collaboration can better service patients	3
Problem with conflict of interest - biased opinion	3
Willing to do extra things for other people	3
Be able to do warm handoffs	2
Bossy or pompous	2
Cherry pick scientific literature and call it EBM	2
Discouraged to refer or collaborate because of financial reasons	2
Does not trust until experience success	2
EBM is flawed by the way people use-not by itself	2
Get used to consult and being consulted	2
Humility	2
Inviting attitude or not discouraging to contact	2
Lack of admin support	2
Low exposure poor exposure lack of awareness	2
ND: Admin needs more financial resource	2
Obstinate and stubborn	2
People whom my patient can trust	2
Physical location office situation number of workers turnover rate	2
Physical proximity sit close shared space	2
Positive attitude	2
Practice standard of care or knowledge of	2
Want to share knowledge	2
Academic excellence	1
Administrator and supervisor have to be in trench frontline	1
Bad timing for warm handoff referral	1
Become specialized or expert in an area	1

Collaborative work alternative and conventional clinicians	1
Common base knowledge of medicine and language	1
Compassionate	1
Continuous study new medicine	1
Creative and people who can think out of box	1
Data-driven and know the limitation of data too	1
Deceptive or double faced	1
Demonstrate or experience collaboration	1
Disciplines are split up and no interaction	1
Down to earth	1
Dropped insurance and increased cash patients	1
Easy-going relaxed flexible	1
Financial stability or stable position	1
Good or model leadership for collaboration	1
Having busy practice and money flow for practice	1
Having the sense of humor	1
I do not know collaboration skills can be taught	1
Insecure people	1
Low recognition not well PR	1
Negative attitude	1
No relationship or cold referral	1
Not satisfied with PCP role	1
Organized people	1
Passive aggressive	1
PCP compensation salary is fair	1
PCP need variety of equipment not used much to recover cost	1
People who can say they do not know	1
People who do homework before consultation	1
People with good reputation	1
Personal and trusting relationships	1
Pressure to work quickly so no time for collaboration	1
Reality check opportunity to feel humble	1
Training which makes me humble or humbling experience	1
Turnover burnout quit job	1
Ethically challenging to recommend non scientific treatment	1

VITA

Masa Sasagawa is a licensed naturopathic physician in the State of Washington since 2004 and has been working at Bastyr University for fifteen years as of 2018. Because the Doctor in Naturopathic Medicine is a clinical degree, another doctoral degree was needed to pursue a research career. The areas of research interest includes but not limited to health psychology, nursing / medical / health sciences, health economy, social and public health, ethical aspect of health professional training, and salutogenesis. Feel free to contact. The contact information may be found on the web.