

Providers Empowering Patients: An Exploration of Agency and Shared Decision Making in the Context of Health Professions Education

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March 21, 2022

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SUBJECT: Appointment to the Final Doctor of Philosophy Examination Committee for Catherine Witkop

In accordance with the School of Medicine Graduate Program Guidelines, you are formally appointed to the Final Examination Committee of Catherine Witkop, doctoral student in the Center of Health Professions Education graduate program.

This Committee will evaluate the scope and qualities of the student's thesis and certify the document's acceptability.

In addition, the Committee will conduct an Oral Examination of the student's scientific knowledge, as well as the knowledge and understanding of the dissertation research project. This examination constitutes the Private Defense.

The Private Defense for Catherine Witkop will take place on Wednesday, April 6, 2022 at 3:00 PM.

Dr. Ronald Cervero is appointed Chair of the Examination Committee. Dr. Cervero will oversee the examination. Passage of the Private Defense will be by majority vote. If corrections to the thesis are needed, the Chair may oversee this process and sign-off after the corrections are made.

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FINAL EXAMINATION/PRIVATE DEFENSE FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN THE
CENTER OF HEALTH PROFESSIONS EDUCATION GRADUATE PROGRAM

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APPROVAL OF THE DOCTORAL DISSERTATION IN THE CENTER OF HEALTH PROFESSIONS EDUCATION
GRADUATE PROGRAM

Title of Thesis: "Providers Empowering Patients: An Exploration of Agency and Shared Decision Making in the Context of Health Professions Education"

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Dedication

This dissertation is dedicated to all our patients who come to us seeking care—may they feel heard and empowered by our words, that they may effectively partner with us in decisions about their care and achieve optimal health and well-being.

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Conflicts of Interest

Neither I nor my family members have a financial interest in any commercial product, service, or organization providing financial support for this research.

IRB Approval

This research protocol was reviewed and approved by the Walter Reed National Military Medical Center (WRNMMC) Institutional Review Board (#WRNMMC-2019-0221) in accordance with all applicable Federal regulations governing the protection of human subjects in research.

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Abstract

Problem: Shared decision making has been cited as the key to patient-centered care, but there is limited evidence of widespread implementation. Gaps in training and education have been cited as barriers, but there is no consensus about the most effective approach. Educational research around shared decision making, in which the decision is co-constructed by individual agents with their own social and behavioral contexts, requires an approach that addresses its complexity and incorporates patient agency and sociocultural influences.

Methods: In a perspective piece, we proposed cultural historical activity theory (CHAT) as a lens for researchers and educators to examine the complexity of shared decision making and to provide a framework for instructional strategies. To understand the state of the science, we conducted a systematic review of the literature that sought to report how shared decision making is taught to physicians and how the concept of agency is addressed. Because our studies involved the use of a decision aid as a tool for shared decision making, our methods paper described the motivation for and development of an evidence-based contraceptive decision aid mobile application. Finally, utilizing CHAT and functional linguistic analysis, we investigated the role of agency and other influences on shared decision making when the decision aid is provided to a military woman before a contraceptive counseling visit.

Results: We learned that previously published interventions for shared decision making included common elements, including use of tools, small group discussions, and role play or practice with simulated patients, but did not address the concept of agency. We saw that with medical decisions, multiple perspectives and voices contribute to the patient's values and preferences and the patient's agency is interwoven with their community and with tools such as

the app. We observed that the patient, the physician, and the app all act as agents in shared decision making.

Conclusions: Shared decision making is a complex activity that involves multifold perspectives and inputs and requires agentic actions by the patient and healthcare provider. Developing effective educational interventions for health professionals requires attending to agency and sociocultural influences on the patient and provider.

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CHAPTER 1

INTRODUCTION

Background and Motivations

As physicians, we seek to provide the highest quality evidence-based care for our patients. We spend countless hours in medical school, residency, and in the wee hours of the night when on call as attending physicians, scouring practice guidelines for the answer—the correct diagnosis based on the patient’s presenting symptoms, the first-line treatment that will be most likely to result in a reversal of the pathophysiologic process in question, often as measured by change in laboratory values, the surgery that accomplishes removal of the offending cyst or tumor or organ, and which carries the fewest risks. We learn about randomized controlled trials and case-control studies, we interpret risk ratios, odds ratios, and number-needed-to treat. We assume that if we follow the guidance of peer-reviewed articles in the *New England Journal of Medicine* or *JAMA*, we will always divine the correct diagnosis, prescribe the medication that will surely cure our patient’s woes (as long as they are compliant!), and utilize the most efficient and effective techniques for whichever-ectomy is called for.

As an obstetrician-gynecologist, I returned to school to complete another residency in Preventive Medicine after only 5 years of practice because I felt that we did not have the necessary tools to carry out evidence-based care for women, particularly during pregnancy. I took advanced courses in epidemiology and biostatistics, and felt that I had found my true calling when conducting a systematic review and meta-analysis on an infertility treatment during my public health training. Not only could I now interpret and critique any published journal article placed in front of me, but I was also equipped to provide the medical community with a synthesis of the literature that would guide each and every physician to provide the highest quality of care.

But, having completed my time in the ivory tower, I returned to patient care and once again felt we were all, as a medical community, ill-equipped. Gulbrandson states: “Ambiguity arises when

risk information is unavailable, inadequate, or imprecise. Complexity refers to inherent features of risk information that make it difficult to understand; examples include the presence of multiple attributes, causes, or consequences of a phenomenon.”¹ Ambiguity and complexity are unfortunately abundant in health and illness. The power that I felt I possessed as a physician was dampened by both ambiguity and complexity. The problem was that the actual patient was left out of the equation—the patient with their thoughts and fears, with their social network that shapes their beliefs and behaviors, with the socioeconomic environment in which they live. What was demonstrated to be effective at a population health level was unfortunately extremely challenging to understand and practically implement at an individual patient level. I was becoming increasingly attuned to and interested in the impact of social determinants of health, the non-medical factors, including “the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life.”²

This was the perplexed state of my physician mind when I first heard the term “shared decision making” sometime around 2013. Shared decision making has been defined in numerous ways, but is commonly understood as a collaborative process in which patients and their providers consider the patient’s values and preferences in addition to the scientific evidence in order to make healthcare decisions together.³ Once I was introduced to the concept, I fully embraced it as I felt shared decision making addressed the limitations of evidence-based medicine and all the uncertainty and ambiguity that are inherently part of healthcare. Berger⁴ tackles the topic of uncertainty and contends that shared decision making “. . . and associated tools can serve as a response to such uncertainty, enabling patients to orient themselves in the available evidence and decision options . . .” as long as uncertainty is “recognized and explicitly incorporated”. The approach acknowledges that even with the best evidence, residual uncertainty is present and

needs to be dealt with. Berger recommends that decision aids can be used in shared decision making, but patients need to understand uncertainties in evidence-based medicine and diagnostic tests, as well as the fact that clinical practice guidelines are imperfect at best.⁴ Frosch & Kaplan⁵ have also described a series of conditions that are required for shared decision making to occur: (1) atmosphere conducive to active patient participation; (2) physician makes the patients “feel that their contributions are valued”; (3) patients are honest about their preferences and goals; (4) “the physician then helps the patient determine how these goals and preferences fit with the available treatment options”.

Role of Agency

I still felt, though, I did not yet have a complete understanding as to how shared decision making could be that bridge between physician and patient, between evidence-based medicine and the patient as an individual within a specific sociocultural context, given the existing historical power differential. In shared decision making, the patient should be empowered to consider all options, even those that the clinician does not necessarily support. Stiggelbout⁶ states that risks need to be presented in both a “positive and negative frame” and, important to the original model of shared decision making, “. . . both patient and physician agree with the final treatment decision, which need not necessarily have been the physician’s preferred option”. Such relinquishment of power by the clinician can bring about the emancipation of the patient.

Traditionally, the physician--having more medical knowledge--has acted as the agent in a clinical environment,⁷ but patient agency derived from a lived knowledge about patient values and preferences is equally important for successful shared decision-making. There are multiple definitions for agency, although we primarily rely on those by Giddens⁸ and by Martin⁹ for our

work. We define agency as the “capacity for understanding and deliberative reasoning that we humans use to select, frame, choose, and execute intentional behavior.”⁹

Why Study Shared Decision Making as a Component of Health Professions Education?

Gulbrandson,¹ in a 2016 article, stated: “The reason seemed so obvious, and the idea so simple. By informing patients, inviting them to discuss treatment options, and partake in decisions, one would respect autonomy, achieve more tailored decisions that would lead to better outcomes and fewer complaints. Yet it was easier said than done. Despite three decades of advocacy for shared decision-making, in some countries supported by legislation, the approach is not part of mainstream practice.”¹ Others have identified similar concerns. Despite being described as the “pinnacle of patient-centered care,”¹⁰ there is limited evidence of widespread implementation of shared decision making and improved patient outcomes, such as adherence with chosen treatment.^{11,12}

Gaps in education and training have been cited as barriers,^{13,14} despite the development of— or perhaps leading to—a number of diverse educational interventions.^{15,16} Unfortunately, evidence is mixed regarding effective educational interventions.¹⁷ Muller, et al.¹⁷ found great variation in the interventions, outcome measures, and conclusions of the 41 included articles and because their analysis did not allow matching training components with outcomes, conclusions were limited for the most effective strategies; further, they noted that most of the published studies reported on provider-reported outcomes over observed or patient outcomes. Tools such as decision aids are being implemented widely in health systems, yet there is no clear roadmap to ensure adequate clinician education in utilization of such tools. This may adversely impact the quality of care provided, patient outcomes, and/or patient satisfaction.

In reviewing the literature, I contend that educational approaches to shared decision making have been fundamentally oversimplified and a more nuanced understanding of shared decision making, with a consideration of the complexity of this decision-making process, is needed. I believe that shared decision making, in which the decision is co-constructed by individual agents with their own social and behavioral contexts, requires an approach that incorporates patient agency and sociocultural influences.

The complexity of the shared decision making may be a factor in its under-investigation, although other complex topics such as interprofessional education and practice-based learning have been successfully tackled.¹⁸ It is incumbent upon the health professions education (HPE) community to embrace the most complex topics and research questions, for they represent the complexity of medicine in general and HPE more specifically. An understanding of shared decision making and educational approaches to successful implementation could lead to a richer understanding of other complex topics in HPE.

Military Relevance

I first heard the term and became interested in shared decision making when working on the staff of the Air Force Surgeon General as the lead for strategic efforts to increase patient activation and engagement throughout the Air Force Medical Service. We explored implementation of decision aids to improve patient activation and, in researching the literature, discovered a number of research gaps. Although many efforts are directed at patients to become more engaged, it became clear to me that the physician also has a role in facilitating and supporting the engaged, activated patient. And, yet, few studies at the time addressed this.

Simultaneously, I was asked to look into the issue of unintended pregnancy among military women. Reports had indicated that military women have a higher unintended pregnancy rate than the general U.S. population¹⁹ and military women often experience obstacles to comprehensive family planning services in certain duty settings. A population-based study of contraceptive prescriptions and procedures from 2008-2013 revealed gaps in certain groups, in particular young enlisted women in the Army have the lowest rate of utilization.²⁰ In my work, I began to think that a contraceptive decision aid readily available to military women may improve their ability to participate in contraceptive shared decision making with their provider. This feeling led to the development of the contraceptive decision aid mobile app that will be discussed in detail in **Chapters 4 through 6**. Findings from this entire program of research will be used to inform implementation of the decision aid in the Military Health System (MHS) and also to inform development of training materials for providers both in and out of the military.

Shared decision making has applications far beyond contraceptive counseling and, in fact, is particularly useful when discussing screening tests with patients. Because military readiness equates to being at peak performance and optimal health, following clinical practice guidelines, several of which contain shared decision making in the recommendation language, are important to military members. Additionally, decisions between surgical and medical management for musculoskeletal issues can also benefit from patients and providers utilizing tools such as decision aids. As mentioned earlier, there appear to be educational gaps around shared decision making. My research aims to begin to shrink those gaps and provide evidence-based recommendations to the military about the use of decision aids and the practice of shared decision making.

Paradigmatic Orientation and Methodological Considerations

As mentioned earlier, most of my previous research was related to my role as a preventive medicine physician, and would be classified as methodology within a positivist or post-positivist paradigm. As I began to approach shared decision making as a possible topic for my program of research, I realized I needed to thoughtfully consider the appropriate paradigmatic orientation for my work. I therefore first set out to conduct a literature review of the philosophical views of shared decision making and share my findings here.

The lack of a common understanding of shared decision making is reflected in the fact that commentaries and research have been based in all four major paradigms: positivism, post-positivism, cultural theory, and constructivism. The most prevalent current approach is perhaps post-positivism, likely because the view of the physician-patient relationship in modern western medicine is currently most closely aligned with the post-positivist paradigm. Therefore it stands to reason that, when shared decision making was highlighted as a panacea for improvement in quality and safety in the 21st century, the medical establishment quickly put forward evidence and commentary that, indeed, our current prevailing approach to clinical practice is in line with or can easily be aligned with shared decision making.

Shared decision making is rarely written about from a positivist perspective. Evidence based medicine (EBM) dependent clinical decision making developed from the positivist paradigm and there are a multitude of published articles that supported the use of EBM as the gold standard in practice. Greenhalgh elegantly summarizes the positivist view on EBM:

“Conventional medical training teaches students to view medicine as a science and the doctor as an impartial investigator who builds differential diagnoses as if they were scientific theories and who excludes competing possibilities in a manner akin to the falsification of hypotheses. This approach is based on the somewhat tenuous assumption that diagnostic decision making follows an identical protocol to scientific inquiry—in

other words, that the discovery of “facts” about a patient’s illness is equivalent to the discovery of new scientific truths about the universe”.²¹

Tannenbaum²² describes it similarly: “Evidence-based medicine argues for the fundamental separability of expertise from expert and of knowledge from knower”. Ontologically, positivism embraces separation of the knower from knowledge and the positivist espouses the exclusive use of EBM in the clinical encounter. Any clinical decision is based on the facts, the facts are found in the evidence, and the physician is most qualified to read the evidence. Shared decision making is not consistent with the positivist paradigm. Randomized controlled trials (RCTs) and systematic reviews of RCTs are the methodology of choice to evaluate evidence, so positivists have attempted to employ these methods to appraise the effectiveness of shared decision making. In one systematic review of 105 RCTs on the use of decision aids to promote shared decision making, there were no demonstrable differences in health outcomes.¹² A tangible, observable reality could not be identified, which is a significant problem for the positivist.

Next, we turn to the post-positivist paradigm. From this perspective, including EBM in clinical decision-making is still important, but the values and preferences of patients are also included in decisions. There is a single, external reality and regularities can be identified. However, we cannot fully perceive the reality, only approximate it, during the provider-patient encounter. Because of this uncertainty, shared decision making is an ideal post-positivist way to approach the clinical encounter.

As mentioned earlier, Berger⁴ addresses uncertainty and offers up a list of tools for the clinical encounter: (1) honesty; (2) recognition of emotion; (3) hope; (4) support/coordination of care; (5) willingness to readdress; (6) respecting personal decisions; (7) a lack of decision is possible.⁴ Berger recommends that decision aids can be used in SDM, but should be supplemented with the

toolbox elements he outlines.⁴ Frosch & Kaplan⁵ also writes from a post-positivist perspective and describes the series of conditions that are required for shared decision making to occur.

Epistemologically, post-positivists can also study and understand shared decision making, although the knowledge is not independent of the knower, so the researcher interacts with the subjects. The RCTs included in the systematic review mentioned above do demonstrate one post-positivist approach to shared decision making.¹² For, even though there were no measurable clinical outcomes, the authors concluded that patients who used decision aids were more knowledgeable, felt better informed, and were clearer about their values. These methodologies with fairly intangible outcomes would not satisfy a positivist, but would a post-positivist. Other examples of post-positivist approaches to shared decision making research would include other modified experimental methods to assess whether or not patients were satisfied with the shared decision making process.

However, a post-positivist approach cannot get at the “how” or “why” of shared decision making. Post-positivist approaches that continue to rely on the objective critical tradition of research will likely not allow us to know if a patient, including their values and preferences, was truly included as an equal partner in the decision-making. Goldenberg²³ states: “The appeal to the authority of evidence that characterizes evidence-based practice does not *increase* objectivity but rather *obscures* the subjective elements that inescapably enter all forms of human inquiry”. As we ponder the right approach to shared decision making, we need to recall this observation. It should encourage us to also look at shared decision making from a critical theorist or constructivist standpoint.

What then is the landscape of shared decision making research and understanding from a critical theorist perspective? The clinical encounter is shaped by values of both patient and provider, including those created by gender and the social, political, cultural, economic, and ethnic values of each and there is a power differential between clinician and patient that needs to be addressed. Approaching shared decision making from a critical theory perspective, therefore, is ideal.

Stiggelbout⁶ writes that some believe shared decision making is similar to “the informative model of care” from early work on physician-patient relationships, in which a decision is made with “facts provided by the physician combined with values from the patient.” A critical theorist would argue that the “facts” provided by the physician are also value-laden and these values need to be exposed. For example, evidence derived from a RCT could be imbued with the values of the pharmaceutical company manufacturing that medication or the academic researcher trying to achieve tenure. Goldenberg²⁴ was also concerned with “the use of evidence as a political instrument where power interests can be obscured by seemingly neutral technical resolve”.

Methodologically, to ensure that values of patients are central in any shared decision making initiatives or research, patients and other community members need to be involved in the process from the beginning, for example, in both the development of the tools for shared decision making and in the research protocol itself. A critical theorist would also advocate the principles of action research, in which research is conducted in a cyclical manner, continuously reflecting on whether the current perspective is taking into account all the values of the patient.

Participatory research is another example of research used in critical theory and Grande²⁴ outlines the three major factors that align it with shared decision making: (1) “leveling the dialogue among stakeholders” by acknowledging the expertise of patients and physicians; (2) “co-leadership” among patients, physicians, and managers; (3) “sustainability” of the process

needs to be ensured. These methodologies align with the concepts of critical theory in that they reduce the power differential between patient and provider--and when research is involved--the investigator. The outcome of such research may not be universally applicable, but may be transferable to similar, marginalized populations.

An example of the critical realist approach to shared decision making is a study that used an iterative and participatory approach in the design and the development of an internet-based decision aid for women choosing between vaginal birth after cesarean and planned repeat cesarean delivery.²⁵ This study was representative of others in the literature that approached the goals of critical theory, but had gaps. While critical theory appears to be an ideal approach for shared decision-making research, there are few, if any, good examples in the current literature.

Similarly, robust examples of constructivist research involving shared decision making in the clinical encounter are difficult to find. We do find descriptions of the constructivist ontology and epistemology of shared decision making. A constructivist posits there is no single external reality and, if a diagnosis or a treatment decision is made, it is a joint reality of the provider and the patient. In other words, the diagnosis is a shared construction and there is not a single correct treatment path that will be selected. Even when the evidence which has been collected in RCTs points towards an apparent diagnosis and a clear treatment, the constructivist would hold that the reality of that particular decision for that patient and that provider will be constructed in the context of that provider-patient relationship. Wilson²⁶ writes that there is “considerable evidence that the interaction between patient and doctor has a significant effect on the outcome of the consultation”. The shared reality is locally constructed and specific to that provider-patient pair at that time and place.

Epistemologically, the constructivist paradigm holds that the knower cannot be separated from what is known. Any understanding of the nature of the clinician-patient relationship will depend not only on the clinician-patient dyad, but also on the interactions of the investigator with that dyad. In this radical subjectivist epistemology, the investigator cannot predict the outcome of the inquiry until the interactions with the patient and provider have taken place. Furthermore, the results of that inquiry are exactly that, the results of *that* specific inquiry. Methods should be hermeneutic and dialectic, and must allow the investigator, provider, and patient to construct the joint reality of a shared clinical decision. The constructivist methodology used to study shared decision making should focus on methods “that facilitate mutual learning, emergent understandings, and consensus”.²⁷ In each inquiry, the perspectives of the patient, provider and investigator shape the outcomes of the research.

Greenhalgh²¹ writes there is a need for narrative research to understand how the truth is constructed from each of four “texts”: experiential, narrative, physical/perceptual, and instrumental texts. Malterud²⁸ also offers recommendations on how to study shared decision making. She states that “diagnosis of a disease is affected by a doctor’s personal experiences, and is not always just a matter of objectively observable facts.”²⁸ She holds that the problem in medicine is “that the medical research tradition lacks strategies for the study of interpretive action, its dynamics and its consequences”.²⁸ In another paper detailing the role of qualitative research in medicine, Malterud²⁹ concludes: “We need to prevent methodological separatism and supremacy if the field of medical knowledge is to be expanded, not just strengthened or divided”. The implication is that *more* quantitative research, however well done, will not help us solve complex questions in the health professions, such as how and why shared decision making should be carried out. Both the critical theorists and the constructivists would hold that only by

carrying out qualitative research will we begin to grasp the nature of shared decision making.

While the goals and methodology of the two paradigms are different, they both espouse a different perspective on SDM research as compared to our prevailing post-positivist perspective.

So how are we to approach shared decision making if we want to reach a better understanding of it in the future (since there is little constructivist research in shared decision making to this point)? Smith et al,³⁰ have conducted research on decision-making in complex and dynamic settings, such as the clinical setting, and reported on the challenges for health professionals including multiple variables and individuals involved, uncertainty, and ever-evolving situations. With all these factors at play, there are multiple realities and shared decision making requires the construction of a shared reality (the decision), consistent with the constructivist paradigm.

In searching the literature, we can find studies that approach shared decision making from a constructivist view, but few, if any, involve *both the patient and the provider simultaneously* in the inquiry. For example, in one recent study, an integrative, hermeneutic phenomenology approach was used to explore how women identified to be at high risk for hereditary breast cancer view risk, their own self-identity and the meaning of “care”.³¹ Another example used hermeneutics guided in-depth interviews and team interpretation of data from 19 women who received news of BRCA mutation from a biologic relative and demonstrated the wide range of potential behavioral and emotional responses that the patient would bring to a clinical encounter.³² In neither of these cases, however, did the inquiry include the providers with whom their clinical interaction occurred (or was going to occur).

A slightly closer approximation to an ideal critical theorist approach can be found in doctoral research in which a hermeneutic approach was adopted to seek an understanding of decision-

making among physiotherapists, “with the context of the practice preserved”.³⁰ The physiotherapists were observed in their everyday practice and then interviewed. The investigators found that decision making is a “complex and contextually dependent process . . .” which is: (1) dependent upon task attributes (difficulty, complexity, uncertainty); (2) involves engaging with situational factors in that particular context; (3) influenced by provider-specific factors; (4) specific to that particular environment (5) requires cognitive, emotional, social, and reflexive capabilities.³⁰ A constructivist approach is best suited to such a complex and dynamic subject.

Smith³⁰ reported that decision-making was related to the context in which it occurred and “ . . . different contextual factors assumed different importance according to the unique circumstances at a given time”. Shared decision making research based in the constructivist paradigm will not be generalizable to all decisions, but a rich description of an inquiry may provide transferable information for other providers and patients engaging in shared decision making.

While most of the current literature on shared decision making is from a post-positivist perspective, critical theorist and, to a lesser extent, constructivist views are also present. Because it is the “collaboration” and “values” of the patient that makes shared decision making different from decision-making based purely on EBM, I recommend that critical theorist and constructivist approaches to research are vital for shared decision making. While these approaches are surely less efficient and require a significant paradigm shift from our post-positivist perspective in current western medicine, they are important if we want to truly understand and implement shared decision making.

This, then, is why I sought a theoretical framework and methodologies from a critical theorist or constructivist approach. The following describes the five papers that make up my dissertation, presented here as **Chapters 2 through 6**:

Chapter 2 of this dissertation is a perspective paper that proposes cultural historical activity theory (CHAT) as a lens for researchers and educators to examine the complexity of shared decision making, to provide a framework for shared decision making instructional strategies, and to consider in solving other health professions education (HPE) challenges.

Chapter 3 is a systematic review of the literature that seeks to report how shared decision making is taught to physicians and, secondarily, in what ways, if any, the concept of agency is addressed in these educational efforts.

Chapter 4 is a methods paper that describes the motivation for and development of an evidence-based contraceptive decision aid mobile application (app), a tool that was then utilized in my program of research for this dissertation. The app is intended to assist servicewomen and their health care providers in facilitating shared decision making and achieving improved outcomes and the paper lays out a roadmap for integration within the Military Health System. This paper also explores the application of the app for health professions education in the realm of shared decision-making, which has implications for a broad array of other healthcare services.

Chapter 5 is a qualitative study that seeks to explore, through CHAT-sensitized analysis of a clinical encounter and focused interviews, patient and physician perspectives of a decision-making process that included the decision aid mobile app, in order to inform physician understanding of the complexity of shared decision making and the design of future educational initiatives.

Finally, **Chapter 6** is a qualitative study that also seeks to help clinicians better understand what supports successful shared decision making, but in this case by utilizing functional linguistics to examine how patients narrate themselves and the role of a decision aid and others (e.g., doctors, family, friends) in contributing to agency.

Theories Informing the Research

To address the impact of patient agency and sociocultural influences on shared decision making, I identified CHAT as a theory that can provide a framework for analysis of complex activities and assist in the design of educational interventions.³³ Although certainly not the only relevant theory to shared decision making, CHAT offers an appropriate lens through which the multi-voiced nature of shared decision making can be more clearly appreciated. As described in detail in **Chapter 2**, CHAT is a theoretical framework that offers a suitable lens to study shared decision making and the elements of CHAT are threaded both explicitly and implicitly throughout the dissertation. In analyzing the literature for **Chapter 3**, CHAT provides a useful framework to help match components of an educational intervention with parts of an activity system that can be related to shared decision making. Most explicitly, CHAT provides the a priori themes for template analysis in **Chapter 5** and allows us to explore the rich data from recorded clinical encounters and patient and physician interviews.

Reflexivity

Because of the nature of qualitative studies, in particular those grounded in a constructivist paradigm, I recognize that my background, assumptions, beliefs, and experiences undoubtedly influence my research program and this dissertation.

First, as a practicing obstetrician/gynecologist, I find myself within almost every clinical encounter trying to engage patients in shared decision making, because I feel that it is the right thing to do—that if only my patient had all the information needed to make a decision, and shared with me their values and preferences, the likely outcome of the visit and our prevention or treatment plan will be a satisfied patient who is thankful to have been listened to, who embraces their role in their own healthcare, and whose health will therefore improve as a result. As a military physician, in particular, I am aware of the disparities in health care that exist, especially among those patients whose voices are often not heard or are ignored, even in the context of a one-on-one visit. I wish to empower these patients to speak up and share their experiences, and not just in their visit with me as the likelihood that I will see them again is low. I want them to know their values and preferences are important and hope that they will be heard at their next visit, if they do try to speak up. While my feeling that shared decision making has benefits has been supported to some extent in empirical research, patient outcomes related to shared decision making, including those for vulnerable populations, have not been studied as extensively as, for example, surgical or medical interventions for acute and chronic conditions.

Second, as an educator, in particular for undergraduate medical education (UME), I appreciate that our medical students have a tremendous amount to learn and I recognize that interventions for teaching shared decision making may not fit well into the UME curriculum. Most interventions thus far have occurred at the GME or CME level and I would suggest that perhaps earlier practice in shared decision making will more effectively lead to a cultural shift whereby patients experience shared decision making in the vast majority of their visits, grow to expect they will be asked about their values and preferences in each and every visit, and thereby are ready and able to participate as partners in their healthcare.

Finally, having been a patient myself and having navigated family members through significant medical issues, I come to this work with the perspective of the patient as well. And this may very well be my strongest motivation for this work, but it is still the perspective of a physician who is a patient or who is a patient navigator and therefore I bring assumptions to this work that all patients feel the same way I do about participating in their care, and about being partners in decision-making. The nature of this research program was to try to get at the heart of what patients are thinking—patients who are not me.

Research Questions

Chapter 2: Perspective Paper

1. Primary question: How can CHAT be utilized to examine the complexity of shared decision making?

2. Secondary questions:

a. Can CHAT be utilized as a framework to develop instructional strategies around shared decision making?

b. Can CHAT be utilized as a framework to develop instructional strategies for other HPE challenges?

Chapter 3: Systematic Review

1. Primary Question: How is shared decision making taught to physicians?

2. Secondary Question: In what ways, if any, is the concept of agency addressed in these educational efforts?

Chapter 4: Methods Paper for Development of Decision Aid Mobile App

1. Primary question: How do we develop an evidence-based tool to facilitate shared decision making between military servicewomen and Military Health System (MHS) providers

2. Secondary questions:

a. How do we disseminate and integrate the use of this app within the MHS?

b. How do we educate health professionals about the use of this app for shared decision making and demonstrate its potential application for a broad array of HPE topics and healthcare services?

Chapter 5: Qualitative Study Utilizing CHAT

1. Primary Question: What are important contributors during clinical encounters to the shared decision making process and to facilitating patient agency?

2. Secondary Questions:

a. What is the patient's perspective of the decision-making process and the role of the app in clarifying her values and preferences, guiding collaborative deliberation, and facilitating her individual agency?

b. What is the physician's perspective of the decision-making process and the role of the app in facilitating shared decision making with the patient?

Chapter 6: Qualitative Study Utilizing Functional Linguistics

1. Primary Question: How do patients narrate themselves in a post-encounter interview?

2. Secondary Question: How do patients narrate the role of the decision aid and others (e.g. doctors, family, friends) in contributing to their personal agency and the decision-making process?

Overview of Studies

Chapter 2 opens this dissertation by describing shared decision making and presenting a fictitious case in which shared decision making does not and then does occur. Elements of this case are threaded through the text as illustrations. The premise is that shared decision making, even for seemingly straightforward decisions, is a complex activity in which the decision is co-constructed by individual agents with their own social and behavioral contexts. As a result, it requires an approach that incorporates patient agency and sociocultural influences. It appears that educational approaches to shared decision making have been fundamentally oversimplified and a more nuanced understanding of the complexity of shared decision making is needed. In order to address the impact of patient agency and sociocultural influences on shared decision making, we identified CHAT as a theory that can provide a framework for analysis of complex activities and assist in the design of educational interventions.³³ We provide a short overview of CHAT, describe its essential elements, and then apply CHAT to the two visits within the clinical case. The interacting activity systems of the patient and physician from the case are visually presented

in a figure and the resulting tensions and outcomes described in the accompanying text. Finally, we discuss this application of CHAT to address the role of patient agency in SDM, describe how CHAT has been and can be used to analyze other complex HPE topics, and propose ways that CHAT can help design novel instructional strategies within HPE. We close by addressing some of the potential limitations of CHAT, but also highlighting its future potential within HPE.

Chapter 3 provides a systematic review of educational interventions related to shared decision making and approaches the question of agency in shared decision making from a different angle—whether published educational interventions for shared decision making that have patient-reported outcomes include consideration of agency in their methods. In one systematic review, Muller et al.¹⁷ reported variation in the interventions, outcome measures, and conclusions of the 41 included articles. Because their analysis did not allow matching training components with outcomes and because most of the published studies reported on provider-reported outcomes over observed or patient outcomes, their ability to speak to the patient’s perspective is limited. Because shared decision making is a collaborative process in which the patient and provider co-create a decision, we propose that analysis of studies with patient-reported outcomes is more appropriate to identify successful approaches and determine gaps in pedagogy and to examine the role of agency in clinical decisions. We suggest that shared decision making requires not only a patient with sufficient agency to participate in the collaborative process, but a clinician whose actions enhance relational agency in the encounter. Data about the educational methods used were extracted and thematic analysis was performed to identify the potential role of agency.

Chapter 4, in addition to describing the development of a contraceptive decision aid mobile app, explores the application of the app in HPE. As we demonstrated in **Chapter 3**, decision aids often played an important role in interventions for educating health professionals about shared

decision making. We describe in detail how the constructs of shared decision making and patient agency contributed to app development. We relied on the evidence-based foundation of the app design to assure us that the app had potential benefits for facilitating shared decision making. But we also noted that further studies on the use of the app would be needed to provide us with insights about effective educational interventions on shared decision making using a decision aid.

Chapter 5 reports on a study conducted at Walter Reed National Military Medical Center in which we sought to understand the complexity of shared decision making in encounters around contraceptive decision making following the use of the decision aid mobile app described in **Chapter 4** by the patient. We enrolled both patient and physician participants, audio-recorded the clinical encounter and post-encounter interviews with each patient and physician. We utilized CHAT-informed template analysis to analyze transcripts with themes including elements of activity systems within CHAT, tensions within and between activity systems, and agency.

Finally, **Chapter 6** reports on a functional linguistic analysis of the transcripts from the patient interviews from the study discussed in **Chapter 5**. From our qualitative study, we learned that patient agency is important for successful shared decision-making. Much can be learned about shared decision-making and a patient's perceived agency by examining how a patient narrates their role in the process. Not just what a patient says, but how a patient tells their story can give us clues to their agency. Understanding patients' conceptions of agency can help health professionals to authentically support their notions of shared decision-making rather than having a provider-centric view.

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CHAPTER 2

Seeing Complexity: Cultural Historical Activity Theory (CHAT) As a Lens for Shared Decision Making

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Abstract

Shared decision making, a collaborative approach between patient and provider that considers patient's values and preferences in addition to the scientific evidence, is a complex clinical activity that has not realized its full potential. Gaps in education and training have been cited as barriers to shared decision making, and evidence is inconsistent on effective educational interventions. Because individual agents with their own social and behavioral contexts co-construct a shared decision, the educational approach may need to consider the role of patient agency and sociocultural influences.

To address the inherent complexity in shared decision making, the authors identified cultural historical activity theory (CHAT) as a framework for analysis. Although certainly not the only relevant theory, CHAT offers an appropriate lens through which the multivoiced nature of shared decision making can be more clearly appreciated. In this article, the authors demonstrate the application of CHAT as a lens for researchers and educators to examine the complexity of shared decisions.

The fictitious case presented in this article describes the use of CHAT with a patient who experiences 2 clinical encounters; during the second, shared decision making takes place.

Elements of the case are threaded through the article, demonstrating a sample analysis of the interacting activity systems of the patient and physician and highlighting inherent tensions and contradictions. The authors propose CHAT as a tool for future research around the role of agency in shared decision making and other complex topics and as a framework for design of novel instructional strategies. CHAT is a complex theory with limitations but which has significant potential within health professions education.

Shared decision making, a collaborative approach between patient and provider that takes into account the patient's values and preferences in addition to the scientific evidence, is a complex clinical activity that has not realized its full potential. Although shared decision making has been described as the "pinnacle of patient-centered care,"¹ there is limited evidence of its widespread implementation and improved patient outcomes, such as adherence with chosen treatment.^{2,3} Gaps in education and training^{4,5} have been cited as barriers to shared decision making and evidence is inconsistent on effective educational interventions,⁶⁻⁸ leaving health professions educators with insufficient guidance on how to best address this complex activity. We argue that shared decision making, in which individual agents co-construct the decision with their own social and behavioral contexts, requires an approach that incorporates patient agency and sociocultural influences. In this article, we propose cultural historical activity theory (CHAT) as a lens for researchers and educators to examine the complexity of shared decision making, to provide a framework for instructional strategies, and to consider in solving other health professions education challenges.

To demonstrate the complexity of shared decision making, we present the following fictitious case.

Encounter 1: A 21-year-old patient presents to her provider, a resident physician, for birth control. She has never been on contraception and, other than knowing her sister takes birth control pills, understands little about her options. Her medical history is uncomplicated. The resident, who is behind in his clinic, runs through the options, sharing a chart listing relative effectiveness of different methods. The patient expresses uncertainty about which would be best. The resident states conclusively, "Since you know the most about the pill, we can start with that. You can pick them up and start today."

Encounter 2: The patient returns to the clinic 2 months later. She was thankful for the pills because she wants to avoid pregnancy, but she works the night shift and finds she frequently forgets to take them. A friend recommended a decision aid designed to help select a birth control method. After she went through a series of educational modules and answered several questions, the decision aid suggested 3 methods most suited to her preferences. She shares the output of the decision aid with the resident, who recently completed a workshop on shared decision making. The resident asks more about her menstrual history and goals for treatment. He encourages her to share what she values in a contraceptive method and her preferences based on the output of the decision aid. They ultimately come to a shared conclusion that an intrauterine device (IUD) is a good option, given her heavy menstrual cycles, her and her husband's current desire to avoid pregnancy, and her shift work. He counsels her about the risks and benefits of the procedure and, under the supervision of his attending physician, places the IUD.

Although the patient is provided contraception in each encounter, there is a striking difference between the visits. In Encounter 1, which could be described as paternalistic, the physician acts as the primary agent in the health care decision. In this traditional role, the physician has more information regarding health status and medical options than the patient does.⁹ Unlike the first encounter, Encounter 2 depicts shared decision making and highlights both the importance of patient agency and the influence of sociocultural elements. The patient has more knowledge about her own values and preferences and a lived, first-hand knowledge of potential obstacles to healthy behaviors and positive health outcomes. As defined by Giddens, to have agency the individual must act intentionally, have the capacity to act on his or her intentions, and have the power to create a new event or intervene in an existing event.¹⁰ Agency is not an inert characteristic of a person but, rather, shaped, facilitated, or constrained by social structures,¹⁰ as

is exemplified in Encounter 2 when the physician asks the patient about her preferences and values. An understanding of shared decision making requires a theoretical lens that can make visible this inherent complexity.

To address the impact of patient agency and sociocultural influences on shared decision making, we identified CHAT as a theory that can provide a framework for analysis of complex activities and assist in the design of educational interventions. Although certainly not the only relevant theory, CHAT offers an appropriate lens through which the multivoiced nature of shared decision making can be more clearly appreciated. Additionally, CHAT, which has been successfully applied to concepts involving human interactions as complex as patient–provider interactions,^{11,12} can help health professions researchers and educators uncover and identify challenging tensions and develop new educational and management strategies grounded in the workplace context to bring about change.

The Theory: CHAT and Expansive Learning

CHAT proposes that humans learn by doing, that they use tools to learn, and that community plays an important role in human activity. Russian psychologists Vygotsky and then Leont'ev developed the concept that a human's actions are mediated by cultural artifacts (tools).¹³ Engeström expanded on the contribution of community and other outside factors to all activities by incorporating rules, community, and division of labor and their influence on a person (subject) and their mediated action (object).¹³ This activity system is considered the basic unit of analysis in activity theory (Figure 1).

An activity system consists of a subject, object, tools, rules, community, and division of labor.¹³

It cannot be considered a single behavior or a linear interaction between 2 individuals but, rather, a process in which different perspectives interact and each interaction can influence the outcome of the activity. An example of an activity system might be a physician (subject) deciding whether to admit a patient to the hospital (object). The physician uses history and physical exam findings and tools, such as a stethoscope or X-ray results, (all categorized as tools) to achieve the object.

The physician may reference clinical practice guidelines (rules), consult other specialists (community), and develop the treatment plan, with responsibilities to be divided between the admitting physician, the emergency department nurse, and the radiologist (division of labor). All components of the activity system contribute to the final decision to admit the patient (outcome).

In Figure 1, the arrows between each of the components of the activity system represent potential tensions within the activity system. See Table 1 for a description of the components of an activity system in CHAT with examples from health professions education.

Over time, CHAT evolved to address interacting activity systems in which the object is shared or constructed jointly.¹⁴ The interaction of multiple activity systems, each with varied perspectives, creates many tensions and the potential for great innovation. The subjects of activity systems vary, from individuals to teams or to entire systems, allowing for the study of interactions between individuals as well as of complex adaptive systems. Culture and historicity are 2 other key components of CHAT. The events that take place within and across activity systems (for example, a clinical encounter) are embedded within and shaped by the norms and values of the culture in which they occur. For example, in some cultures, the physician may be expected to always act on behalf of the patient, while in others, the patient may play a more active role. Historicity introduces a temporal dimension, where the activity takes place in different historical

contexts; thus, the history of the clinical environment (e.g. health care system or clinic) and of the medical technology, procedures, and knowledge can all shape the activity (clinical encounter).

Expansive learning builds on the concept that a series of actions taken by participants within and between activity systems can form an expansive cycle that may lead to the development of novel objects and practices and, ultimately, a new culture or way of acting. In particular, when the objects of 2 or more interacting activity systems are different, the evolving resolution of the contradictions may lead to expansive learning. Understanding how expansive learning can occur through interactions of different activity systems is applicable to the education of health professionals. For example, Larsen et al applied CHAT to study student learning goals in clinical education.¹⁵ In this study, the activity systems of educator and student interact, with a shared goal of patient care, but with tensions produced by the additional objects of mastering the material and safe patient care.

Linking CHAT to Shared Decision Making

To illustrate the use of CHAT in informing our approach to shared decision making, we refer to our case. Figure 2 demonstrates hypothetical interacting activity systems for the 2 encounters. In contrasting the elements of the interacting activity systems, we can visualize those features that may be key to successful shared decision making.

In Figure 2A, we present a notional representation of the physician and patient activity systems in Encounter 1. In the physician activity system (on the left), the physician seeks to make a quick decision about a contraceptive method. He uses his knowledge to recommend a method, but because time for the visit is constrained, he does not engage the patient in decision making, and he does not consult his attending physician nor involve others in the treatment plan. In the patient

activity system (on the right), the patient's object is selection of a contraceptive method that meets her needs, although she has only minimal knowledge of options from her sister. She is not given the opportunity to express her needs, and her ability to engage in decision making may be affected by sociocultural norms that prevent her from speaking up and questioning the confident recommendation of the physician, who she perceives as more knowledgeable. Previous learned experiences may have included visiting a pediatrician with her mother, who instructed her to always follow the advice of a doctor. Most notable about the interaction between the 2 activity systems is that, while Object 1 of each activity system is similar, they are not the same, and there is no shared object (Object 2 or Object 3).

In Figure 2B, we show physician and patient activity systems in Encounter 2. Unlike the situation in Encounter 1, the physician has had experience with shared decision making before this encounter, and the patient has used a decision aid before the visit. In the physician's activity system (on the left), his primary object is now to elicit the patient's values and preferences, and he has a second object, which is facilitating agency in the patient. In addition to sharing his medical knowledge and discussing alternatives, the physician in Encounter 2 appreciates the need to elicit the patient's values and preferences, and he uses the decision aid as a tool to help the patient achieve agency in her care. Because he had received training on shared decision making, the principles of patient-centered care now overshadow paternalism, and although he is not yet privileged to insert an IUD on his own, he requests the help/supervision of his attending to achieve the object.

In the patient activity system depicted on the right side of Figure 2B, the patient has used the decision aid recommended by her friend and has thought about her values and preferences around this decision. Given her dissatisfaction with the outcome of the first visit, the patient's

primary object is now to articulate her values and preferences about contraception. The social norms of a patient–physician interaction in which the patient defers to the physician may still exist, but there is a tension between the historically prevalent behaviors and the existence of a decision aid, which indicates that her values and preferences do indeed matter. By asking about her values and preferences, the physician also reinforces the patient’s role, and will likely contribute to increased agency in the patient. The patient and physician now have a shared object, which is shared decision making (Object 3).

Comparing the activity systems of Encounter 1, in which a shared decision was not achieved, with the rich and meaningful interaction of the activity systems in Encounter 2 can help researchers and educators identify the tensions that appear in the activity systems and can point to targets for educational interventions. The concept of expansive learning in CHAT indicates that as participants in activity systems work through tensions, learning can take place and be reinforced over time. As the physician works through these tensions, the object, which was originally to come efficiently to a decision about a contraceptive method, now also needs to account for the patient’s preferences and values. If the physician emerges from this co-constructed encounter reflecting on successfully reaching a shared decision, learning has taken place, and he may be more likely to engage in shared decision making with his next patient. Similarly, the patient will have learned that she does have a voice and her preferences and values matter. She may be empowered to enter into her next visit, for another medical concern, with increased agency—leading to increased engagement over time and a culture that embraces increased patient agency and co-constructed decisions that truly represent patient-centered care.

Discussion

As we have demonstrated, CHAT can provide a useful framework to analyze shared decision making. In this section, we describe ways to use CHAT in research involving work-based activities to guide instructional design and CHAT's potential in relation to other complex education topics. By using CHAT as a lens in qualitative studies of work-based activities, we can visualize the tensions within the activity systems and contemplate which elements seem to contribute to successful shared decision making and to expansive learning. By analyzing the interacting activity systems in Encounter 2 of our hypothetical case (Figure 2B), we perceive that the decision aid, the patient's community, and the changing rules about who contributes to decisions help the patient gain agency. We also learn that the physician has a role in facilitating the patient's agency by asking appropriate questions and, after co-constructing a decision with the patient, supporting her decision with immediate action. Moving away from hypothetical examples, we can examine a published study in which researchers used activity theory to observe and analyze teamwork among staff in an organ transplant unit in Canada; they were able to analyze examples of the interprofessional staff working through problems and observed that other objects besides patient care may emerge (e.g., need to provide training to junior physician) and compete with patient care.¹²

Findings from research studies using CHAT to analyze work-based activities can be used to guide the development of appropriate instructional strategies. In our hypothetical example, a researcher observing similar scenarios as part of a research study may conclude that, because patient agency was observed to be a critical component of shared decision making, the provider has a role not only as a medical expert but also as a facilitator of the patient's agency. An instructional strategy for shared decision making could include presenting videos of providers

successfully using specific language to elicit patients' individual values and preferences, followed by role play in which students practice those communication skills. Shared decision making cannot be thought of as simply an interaction between 2 individuals; rather it must be seen as the interaction of the individual complex activity systems of a patient and a provider—each existing within social structures. Gulbrandsen et al describe the aim of shared decision making as boosting patient autonomy, which involves strategies that address the patient's vulnerability and scientific uncertainty, among other key elements.¹⁶ Shared decision making requires more than basic communication competencies, and CHAT provides a suitable framework for identifying the characteristics of a clinical interaction to emphasize in a successful educational intervention.

In applying CHAT to complex health professions education topics, we can identify numerous facilitators for and barriers to learning and thereby envision new approaches to instruction that encompass the actual complexity of the clinical educational problem being addressed. By examining the facilitators that can help individuals or teams work through tensions within and between activity systems, educators can develop novel interventions that boost the facilitators. As an example, discourse (language) or other tools (like decision aids or other clinical support tools), potential facilitators for expansive learning, can be shaped and applied in educational settings where needed. Specifically, if trainees learn and use phrases that enhance patient agency and use decision aids during patient encounters, such behaviors will be the norm, and patient and provider objects may become more aligned. Another example is the application of CHAT to analyze simulations, such as mock codes or emergency cesarean deliveries. Specifically, analysis of how division of labor, rules, and community affect interacting activity systems may lead to the evolution of more effective team-based care. Similarly, barriers to change and learning may

include rules that are entrenched in the historical context of the learning environment and that need to be addressed and mitigated. These are but a few of the facilitators and barriers that may exist in health professions education; if these, and others, are addressed, educational interventions may be successful in addressing complex learning issues.

By becoming nimble with CHAT, health professions education researchers will begin to appreciate its potential applicability in several other complex educational areas. For example, there is a potential role for CHAT in the education of health professionals in competencies under the umbrella of systems-based practice or, more broadly, health systems science, including team-based care, quality improvement and patient safety topics, and interprofessional education. In a recent application of the CHAT framework, Varpio et al stated, “By understanding how interprofessional communications are influenced by multiple activity systems, research can uncover the layers of personal, professional, organizational, social, and physical contexts that influence the actions and interactions involved in interprofessional communication.”¹⁷ Another recent study used activity theory as an organizing principle to better understand cultural differences and cross-cultural applicability of problem-based learning.¹⁸ And, in a study of the socially complex zone of practice around identification of autism spectrum disorder, the authors mapped activity systems in 2 medical education systems to identify some of the barriers to effective, comprehensive care for children diagnosed with this disorder.¹⁹

Although CHAT provides a useful lens to study learning and instruction related to shared decision making and other education topics, it has potential limitations. First, the very nature of CHAT as a theory that focuses on the interactions of the subject, object, and tools, as well as sociocultural influences, may make it less generalizable for a broader audience. Frambach et al¹⁸ addressed this concern in their study, stating that, although they could not necessarily generalize

to contexts other than what was studied, they were able to identify elements that could be applied to other settings. Second, although CHAT can address many activity systems simultaneously, a large number of interacting activity systems may distract from focusing within activity systems, where the foundational unit of analysis lives—and where educators may most readily identify the root of tensions. In such cases, boundaries might be needed to establish the scope of an inquiry. The physician–patient dyad and the interacting activity systems explained in this article present several tensions for analysis—areas that can be addressed in educational interventions. Finally, CHAT may be more useful to researchers and educators for analyzing the complexity of shared decisions than to learners for trying to master shared decision making in their daily educational activities.

In this article, we have described how CHAT provides medical educators a lens to consider the complexities of shared decision making. A better appreciation of the complexity of this topic, and many other health professions education topics, is critical to developing effective educational interventions. We have also proposed CHAT to help bring into focus the variety of perspectives and tensions inherent in shared decision making and suggested recommendations for medical educators harnessing CHAT as an analytical tool and framework to assist with design of instructional strategies. Lastly, we proposed that future work should focus on revealing the ways in which CHAT can be more broadly applied to the design and evaluation of instructional methods in other areas of health professions education.

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Figure 1. The activity system. This system is considered the basic unit of analysis in activity theory. The arrows indicate potential tensions between elements of the activity systems.

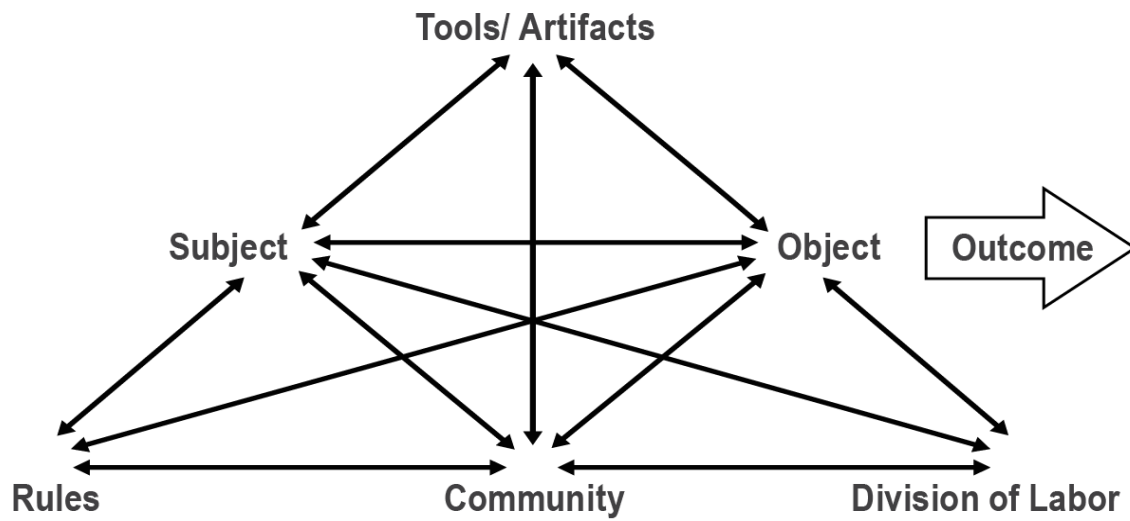


Figure 2 Representations of the interacting activity systems of the physician and patient in Encounter 1 (A) and Encounter 2 (B).

Figure 2A: Interacting activity systems in Encounter 1, when shared decision making does not occur and, as a result, there is no Object 2 or joint Object 3.

Figure 2B: Interacting activity systems in Encounter 2, when shared decision making does occur. Object 1 for the physician is similar to Object 1 for the patient, and there is now an Object 2 for the physician and patient (both aligned to increase patient agency) and a joint Object 3 (shared decision making). Each activity system element has more variables in Encounter 2 than in Encounter 1, potentially allowing for richer discussion, resolution of tensions, and—ultimately—successful shared decision making (achievement of a joint object).

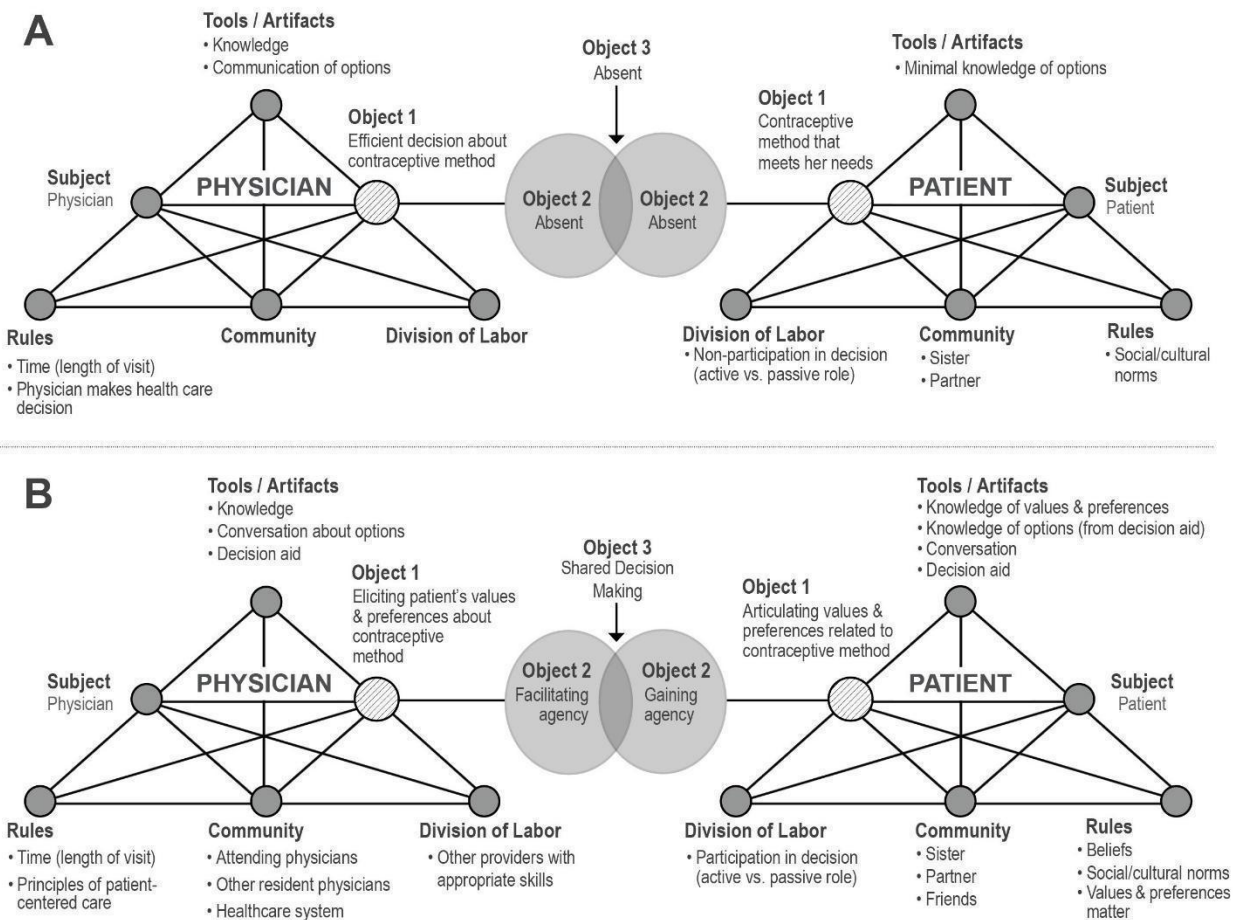


Table 1. Components of an Activity System in Cultural Historical Activity Theory (CHAT), with Examples from Health Professions Education

Element ^a	Description	Examples
Subject	The individual engaged in the activity who acts on the purpose of the activity (the object)	• Medical student • Resident physician • Attending physician • Patient
Object	Purpose of the activity that is constructed as a result of the interactions of all other parts of the system; the meaning or motive of an activity system that is interpreted and changed by the subject's actions; something that can meet the need of a subject	• Making a diagnosis • Making a decision about treatment • Learning a task (e.g., drawing blood, suturing) • Writing a note
Tools/Artifacts	Symbolic or physical objects that facilitate the accomplishment of a defined objective and/or contribute to the construction of the object within the activity system	Material tools: • Electronic health record • Decision aid Semiotic or conceptual tools: • Knowledge • Language (discourse)
Rules	Guidelines that reflect and regulate activities, can be considered cultural norms, and may change as the activity system changes	• Clinical practice guidelines • Regulations or accreditation requirements • Local procedural instructions or clinic practices • Time allotted for visit
Community	A group of any size that shares an interest in and involvement with the object of an activity system	• Cohort of students • Clinical staff of a hospital • Online learning community • Specialty professional organization • Patient's family or friends
Division of labor	How activities are distributed among various members of an activity system or community (vertical, based on hierarchies; horizontal, based on proficiency or assignment of duties)	• Relationship of attending physician and medical student • Role of physician versus patient • Role of other team members or family in making or carrying out treatment plan

^aEach element interacts with other elements in the activity system to influence the outcome of the activity.

CHAPTER 3

Educational Interventions for Shared Decision Making and the Role of Patient Agency: A Systematic Review

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Abstract

Background: Shared decision making is critical to patient-centered care and yet there is limited consensus on effective teaching approaches for training physicians in this domain. As a collaborative process in which the patient and physician co-create a decision, patient and relational agency may be important contributors and studies with patient-reported outcomes may identify successful approaches and determine gaps in pedagogy. The authors conducted a systematic review of educational interventions for shared decision making, focusing on patient-reported outcomes and consideration of agency.

Methods: Ovid MEDLINE, Embase, and Web of Science were searched for studies describing educational interventions with patient-level outcomes published between January 2000 and January 2020. Articles were excluded if they were not in English, included only patient interventions, or reported only physician outcomes. Quality assessment was performed using the Medical Education Research Study Quality Instrument (MERSQI). Data about the educational methods used were extracted and included studies were assessed for quality. Thematic analysis was performed to identify the potential role of agency.

Results: 26 articles were identified describing 17 unique studies. Educational interventions were diverse in duration and content, with multiple components. Three-quarters of studies used role play or simulated patients and 82% included tools to facilitate shared decisions. Although no articles explicitly discussed facilitating agency as a component of the intervention or as an outcome, one qualitative study demonstrated themes of patient and relational agency.

Conclusions: Educational interventions included small group discussion, decision aids, role play, and simulated patients, and improved a range of patient outcomes, but our study included

only studies including practicing physicians, limiting applicability to trainees and other health care providers. Interventions have not included explicit instructional design around agency, but qualitative analyses demonstrated interventions may facilitate agency and shared decision making. Future instructional strategies should consider the complexity inherent in co-constructing decisions.

Introduction

Shared decision making is critical to patient-centered care, and yet there is limited consensus on how to most effectively teach it to health professionals. Although numerous educational interventions have been developed, many have not been methodically studied nor described in the literature [1, 2]. In a recent systematic review of published studies, Muller et al. found great variation in the interventions, outcome measures, and conclusions of the 41 included articles [3]. Because their analysis did not allow matching training components with outcomes, conclusions were limited for the most effective strategies, further, they noted that most of the published studies reported on provider-reported outcomes over observed or patient outcomes [3]. Because shared decision making is a collaborative process in which the patient and provider co-create a decision based on the patient's preferences and values in addition to scientific evidence, we propose that in depth analysis of studies with patient-reported outcomes may help us better identify successful approaches and determine gaps in pedagogy.

Focusing on studies with patient outcomes may also allow for closer examination of the role of agency in shared clinical decisions. We suggest that shared decision making requires not only a patient with sufficient agency to participate in the collaborative process, but a clinician whose actions enhance relational agency in the encounter. One commonly cited definition of agency, by Giddens, is an individual acting intentionally, with the capacity to act on his or her intentions, and having the power to create a new event or intervene in an existing event [4]. According to Giddens, individual agency can be shaped, facilitated, or constrained by social structures. The clinical encounter is such a social structure, made up of the actions of the physician, the clinical and patient support tools, the culture, environment, and expectations. Relational agency has been defined as “the capacity to work with others to expand the object that one is working on by

bringing to bear the sense-making of others” [5]. By examining relational agency of a physician and patient dyad, we can better understand how a shared decision can be accomplished.

Despite the apparent importance of agency to shared decision making, it is unclear if educational interventions address the roles of patient and relational agency. Thus, we sought to answer the questions: How is shared decision making taught to physicians and, secondarily, in what ways, if any, is the concept of agency addressed in these educational efforts?

Methods

We conducted a systematic review of studies evaluating educational interventions for physicians that aimed to increase shared decision making in the clinical encounter, as measured by patient-level outcomes. Our review followed guiding principles of conducting systematic reviews in medical education [6] and is reported in accordance with Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) [7]. (See PRISMA Checklist: <https://zenodo.org/record/5029150#.YNTs6ndKicY>) [8]

Data Collection

We hand-searched a 2012 environmental scan of shared decision making training and its 2016 update [1, 2] and identified relevant articles. Leveraging these results, we conducted searches of Ovid MEDLINE, Embase, and Web of Science limited to studies published between January 2000 and January 2020. A medical librarian created search strategies for each database that utilized combinations of keywords and controlled vocabulary terms. (See extended data <https://zenodo.org/record/5029150#.YNTs6ndKicY>) [8] Searches were limited to English-language publications and conducted on January 29, 2020. We also hand searched references of

all included articles and key review articles. All citations were managed in EndNote, including the removal of duplicate citations.

Inclusion and Exclusion Criteria

We included studies that described educational interventions for physicians that included patient outcomes (objective health outcomes or patient-reported outcomes). Articles were excluded if they were not in English, included only patient interventions, or reported only physician outcomes.

Two authors (CW and LM) independently screened all titles and abstracts using Rayyan (<https://www.rayyan.ai>), a webtool optimized for data screening. Screening was based on the above inclusion/exclusion criteria. Upon completing the screening, LM and CW discussed any conflicts until consensus was reached. In instances in which CW and LM did not reach consensus, the full text was reviewed and if appropriate included.

Data Extraction

CW, EH, and LM independently extracted data from the included articles, using a form that was created based on our research question and examples from the literature. The data extraction form was operationalized in Excel. CW, a physician and doctoral student in a Health Professions Education program, extracted data from all full-text articles. LM and EH, both HPE researchers, each extracted data from half of the articles. Discrepancies were resolved by discussion. If multiple articles reported different findings from the same study, data extraction occurred from individual studies, but they were grouped together for future analysis. Upon completion of extraction, the authors met to reconcile their coding.

Data extracted included the context of the intervention, clinical area, physician-type targeted, theories/approaches used, educational intervention(s), instruments or measures used (delineated as patient and provider outcomes) and outcomes (including effect of intervention). We identified any discussion of agency in either the intervention specifically or in the analysis or discussion of results.

Because of the complexity of shared decision making, we drew on Cultural Historical Activity Theory (CHAT) as a framework. We propose that CHAT allows examination of interacting activity systems that can impact shared outcomes. An activity system in CHAT is made up of a subject (person engaged in the activity), tools (symbolic or physical objects that facilitate accomplishment of a defined objective), and object (purpose of the activity), as well as rules, community, and division of labor [9]. Any components of the intervention, results, or discussion that appeared to be aligned with elements of CHAT were extracted from each study.

Quality Assessment

Quality assessment of the included studies was performed, with an understanding that these studies were diverse in methodology. All articles in the final review underwent evaluation using the Medical Education Research Study Quality Instrument (MERSQI) [10]. CW and LM independently scored each of the included studies. For studies with more than one article, one with quantitative patient outcomes was used for rating purposes. Any discrepancies were discussed and resolved by consensus. If disputes remained, EH served as an adjudicating reviewer. Reliability kappa coefficient scores for the MERSQI used in other systematic reviews of educational interventions have ranged from 0.72 to 0.99 [10, 11]. We utilized categories of quality from previous studies: 4.5 to 8.5 is considered low quality, 9.0 to 13.0 is moderate, and

13.5 to 18 is considered high quality [12]. Quality assessment was performed for studies with quantitative data, which made up a majority of the studies.

Data analysis

We tabulated the key characteristics of the included studies (e.g., intervention modality, learner and patient population, assessment instruments). To identify the presence of agency within the interventions, thematic analysis was performed on all studies with a focus on the intervention and results.

While we remained open to all elements related to agency in our thematic analysis, we used CHAT as a framework for coding. Codes were created for each of the elements of activity systems and for tensions within and between activity systems. Codes were applied to findings and representative quotes for each study. A code for patient agency was also applied to intervention descriptions and results and authors' interpretations of study findings. Codes were organized into related areas and used to identify themes.

Results

Our search yielded 2879 articles after duplicates were removed. After title/abstract review, we identified 34 for full-text review, of which we excluded 8. We also reviewed reference lists of 10 articles marked as key background/review articles and the 26 remaining articles. In total, we identified 26 articles [13-38], describing 17 unique studies meeting the inclusion criteria for our review. Figure 1 diagrams our review process. In this section, we first report study characteristics and describe the educational interventions. We then turn attention to elements of shared decision making and agency which we have mapped to CHAT.

Table 1 includes characteristics of the included studies. From the included studies, 14 (82%) were randomized controlled trials (RCT), with the majority characterized as cluster RCTs. Six studies were conducted in Germany, four in the United States, three in the Netherlands, and the remainder in Canada (2), the United Kingdom (1), and Mexico (1). Most studies (n=12; 71%) were conducted with primary care physicians and the remainder were specialists or unspecified. All studies received external funding and were found to be of high quality based on MERSQI scores ranging from 13.5 to 18.

Educational Interventions

Educational interventions described in the studies were diverse in duration and content (See Table 2). All interventions involved more than one method to deliver the intervention, including a mix of: lecture/video/web-based presentation, group discussion, role play or consultations with simulated patients, self-reflection, feedback on performance (either direct observation or in visit with simulated patient), and tools for interaction (for the physician, the patient, or both). All studies used some form of lecture, video, or web-based didactics. Group discussion was included in 6 (35%) studies, feedback on performance in 11 (65%), and 5 (29%) studies explicitly included self-reflection.

The majority of studies (n=13; 76%) utilized role play or simulations within their educational interventions, although the approach differed between studies. We describe two of the interventions as examples of disparate approaches with different study populations, however, it should be noted that they are not representative of all interventions. One of the earliest studies in this review was a cluster RCT that utilized two workshops with didactics that focused on shared decision-making competencies [13-16]. A second group received a similar intervention focused only on risk communication skills and a third group received both interventions (combined

interventions). The primary care physicians then participated in consultations with simulated patients and received feedback on their performance in at least one of the consultations with simulated patients [13-16].

Another study compared radiation oncologists before and after participating in two plenary sessions (3-hours each), group discussion, trained patient simulators, and three videotaped real patient consultations with a 1-hour feedback session on each [20]. Training included activities to emphasize components of shared decision making and outcomes related to communication of the physician participants before and after training [20].

Most studies (n= 14; 82%) included tools that the physician and/or patient could utilize to assist with decision making. For example, decision aids were paper-based booklets or web-based applications that provide information about health options and were designed to help patients clarify their personal preferences and values. Tools were directed at physicians in 14 (82%) studies and at patients and physicians in 6 (35%) studies; the majority were designed to be used during the clinical interaction.

Measures and Instruments

Although there were significant differences in how outcomes were assessed (Table 2), a few measures were utilized in multiple studies. The observing patient involvement in decision making (OPTION) scale or an adapted version (e.g., OPTION 5), was used in five studies [16, 17, 26, 31, 34, 37, 38]. The extent to which providers were observed involving patients in shared decision making was considered an outcome in all these studies [39].

The Roter scale, from the Roter Interaction Analysis System (RIAS) is another measure utilized in three studies [17, 20, 23]. RIAS is a validated tool for coding medical dialogue, notable for its

ability to code multiple speakers and in its flexibility in coding subcategories and content-specific topics of interest [40]. Examples of outcomes included numbers of utterances that represent physician support and encouragement of shared decisions and patient involvement.

Outcomes

Outcomes for each of the studies are described in Table 2. The majority of studies demonstrated improvement in measures of shared decision making that were used. However, because of the wide variation in outcome measures used between studies, comparing effectiveness of interventions between studies is a challenge. We highlight a few of the outcomes. For example, studies that utilized the OPTION scale [16, 17, 26, 31, 34, 37, 38] all demonstrated improvement in patient involvement to some extent. Those that used the Roter scale demonstrated improved shared decision making behaviors and patient participation with the intervention [17, 20, 23].

Studies in which role play was part of the intervention generally demonstrated an improvement in patient participation during the clinical encounter as reported by physician or observed by external rater [16-18, 20, 23, 24, 31, 35, 37, 38]. Of these studies, one had a discrepancy between the patients' perception of shared decision making and that reported by the physician or observed [35]. One study demonstrated a discrepancy between the physicians' subjective assessment of and evidence for shared decision making on transcripts [21].

Agency

We now describe the concepts of agency as identified in the included studies. Although none of the studies included facilitating agency or impacting relational agency as an explicit element of an educational intervention to teach shared decision making, aggregation of codes for CHAT and agency enabled us to identify concepts related to relational agency. To illustrate, we describe one

study [18, 19] by Bieber et al. which had the most robust collection of codes associated with agency and CHAT. We offer this study as the clearest application of relational agency in studies of educational interventions for shared decision making process.

This study describes a group of German outpatient physicians caring for patients with fibromyalgia syndrome. Patients in this study reported they often encountered resistance from within the medical community and "often spend all their strength on struggling, quarrelling and asserting themselves during consultations and tend to use 'war' and 'legal' metaphors in their descriptions of medical encounters" [18]. Physicians in the study also reported negative feelings, sometimes making them want to discontinue treating the patient [18]. With a CHAT lens, these descriptions evoke images of two interacting activity systems in which the objects are not aligned, and tensions have developed. The patient and the physicians had varying degrees of agency, and their existing interaction did not promote shared decisions.

The study intervention included twelve 90-minute sessions with the goal of training providers to develop a working alliance with their patients. Role plays allowed providers to practice dealing with challenging situations and inviting the patient to participate in decision making [18]. There was also a patient intervention, a computer-based information tool which was designed to lead to behavior change within the patient. Qualitative analysis of recorded consultations, semi-standardized interviews, and questionnaires all supported the finding that there were differences in patients' reported quality of the physician-patient interaction in the intervention group.

Applying the CHAT lens, we see the study intervention provided tools for both the patient and physician to apply within their activity systems, and the object became aligned ("working alliance"); the intervention impacted community (providers and patients shared a common object) and rules (the patient was now involved in decision-making). The tensions seemed to

resolve; more importantly, there were longer term effects, possibly indicating expansive learning, a concept within CHAT that refers to cycles of interacting activity systems leading to learning and behavior change.

Discussion

We identified and reviewed a broad range of educational interventions around shared decision making. As in previous reviews [1-3], all included studies described multicomponent interventions and it is difficult to draw conclusions about effectiveness of any individual component. However, by focusing on patient outcomes, we reveal common elements among many of the studies, including use of tools such as decision aids, small group discussions, and role play or practice with simulated patients, which may be critical for shared decision making. None of the included studies explicitly addressed patient or relational agency.

Based on our analysis, role play and practice with simulated patients were key elements of training effectively. Like many educational interventions aimed at improving physician communication skills, role play, and the use of simulated patients provide opportunities for physicians to practice those competencies. An umbrella review that examined effective educational programs for teaching physicians' communication skills found that the interventions were effective if they were at least one day long, learner-centered (practical), and focused on skills practice [41]. Among specific strategies, role play with simulated or real patients, feedback and small group discussions were found to be effective [41]. The authors of the umbrella review reported that interventions were often poorly described and varied greatly, most lacked theoretical underpinnings, and relative efficacy was difficult to ascertain because many components were combined [41]. One of the included reviews specifically examined the use of simulated patients and/or role play in 23 studies and concluded that more studies report

improvement in communication skills when practice has taken place; the single study that compared role play with simulated patients showed no difference in extent of improvement [42]. Although limitations included multicomponent interventions, variable outcomes, small study size, and potential selection bias in some studies, the three studies considered higher quality demonstrated better outcomes when simulated patients and/or role play were utilized [42].

Although the multicomponent nature of the included interventions in this review prevents us from teasing out the specific impact of role play and/or simulated patients, the studies that included these components demonstrated improvements in shared decision making outcomes. In addition to the importance of communication competencies in making shared decisions, we propose that practice and feedback might also provide the social context required to develop and maintain physician behaviors that bolster patient engagement and partnership in the complex shared decision making process. Although relational agency was not mentioned explicitly, these interactive interventions may enhance the physician's comfort with relational agency. Role play, in particular, may be well suited to facilitate relational agency. As Lane and Rollnick wrote in their 2007 study: "... trainees can get additional knowledge by experiencing the role of the patient" [42].

We did not identify any studies that explicitly addressed patient or relational agency, either in the design of the intervention or in reported outcomes. The study by Bieber et al. allowed us to retrospectively consider how relational agency may be emphasized in educational interventions and how CHAT could be utilized in the analysis of an educational intervention [18, 19]. But we must be clear that this was our interpretation of a study and not the authors' explicit intent. Given our finding that the majority of studies included role play or simulated patients and

considering that these approaches most logically allow the introduction and development of the concept of relational agency between patient and physicians, we would recommend consideration of this area for future study. Street et al. addressed the issue of how clinician-patient communication can directly and indirectly impact health outcomes, by empowering patients to be active agents in their health: “Clinicians can facilitate patient involvement in the decision making process by helping patients actively seek information, clarify treatment goals, and express concerns and feelings” [43]. Applying the CHAT framework to studies of shared decision making interventions will allow investigators to examine how well the intervention addresses tensions in the simulated clinical encounter and how physicians learn to engage patients in decisions, potentially leading to expansive learning over time.

Consideration of relational agency may be important to successful shared decision making and should be included in development of future educational interventions. Focused on relational agency, Edwards and D’Arcy studied young bilingual pupils teaching a foreign language to student teachers. Similar to shared decision making between a physician and patient, “teaching was . . . seen as joint action between pupils and student teachers on the shared object of the learners’ communicative competence, using some fairly traditional pedagogic tools” [44]. The investigators also found that the sessions became more interactive and responsive; the authors stated: “. . . the concept of relational agency, embedded within the idea of a classroom as an open-ended learning zone is a useful way forward. Its particular strength lies in the emphasis it places on the need for learners to develop the capacity to both seek and give support in joint action on the object of activity to expand mutual understandings of the object” [44]. We can envision a similar application to shared decision making, in which role play and simulated patients give the physician learners an opportunity to learn from the interaction with the

“patient”; similarly, over time, physicians and patients learn from each other how to reach the shared object of shared decision making. Expansive learning can begin with an educational intervention that has development of relational agency between patient and physician as a central theme.

There do not appear to be well-accepted instruments or tools to evaluate or measure patient or relational agency; therefore, studies that address the role of agency in shared decision making should include a qualitative component. The use of qualitative analysis within the Bieber study design provided a rich example of the potential impact of the intervention on patient agency [18]. Our use of CHAT in this review demonstrates its potential as a future framework to analyze the role of agency in studies of shared decision making and to suggest potential areas for future research. Specifically, the tensions between each of the components of an activity system shed light on the complexity of shared decision making. Furthermore, the more complex tensions between two activity systems are also worth investigating.

In order to characterize studies of shared decision-making educational interventions and identify those that address patient agency, we included only studies that reported patient outcomes. One benefit of our approach, besides answering our research questions, was that many of our studies scored high on quality ratings. Other potential reasons for the higher MERSQI ratings are that the majority of the studies were RCTs and, in particular, many of the included studies used previously validated instruments to report on outcomes, such as the OPTION and Roter scales.

However, by focusing on actual patient outcomes, our approach excluded articles describing medical students or other trainees who do not see patients independently; all of the interventions involved physicians who cared for patients independently (i.e., attending physicians, fellows, and residents). Another limitation was that, while the majority of studies were RCTs, making them

methodologically strong educational studies, they often did not include qualitative analyses that may have provided more insight into the role of agency. Finally, despite our best efforts to conduct a comprehensive search, it is possible we inadvertently missed articles.

Conclusions

Educational interventions to teach shared decision making to physicians commonly include decision aids, role play, and/or simulated patients, and have had a positive impact on a range of patient outcomes. Explicit instructional design around individual and relational agency is absent from educational interventions for shared decision making. Using CHAT can highlight the role of agency and identify tensions that could be included in the design and development of training programs. Future research and development of instructional strategies should consider the complexity inherent in co-constructing decisions.

Educators should consider utilizing multicomponent interventions to teach shared decision making, including role play and/or simulated patients and should ensure health professionals are familiar and can effectively engage patients using decision aids. Although formal educational programs around facilitating patient agency have not been developed, clinicians should look for opportunities to encourage patients to actively seek information and should inquire about patients' preferences and treatment goals.

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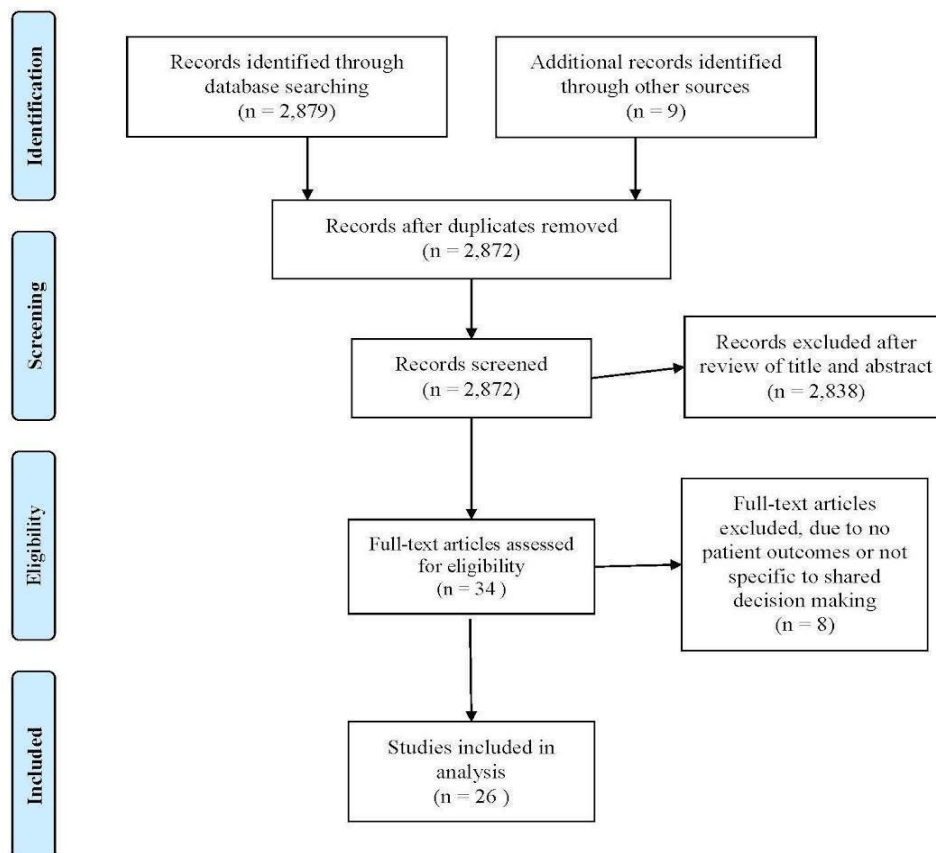
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Figure 1. Literature Search and Study Selection Process

Literature search and study selection process for a systematic review of the literature, published between January 2000 and January 2020, on educational interventions for health professionals that aimed to increase shared decision making in the clinical encounter, as measured by patient-level outcomes. The study followed the PRISMA guidelines for conducting a systematic review.

Figure 1



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit www.prisma-statement.org.

Table 1. Characteristics of Included Studies in a Systematic Review of Shared Decision Making Educational Interventions

Author(s), year	MERSQI Score	Type of study	Setting	Learner characteristics	Patient characteristics
Davis et al (2003) ¹³ ; Edwards, (2004a) ¹⁴ ; Edwards (2004b) ¹⁵ ; Elwyn (2004) ¹⁶	17	cRCT; Qual	United Kingdom	Recently qualified General Practitioners	Patients with known atrial fibrillation, prostatism, menorrhagia, or menopausal symptoms
Kim(2005) ¹⁷	13.5	Pre-post	Mexico	Health care providers in government health facilities	Women seeking family planning services
Bieber (2006) ¹⁸ ; Bieber (2008) ¹⁹	15	RCT; Qual	Germany	Specialty physicians in outpatient setting	Patients with fibromyalgia
Timmermans ²⁰ , (2006)	14.5	Pre-post	Netherlands	Radiation oncologists (staff and residents)	Newly referred oncology patients
Towle (2006) ²¹	N/A	Qual	Canada	Family physicians (lead tutors)	Patients in family medicine practice
Loh (2007) ²²		cRCT	Germany	Primary care physicians	Patients with newly diagnosed depression
Haskard (2008) ²³	16	RCT	United States (California)	Primary care physicians (Ob/gyn, Family medicine, internal medicine)	Primary care patients
Krones (2008) ²⁴	17	cRCT	Germany	Family practice physicians	Family practice patients
Legare (2012) ²⁵ Legare (2013) ²⁶ Couet (2014) ²⁷	15	cRCT	Canada	Family physicians (staff and residents)	Adults or children with acute respiratory infection
Sheridan (2012) ²⁸	14	RCT	United States (North Carolina)	Physicians from an academic and community-based practice	Male patients 40-80 years of age
Tinsel (2013) ²⁹	17.5	cRCT	Germany	General Practitioners	Patients ≥ 18 years, with hypertension, requiring repeated prescriptions
Wilkes (2013) ³⁰	17	cRCT	United States (California)	Internal and Family Medicine Physicians	Male patients 55-65 years of age

Harter (2015) ³¹ Bieber (2018) ³²	17.5	cRCT	Germany	Oncologists	Breast and colon cancer patients
Tai-Seale (2016) ³³ ; Dillon (2017) ³⁴	17	cRCT	United States (California)	Primary care physicians and medical assistants	Primary care patients
Geiger (2017) ³⁵ ; Kasper (2017) ³⁶	18	RCT; pre-post	Germany	Neurologists, dentists, general practitioners	Patients in consultation requiring decision of more than one option
Sanders (2017) ³⁷	17	cRCT	Netherlands	Primary care physicians	Patients with low back pain
Henselmans (2019) ³⁸	18	RCT	Netherlands	Medical oncologists and fellows	Patients with metastatic/inoperable tumors; median life expectancy <12 mo

Abbreviations: MERSQI indicates Medical Education Research Study Quality Instrument; cRCT, cluster randomized-controlled trial; qual, qualitative analysis; RCT, randomized-controlled trial

Table 2. Description of Interventions and Results in a Systematic Review of Shared Decision-Making Educational Programs

Author (year)	Details about Intervention		Control	Measures and Analyses	Shared Decision Making (SDM) Outcomes
Davis et al (2003) ¹³ ; Edwards, (2004a) ¹⁴ ; Edwards (2004b) ¹⁵ ; Elwyn (2004) ¹⁶	LV, RP, FP, TI	2 workshops with didactics; feedback on consultations with SPs; workshop also addressed risk communication skills	Workshops addressing risk communication skills; crossover study, so all participants had both interventions	Davis (2003): content analysis Edwards (2004a): COMRADE score, Patient Enablement Instrument, patient questionnaires Elwyn (2004): OPTION scale, provider questionnaires	Davis (2003): high degree of congruence between clinicians & pts in decision-making Edwards (2004a): no change in COMRADE score or other patient-reported outcomes Elwyn (2004): Clinicians significantly increased involvement of patients
Kim (2005) ¹⁷	WM, LV, RP, FP, TI	2.5-day workshop, use of 100-page flipchart, role-playing; feedback	Pre-training (3 months before)	Adapted RIAS of videotaped interactions; Adapted OPTION scale	Improved information offered; prompted providers to tailor information to client's situation; improved client involvement in decision making
Bieber (2006) ¹⁸ ; Bieber (2008) ¹⁹	WM, LV, GD, RP, TI	12 1.5-hr sessions (videos, interactive discussion, role play, practicing competencies); computer-based visualized information package (text, video) for pts	Information intervention received information tool, but treated by SDM-untrained physicians; non-randomized control treatment as usual	FAPI (Primary physician-patient interaction from pts' and physicians' perspective; qual (grounded theory and triangulation); semi-standardized interviews (re: physician-patient interaction; perceived involvement in decision, wish for involvement, subjective illness concepts, coping behavior); questionnaires; Secondary: SWD; DCS	Significant difference in FAPI score; interactions less difficult A year follow-up: "coping with pain had more positive view when thinking of their future improved"; "Patients of the SDM group adopted with the illness. They had developed more activity in treatment and they also had more active treatment plans for the future."
Timmermans(2006) ²⁰	LV, GD, RP, SR,	2 plenary sessions (3-hr each) on SDM behaviors; group	Pre-training consultations	Adapted RIAS	Improvement in pts' participation in the beginning/throughout the consultation; in first hundred

	FP, TI	discussion; SPs; 1-hr feedback session on each of 3 videotaped consultations			utterances, pts in post-group contributed more to interactions (about agendas, ideas, diagnosis, psychosocial circumstances); engaged more actively in decision making
Towle (2006) ²¹	WM, LV, GD, RP, SR, FP	3-hr workshop followed by three simulated patient encounters with feedback (from SPs, facilitators, peers)	Pre-training consultations	Analyzed transcripts of recorded consultations; classification scheme developed for SDM; discussion groups with physicians and researchers; framework method of analysis; pt questionnaire	Discrepancy between subjective assessment of SDM (providers thought rating of success) and evidence of SDM on transcripts; practice of SDM limited
Loh (2007) ²²	WM, LV, GD, RP, TI	5 program events (4 modules each) over 6 months; modules on enhancing skills; standardized cases with role-playing; patient information leaflet	Pre-training consultation and compared with control group who did not receive intervention	Patients' Perceived Involvement in Care Scale; Man-Son-Hing scale about patient involvement; patient satisfaction; Brief PHQ-D (criteria-based screening for depression); treatment adherence scale; consultation time	Significantly higher participation found in intervention group from pre-to post-in both scales; greater increase in intervention group as compared to control group; no significant difference in treatment adherence; no sig reduction in depression severity
Haskard (2008) ²³	WM, LV, RP, SR, FP	6-hr interactive workshop + 30-45 min coaching session; patient also received 20 min waiting room intervention with guide	No training for physician or pt; (+3 conditions: combinations of physician and pt training)	RIAS for audiotaped interactions; validated questions for a range of patient and physician outcomes	Significant effects: increased independent ratings of physicians' communication with pts; improved information giving, lifestyle health behavior counseling, and increased patients' quality of care rating and willingness to recommend physician; physician satisfaction decreased
Krones (2008) ²⁴	WM, LV,	Two 2-hr sessions; didactics,	Seminars on defined alternative	Primary: Patient participation scale; Secondary: SDM-Q	Intervention arm patients participated more and more

	RP, FP, TI	practical communication strategies, role play with feedback	topics (not CVD prevention)	scale, decisional regret; measured immediate preventive actions and sense of control by theory of planned behavior	satisfied; patients reported more SDM, less decisional regret after 6 months; CVD risk decreased from baseline in both groups (no difference)
Legare (2012) ²⁵ Legare (2013) ²⁶ Couet (2014) ²⁷	LV, GD, TI	“DECISION+2” – 2-hr online self-tutorial; interactive workshop with videos, exercises, decision support tool; point of care reminder	Usual care, no access to training for physicians	Proportion of patients who decided to use antibiotics after consultation; patient roles; DCS, CPS; quality of decision; DRS; SF-12; physician intention to engage in SDM in future; D-Option scale	Pts in intervention group: less likely to use antibiotics, higher scores SDM behavior, report assuming active/collaborative role; staff physicians more likely to have patients report SDM behaviors; no difference in: decisional conflict, perception of quality of decision, decisional regret; QOL; intention of physician to engage in SDM in future
Sheridan (2012) ²⁸	LV, TI	1-hr session about prostate cancer screening and SDM; 12-min video decision aid for pts; 8-min coaching tool for pts	No control; only examined differences between pt interventions	perceived SDM, self-reported SDM, reporting of PSA screening	Not clear how much of effect was provider intervention; improved perception that screening is a decision, not on self-reported participation in SDM, intervention group reported less actual screening
Tinsel (2013) ²⁹	WM, LV, RP, TI	6-hrs total; didactics; case vignettes for role play, CVR calculator; pt information flyers to intervention group	No training, usual treatment	Primary: change in perceived SDM (SDM-Q-9); change in systolic BP; Secondary: change of diastolic BP, pt knowledge about HTN, medication adherence; CVR score	No significant intervention effect on any endpoints (concerns about content validity of SDM-Q-9)
Wilkes (2013) ³⁰	LV, TI	30-min interactive web-based program on prostate cancer	No physician or pt intervention	Primary: Pt perception of SDM (modified questionnaires); Secondary: SP measures of SDM	Moderate to high level of SDM on modified Kaplan scales in both groups (no

		screening; also group with pt intervention		behaviors, final rec; physicians perception of SDM (questionnaire)	difference); PSA test frequency similar in both groups; no sig behavior difference in SDM as reported by SPs
Harter (2015) ³¹ Bieber (2018) ³²	WM, LV, RP, SR, FP, TI	12-hr training (8-hr, then 4-hr refresher) with group discussion, reflection, role play (with video feedback); use of decision aids	Not trained; usual treatment	Harter (2015) Primary: Pt perceived confidence and satisfaction with decision (multiple questionnaires) Secondary: OPTION Bieber (2018): CPS, PPS, and congruence between CPS and PPS	Harter (2015) - No difference in confidence or satisfaction with decision; Higher OPTION scores and less anxiety/depression Bieber (2018) Improved pt perceived autonomy or active role; no improvement in matching pt preference for decision-making
Tai-Seale (2016) ³³ ; Dillon (2017) ³⁴	WM, LV, RP, FP, TI	OpenComm (2 min video, 2-30 min sessions of SP coaching; +/- ASK	Usual care; ASK handout for pt only	Primary: Observed audio-recording of visits; Observer OPTION5	Higher OPTION scores for OpenComm (eliciting patient preferences, integrating patient preferences into decision)
Geiger (2017) ³⁵ ; Kasper (2017) ³⁶	WM, LV, RP, FP	40-page manual, 20-min video, 2 15-min face to face feedback sessions (consultation videos)	No training initially	MAPPIN'SDM: Patient, provider, and observer perspectives; SDMmass, SDM-Q, DCS, questionnaires	SDMmass increased significantly in intervention group compared to the controls, physicians reported SDM higher after intervention, but not patients
Sanders (2017) ³⁷	LV, RP, SR, FP, TI	2 2.5-hr sessions with group discussion, reflection, feedback, role play; decision aid and desktop tool to facilitate SDM; feedback on 2 training consultations	Not trained, usual care	Primary: OPTION scale (level of SDM and positive reinforcement of chosen therapy) Secondary: level of autonomy; extend for "wait and see"; OPTION scale; duration of consultation	Trained physicians scored higher on OPTION scale and level of positive reinforcement; less paternalistic decision making
Henselmans (2019) ³⁸	WM, LV, GD,	Readers, 2 small group sessions (3.5-	No training, usual treatment	Primary: Observed SDM as rated by blinded observers	Large positive effect on observed SDM and patient-

	RP, FB, TI	hrs each) with discussion, videos, role play with simulated patient; booster session (1.5-hr feedback, videotaped consultation); pocket card with SDM phrases; pt decision aid		(audio-recorded) using OPTION12 and 4SDM; Secondary: Patient and provider questionnaires (SDM-Q, PSQ, DCS, QOL); duration; decision made	reported SDM; no impact on satisfaction (generally high), decisional conflict, quality of life, consultation duration, decision made
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Abbreviations: SDM indicates shared decision making; LV, lecture or video; GD, group discussion; RP, role play; SR, self-reflection; FP, feedback on performance; TI, tool for interaction; WM, written material; O, other; SP, simulated patient; COMRADE, Combined Outcome Measure for Risk Communication and treatment Decision making Effectiveness; OPTION, Observing Patient Involvement Scale; RIAS, Roter Interaction Analysis System; FAPI, Questionnaire on Doctor-Patient Interaction; SWD, Satisfaction With Decision scale; DCS, Decisional Conflict Scale; PHQ-D, Patient Health Questionnaire-Depression; CVD, coronary vascular disease; SDM-Q, Shared Decision Making Questionnaire; CPS, Control Preference Scale; DRS, Decisional Regret Scale; SF-12, 12-item Short Form-Survey; QOL, quality of life; PSA, prostate specific antigen; CVR, cardiovascular risk; BP, blood pressure; HTN, hypertension; PPS, Patient Perception Scale; ASK, AskShareKnow; MAPPIN'SDM, Multifocal Approach to the 'Sharing' in Shared Decision Making; SDMmass, SDM Meeting its concept's ASSumptions

Appendix

Ovid MEDLINE Search Strategy: 01/29/2020 – 1326

(exp *Patient Participation/ OR (shared decision making OR patient agency OR patient activation OR patient engagement OR patient participation or patient self efficacy).ab,ti.) AND (exp *Physicians/ OR exp *Nurses/ OR (physician* OR doctor OR doctors OR nurse* OR patient provider communication*).ab,ti.) AND ((intervention OR program OR programs OR training OR pilot study).ab,ti. OR interventions.ti.)

Embase search strategy: 01/29/2020 – 986 results

('shared decision making'/exp/mj OR 'patient activation'/exp OR 'patient activation measure'/exp OR 'patient engagement'/exp OR 'shared decision making':ab,ti OR 'patient agency':ab,ti OR 'patient activation':ab,ti OR 'patient engagement':ab,ti OR 'patient participation':ab,ti OR 'patient self efficacy':ab,ti) AND ('physician'/exp/mj OR 'nurse'/exp/mj OR physician*:ab,ti OR nurse*:ab,ti OR doctor:ab,ti OR doctors:ab,ti OR 'patient provider communication*':ab,ti) AND ('training'/exp/mj OR 'education program'/exp/mj OR intervention:ab,ti OR interventions:ti OR program:ab,ti OR programs:ab,ti OR training:ab,ti OR pilot-study:ab,ti) AND [english]/lim AND ([article]/lim OR [article in press]/lim OR [review]/lim) AND [2000-2020]/py

Web of Science, 01/28/2020 – 2,180 results

shared-decision-making OR patient -agency OR patient-activation OR patient-engagement OR patient-participation OR patient-self-efficacy

physician* OR nurse* OR doctor OR doctors OR patient-provider-communication*

TOPIC box: (intervention OR program OR programs OR training OR pilot-study) OR TITLE box: (interventions)

Limits: Language: English; Document Types: Article, Date: 2000-2020

CHAPTER 4

Decide + Be Ready: A Contraceptive Decision-Making Mobile Application for Servicewomen

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Abstract

Women in the military have a high rate of unintended pregnancies, which is an issue both personally and with respect to the warfighting mission. One strategy to help servicewomen achieve family planning goals includes increasing education about and access to contraception. Research suggests that preference-sensitive decisions about contraceptives benefit from shared decision making and decision aids have been shown to facilitate this patient-centered approach. In this paper, we describe the process by which we enhanced an existing evidence-based tool to meet the needs of military servicewomen and created Decide + Be Ready, a contraceptive decision-making mobile application.

After extensive research into challenges faced by servicewomen with respect to contraceptive knowledge and access, we developed content for the decision aid and determined that a mobile app format would provide the privacy and convenience needed. Our team developed a prototype that, in collaboration with the Defense Health Agency Connected Health Branch, was tested with servicewomen and providers. User feedback shaped the final version, which can be accessed free from the App Store and Google Play. Early implementation has demonstrated patient and provider satisfaction.

Obstacles to full implementation of Decide + Be Ready remain within the Military Health System. We lay out a roadmap for dissemination, implementation, and evaluation and explore the applications of the decision aid for health professions education in the realm of shared decision making. Finally, we recommend consideration of decision aids for other healthcare decisions as a way to achieve patient-centered care, improve health outcomes, and potentially reduce costs.

Introduction

Women in the military have a high rate of unintended pregnancies, which is an issue both personally and with respect to the warfighting mission.^{1,2} Comprehensive education about and access to counseling for the full range of contraceptives have been identified as gaps in provision of the highest quality health care for servicewomen. As one approach to address this need, we modified and enhanced an existing evidence-based contraceptive decision-making digital tool to assist servicewomen and their healthcare providers in optimizing care and achieving improved outcomes. In this paper, we describe the journey from identification of a gap to development of a solution, and a roadmap for the way ahead.

The Challenge: Unintended Pregnancy Among Military Women

The ability to plan for or prevent pregnancy is a critical component of reproductive autonomy and unintended pregnancies have health implications for women and their families. Within the military setting, mistimed or unplanned pregnancies can also negatively impact servicewomen's careers and mission readiness. In addition to precluding deployment, pregnancy complications in theater can pose management challenges and result in poor outcomes; further, pregnancies are responsible for a number of medical evacuations out of theater each year. Using 2011 data from separate DoD and civilian survey instruments, the rate of unintended pregnancy among servicewomen (72/1000) was higher than for the general population (52/1000).¹ A more recent 2016 study using a 15-question validated survey found lower rates overall than previously reported, but 68% of young, single, active duty women in that study reported at least one unintended pregnancy, a rate far higher than the 28% reported among married, active duty women and the 51% rate reported in a civilian population.²

The Gap: Incomplete Education About and Access to Contraceptive Methods

One strategy to help servicewomen achieve family planning goals includes increasing education about and access to contraception. Slightly more than two-thirds of eligible servicewomen received at least one form of contraception during a 6-year surveillance period and almost 12% used a long-acting reversible method.³ However, receipt of contraception was lowest among women aged 17-19, those in the lowest Enlisted ranks, and women in the Army, all subgroups that have been found to have higher rates of unintended pregnancy.³

Obstacles to obtaining contraceptives may play a role, in particular before and during deployments. Over 20% of women have reported challenges in accessing contraception for deployment, and one-third felt unable to access their desired method.⁴ Almost half of participants in another study reported they did not have, or do not recall having, a discussion about contraception with a provider before deployment.⁵

Recent research suggests that preference-sensitive decisions about contraceptives benefit from a shared decision making approach. Shared decision making is a process in which patients and providers make healthcare decisions together, considering both the scientific evidence and the patient's values and preferences. Such a collaborative process requires not only a shared understanding of the evidence, but also that the patient has agency to participate in the process and that the provider hears and involves the patient.

One mechanism to promote shared decision making is the use of decision aids, tools that provide easy-to-understand information about options and help patients identify their preferences and values. Patients can use decision aids before or during an encounter to facilitate discussion and shared decision making. A recent systematic review reports patients who used decision aids had

improved knowledge and accurate risk perceptions and were more likely to choose the option that was congruent with their values.⁶

Military women face unique challenges in making decisions about contraceptives. For example, specific methods may be suboptimal for particular deployments and some women may want to suppress menses in more challenging or austere environments or to address medical conditions. Decision-making needs to include an understanding of how to achieve amenorrhea and/or which methods are best for a gynecologic condition. Research has demonstrated significant gaps in knowledge and action.⁷ To this end, we considered whether a contraceptive decision aid readily available and applicable to military women may improve their knowledge and ability to participate in decision making with their provider?

In this paper, we seek to (1) describe the process by which we enhanced an existing evidence-based tool to meet the needs of military servicewomen and introduce the military medicine community to the existence of Decide + Be Ready, a contraceptive decision aid mobile application (app); (2) lay out a roadmap for integration within the Military Health System (MHS), and (3) explore its applications for health professions education in the realm of shared decision making, which has implications for a broad array of healthcare services.

The Solution: Tool Enhancement and Development of a Mobile App

Development of a servicewoman-specific contraceptive decision aid, ultimately named Decide + Be Ready, was recommended and funded as part of a report prepared for Uniformed Services University (USU) Defense Health Horizons Program. The process to develop the app included several critical steps, which will be subsequently described: (1) identifying a prototype and assembling a team; (2) reviewing/building upon the existing tool with an eye to customizing it to

military women; (3) conducting usability testing with both patients and providers; and (4) exploratory implementation.

First, we researched available tools that could serve as models for the decision aid. We reached out to a team at the University of California, San Francisco (UCSF) who had developed a decision aid called My Birth Control, to facilitate contraceptive counseling.⁸ Field testing of the decision aid revealed 96% of the participants who used the tool felt it helped them choose a method and women who used the tool were more likely to be completely satisfied with their method.⁸ Additionally, in a mixed methods analysis as part of a subsequent cluster randomized controlled trial, providers reported that that decision aid helped allocate time more efficiently, focusing on the patients' methods of interest, and that patients appeared to be more informed and to take a more active role in method selection.⁹

The detailed discussion of the systematic and iterative process for development of the original decision aid is available.⁸ Input from patient and provider stakeholders was utilized throughout design and development. It was therefore deemed an ideal foundation for our goals.

To modify and enhance the tool for servicewomen, we first ensured we had a team equipped to do the work, including subject matter and technical experts. The project lead from USU (CW) was an Active duty servicewoman and gynecologist and preventive medicine physician in the U.S. Air Force who had previously published about contraception.³ The UCSF team included a physician and program manager as well as the developer and graphic designers who had all helped design the original tool.⁸ At the beginning of the process, we completed intellectual property agreements between the DoD and UCSF, so that the ultimate product was owned and could be modified by either entity for their individual populations.

We first considered how to best deliver the content of the tool. The original decision aid was available as a tablet-based tool, but we were concerned this format could limit a decision aid's accessibility for some servicewomen. Recent data has revealed that the majority of people in the U.S. have smart phones and almost half report using their apps for health-related purposes, with the highest percentage among younger female participants.¹⁰

There are military-specific benefits of mobile apps for health decisions. Mobile apps provide users privacy, which can be a challenge for young, enlisted service members, especially on a ship or deployment, as well as the reassurance that the information they enter will not be uploaded to a military server and visible to others without their consent. A mobile app can be used offline, which is important for a deployed service member without internet access. During deliberation about the platform, we also consulted the Defense Health Agency (DHA) mHealth Working Group and the DHA Connected Health Branch about DoD-specific security considerations. The decision was ultimately made to move forward with a mobile app.

The second major consideration was around additional content needed for servicewomen. Since shared decision making requires a patient to identify her own values and preferences about the options, she needs all relevant information, including unique gynecologic considerations of military women. The initial development process included review of relevant literature regarding health of servicewomen, including knowledge gaps and challenges encountered in accessing the full range of contraceptive methods.^{1,2,4} The relevant publications revealed servicewomen needed information about timing of method initiation, side effects and menstrual suppression, as well as supply, storage, and use while deployed. Findings from the literature and discussion with other subject-matter experts led to the creation of a storyboard for the content not already included in the original decision aid.

In summer of 2018, the DHA Solution Delivery Division Usability Lab conducted usability testing with prototype 1 of the app. Active duty servicewomen were recruited from the Seattle-Tacoma area; participants ranged in age from 23 to 47. Participants used the app and answered questions concerning ease of use and navigation among other usability factors. The System Usability Scale (SUS) was 89.5, above average, based on rankings from Usability.gov.¹¹ Participants were also asked about the specific tasks they completed with the app, including whether the user learned anything new, how helpful the information was, their perception of the graphics, and their ability to complete the questionnaire that led to the development of the user profile. Overall, feedback was positive and the recommendations from DHA user testing suggested additional instructions at the start of the app to set expectations, adding more “info quickies” about additional topics, and consideration of adding a cycle tracker in future versions.

The project lead (CW) also conducted user testing with physicians and other health professionals in the National Capital Region. After completing the app, users answered questions about understandability and accuracy of the information presented and potential gaps. This stakeholder feedback informed the addition of screens regarding access to emergency contraception, fertility awareness methods and postpartum contraception. Participants also provided helpful information regarding app formatting depending on the version of the smartphone being used.

Prototype 2 was developed based on the feedback from both usability testing sessions as well as team input while using the app for specific scenarios. The features of the final version can be seen in Table 1. At this time, we sought and received approval from the DHA Women and Infants Clinical Community and the DHA Connected Health Branch for transfer of the app to the DHA for inclusion in its portfolio and ongoing management and maintenance. The final version

was released in Feb 2019 through the App Store (iOS) at <https://itunes.apple.com/us/app/decide-be-ready/id1451879300> and Google Play (Android) at <https://play.google.com/store/apps/details?id=mil.dha.decidebeready&hl=en>.

The app was implemented in an exploratory capacity at the Walter Reed National Military Medical Center Comprehensive Contraceptive Clinic in the spring of 2019. Feedback from providers using the app in consultation with their patients revealed several themes: (1) the app led to a more focused discussion on fewer options, allowing for answering second and third order questions for the patients; (2) even if a patient did have knowledge around options and may have even decided on her choice, the app provided reassurance and patient seemed more confident. Providers suggested the app be used in advance of the visit, so that patients have time to process the information.

From 1 Mar 2020 through 28 Feb 2021, the app has been downloaded 3,837 times from the App Store. During the same time period, Google Play reports that between 117 and 261 individuals have the app downloaded on a device on a given day. Feedback from the App Store has revealed 4.5 out of 5 stars, with 11 reviews. Google Play also has comments, although no rating schema.

Roadmap for the MHS

Studies have demonstrated significant gaps in knowledge of and access to a broad range of contraceptive options for military women, but the DoD has made progress to address the gaps. In 2019, a Defense Health Agency-Procedural Instruction (DHA-PI) was published, requiring that active duty service members receive comprehensive contraceptive counseling that includes the full range of contraceptive methods, for pregnancy prevention and menstrual suppression; such services would be included in the assessment of pre-deployment readiness for deployment

training or the deployment itself.¹² Implementation of these requirements should be monitored. Keyser et al also recently called for increased education regarding menstrual suppression and recommended that this be a requirement for women before they deploy.⁷

Despite the policies and articles bringing attention to the issue of contraceptive access, obstacles persist. The use of Decide + Be Ready can be a first step in ensuring that, at the very least, servicewomen are aware of all their options, educated about the characteristics of the methods, including their role in menstrual suppression, and can come to an understanding of their own preferences and values, which is critical if they are to act as active agents in a shared decision. If shared decision making is subsequently successfully carried out in a clinical encounter, the patient will be reassured that their preferences and values matter and that the choice of contraceptive method, barring any medical contraindications, can be their decision.

Beginning in 2021, the Periodic Health Assessment (PHA) will contain not only questions specific to contraceptive use and desire for contraceptive counseling from all service members, but also an educational component that recommends and provides instructions to download Decide + Be Ready prior to a visit with a provider. The DHA is developing materials to disseminate information about Decide + Be Ready throughout the DoD, utilizing social media, health.mil website and other avenues. Looking to the future, there are potential additional platforms for implementation, including those that target basic training bases and service academies as well as Reserve and Guard personnel. Furthermore, implementation and dissemination should include education for providers, and this will occur through webinars, podcasts, and formal training at all levels of health professions education.

Implications for Health Professions Education

Unfortunately, providing a decision aid to patients may be insufficient to ensure successful shared decision making. One obstacle is lack of training. Shared decision making is a complex construct and there is no consensus on the most effective education and training programs.¹³ Studies of effective educational programs have utilized a variety of multicomponent interventions, including didactics, videos, role play and simulated patients, in addition to use of tools like decision aids.¹³

There is generally a significant power differential between patients and providers in the health care setting. Within the military, that may be compounded by differences in rank. Shared decision making seeks to mitigate that power differential and allow for a health care decision to be made based on the scientific evidence and the patient's preferences, not the provider's preferences or those that are assumed to be the patient's preferences. Decision aids can help, but providers need to actively facilitate the process by incorporating a patient's knowledge of their own lived experience (e.g., with other methods of contraception), the knowledge they gleaned from the decision aid, and the other influencers that may be critical to the decision making process, e.g., their role and job as a military member, their community (partner and friends or family), and rules about what side effects are acceptable or what contraceptive benefits are needed. The construct of shared decision making is complex and thus teaching it requires an understanding of that complexity. To highlight that, we have published an article on application of Cultural Historical Activity Theory (CHAT) to shared decision making, in which contraceptive decision-making was used as a case example.¹⁴

We propose that educating providers on the use of a specific decision aid for contraceptive shared decision making goes far beyond a single patient encounter. CHAT's premise is that for

complex activities, learning expands from the construction and resolution of ongoing tensions and develops over time. In other words, by engaging in shared decision making with one patient, a provider realizes that the clinical relationship benefits from discussing patient preferences. Over time, by engaging with patients in this way, providers improve their ability to facilitate shared decision making and patient agency. Similarly, a patient who is asked about their values and preferences (e.g., by utilizing Decide + Be Ready and discussing the output with their provider) feels validated and begins to trust that their providers are providing person-centered care that takes their values and preferences into account. The patient's agency is increased and such a patient is likely to enter into their next healthcare visit with a desire and an intention to participate more in decisions that affect their health and well-being.

Future Directions

To ensure optimal utilization of the app and its information in the clinical setting, we must ensure providers are prepared to engage with patients in shared decision making. This will require a multipronged education campaign for providers, from undergraduate to graduate medical education and beyond. Several studies utilizing Decide + Be Ready are already underway and by disseminating and studying its implementation and impact, we will not only move the needle in patient-centered reproductive health care for military women, but the findings may be transferable to inform dissemination, implementation, and evaluation of decision aids for other conditions as well. The lessons we learn from implementation of Decide + Be Ready and the ongoing research at USU on educational interventions for shared decision making will allow us to more broadly address shared decision making education. We need to be equally rigorous in studying other digital health tools implemented in the DoD.

Finally, as health professionals within the MHS, we need to consider introducing more decision aids. Shared decision making for other preference sensitive decisions such as treatment for back pain, early breast/prostate cancer, and angina has led to reduction in rates of surgery, nonsurgical admissions, and overall cost savings.^{6,15} Implementation of decision aids for a number of conditions and health-care decisions may be an effective way to improve patient-centered care and reduce costs. Currently, there are no system-wide efforts to utilize decision aids in facilitating shared decision making among MHS beneficiaries, but one would argue that time has come to embrace this possibility.

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Table 1. Description of the Features of the Mobile Decision Aid App Decide + Be Ready

Features	Description
Educational Session	Reviews effectiveness, mode and frequency of administration, side effects, return to fertility, and military-implications/considerations
Interactive values clarification exercise	Allows user to indicate preferences for method characteristics
Checklist	Assesses medical eligibility for different methods based on any self-reported medical issues
Interactive “method chooser” screen	Compares two methods simultaneously on a range of characteristics
Screen to document questions for provider	Collates questions and notes that the user enters when progressing through app
Final screen	Displays and allows patient to print out method preferences, relevant medical history, questions, and methods of most interest

CHAPTER 5

Complexity in Shared Decision Making: A Qualitative Analysis of Clinical Encounters and Patient/Physician Interviews

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Abstract

Introduction: Shared decision making is a complex clinical activity, for which the most effective educational interventions are unclear. Cultural Historical Activity Theory (CHAT) can be utilized as a framework to help medical educators understand and teach shared decision making. The objective of this qualitative study was to utilize CHAT to explore, through analysis of clinical encounters and interviews, patient and provider perspectives of a medical decision-making process that included use of a decision aid mobile application (app).

Methods: Female patients from age 17 to 45, who sought care at a contraceptive clinic between April and June 2019, and physicians providing care in the clinic, were recruited for this study. Patients utilized the decision aid app prior to the visit. The clinical encounter and semi-structured interviews with each patient and physician were recorded. Template analysis was used to analyze the transcripts with themes including elements of activity systems within CHAT, tensions within and between activity systems, and agency.

Results: In total, 21 patients and eight providers participated in the study. Evidence of CHAT elements were identified for each patient-physician dyad. In analyzing occurrences of codes across transcripts, recurring contradictions and themes emerged, such as how the app is utilized as a mediating tool and the importance of patient and physician communities.

Conclusions: Through analysis of clinical encounters and focused interviews, patient and provider perspectives provided a unique understanding of the complex process of decision-making. These findings can assist educators in developing more effective teaching strategies that may lead to enhanced patient agency, effective relational agency, and successful shared decision making.

Introduction

Teaching complex topics in health professions education will fall short of its goals if medical educators fail to recognize or address a topic's complexity [1,2]. Shared decision making, an approach in which a patient and healthcare provider make a health decision together, considering a patient's values and preferences in addition to the scientific evidence, is one such complex activity. In this article, we explore patient and physician perspectives of a clinical decision-making process to inform physicians and medical educators about the complex process of shared decision making.

The complexity of shared decision making arises from the requirement that the physician and patient co-create a decision, and the fact that the patient's values and preferences grow from their sociocultural contexts, including their community and environment [3]. Shared decision making requires an explicit discussion of these values and preferences, but patients may not mention this information in the clinical setting, especially if they are rarely asked about such things. Shared decision making relies to some extent on a patient's agency—defined as an individual having intention and empowerment to act [4]. However, if the patient is not forthcoming with their values, preferences, and cultural context, the physician may need to employ strategies to elicit the information and make sense of it, thus harnessing relational agency [5]. But, like the patient, the health professional has their own professional identity, community, and preconceived notions of their role in the clinical encounter, which may not include facilitating the patient's agency.

Developing effective teaching approaches for shared decision making first requires an understanding of its inherent complexity. Cultural Historical Activity Theory (CHAT) is one framework that has helped health professions educators close the gaps in understanding and achieving educational goals for other complex topics [6-9]. In the CHAT framework, shared

outcomes are dependent on interactions between activity systems, which are made up of a subject (person engaged in the activity), tools (symbolic or physical objects that facilitate accomplishment of a defined objective), and object (purpose of the activity), as well as rules, a community, and division of labor [10]. According to Engeström, “the object-oriented and artifact-mediated collective activity system is the prime unit of analysis in cultural-historical studies of human conduct” [10].

Tensions (or contradictions) exist within and between elements of an activity system and it is the working through those tensions that can lead to learning [8,11]. The events that take place within and across activity systems (e.g., a clinical encounter) are embedded within and shaped by the norms and values of the culture in which they occur. By analyzing clinical encounters with a CHAT lens and identifying contradictions that exist within activity systems and between a physician and patient, we may be able to develop effective educational strategies to teach behaviors that lead to enhanced patient agency and successful shared decision making.

The objective of this study was to explore, through CHAT-sensitized analysis of a clinical encounter and focused interviews, patient and physician perspectives of a decision-making process that included a decision aid mobile application (app), in order to inform physician understanding of the complexity of shared decision making and the design of future educational initiatives.

Methods

We conducted a qualitative study using template analysis guided by a constructivist approach to analyze audio recordings of clinical encounters and semi-structured patient and physician interviews [12,13]. We obtained approval from the Walter Reed National Military Medical

Center (WRNMMC) Institutional Review Board (#WRNMMC-2019-0221). Per the regulations of this body, access to the interview and clinical session data is strictly controlled and limited to the core research team making it impossible for us to publicly deposit this data or make it available upon request.

Setting and participants

Recruitment and data collection occurred at the WRNMMC Complete Contraceptive Clinic between April-July 2019.

Our study included both patient and physician participants. Patient participants were active duty females in the United States military between the ages of 17 and 45 who were seen at the clinic and were interested in contraceptive services. Participants were excluded if they did not speak English, were infertile, currently pregnant, or desired to be pregnant within six months. Patient participants were recruited by two of the investigators (CW and EH) while they were waiting to be seen, and were informed about the purpose of the study and procedures for participation. For interested patients, informed consent included details about how the recordings of the encounter and subsequent interview would be transcribed and anonymized; they were informed that, when study results were published, there would be no identifying characteristics included in the manuscript. After informed consent, patient participants downloaded and completed a contraceptive decision aid mobile app, Decide + Be Ready, on their personal device. The app was designed by CW in collaboration with partners at University of California, San Francisco, and Nitid Bit LLC, and can be downloaded through the App Store (iOS) at <https://itunes.apple.com/us/app/decide-be-ready/id1451879300> or Google Play (Android) at <https://play.google.com/store/apps/details?id=mil.dha.decidebeready&hl=en>. [14].

CW recruited physician participants during meetings with clinic staff. Upon recruitment, physician participants received basic information about navigating the app and had the opportunity to engage with it on their own device.

Data collection

Patient participants were seen in the clinic by a physician participant. The initial part of the clinical encounter (including history, discussion of contraceptive options, counseling, and decision about contraceptive method) was audio-recorded with the patient's consent.

Immediately following the medical encounter, EH, a female civilian with master's-level training in qualitative methods, conducted and audio-recorded a semi-structured interview with the patient. The semi-structured interview guide was designed to elicit the patient's experience of the preceding visit (see *Extended data*, Appendix A for patient interview guide). Questions elicited perceptions about empowerment to participate in decision-making, how the app impacted the decision-making process, factors that impacted the decision, and past experiences with similar types of health-care decisions. Following the medical encounter, within the same day, CW, a physician, conducted and audio-recorded a semi-structured interview with the physician, eliciting the physician's perception of how the decision aid impacted a typical contraceptive counseling visit and if and how the decision aid facilitated or hindered the shared discussion about the patient's options and preferences (see *Extended data*, Appendix B for physician interview guide). Prior to deployment, both interview guides were pilot tested with three females and several questions were revised based on their feedback. Additionally, both guides were iterated over the study period based on analysis of participants' responses.

Recorded clinical encounters and interviews were transcribed and de-identified by CW.

Data analysis

We utilized template analysis [12,13], a form of thematic analysis, to help us make sense of the inherent complexity using CHAT. The *a priori* overarching themes for the analysis were elements of activity systems within CHAT, including subject, object, tools, rules, community, and division of labor, as well as tensions within and between activity systems and individual and relational agency (See Table 1). These elements were defined early in the study based on the author team's previous article on CHAT and Engeström's descriptions [9]. We utilized CHAT to analyze the patient and physician roles in clinical encounters in which the patient used a contraceptive decision aid app prior to the appointment.

To familiarize ourselves with the data, each author read a third of the transcripts, identifying and highlighting parts relevant to shared decision making, patient or relational agency and elements of CHAT. CW read and coded all the transcripts.

The initial template was designed in Excel after preliminary review of the transcripts and then operationalized as a table. The template contained elements of CHAT, and columns for tensions within and between activity systems of the patient and physician, and for data related to patient and relational agency.

Each co-author completed the table for each document, group-talked through the completed forms, and initial data were consolidated on a single document, with new themes noted during this process. Iterative changes to the data extraction tool occurred twice during initial data extraction, including slightly changing the structure of the template. New themes were defined, codes were established for themes and sub-themes, and codes added into the template. Data was transferred from Excel to [Dedoose](#), where further coding and modeling of data was undertaken.

Analysis was iterative. While physician and patient transcripts were considered as groups for early analysis and general themes, we ultimately focused on each case—an encounter, patient interview and physician interview—as the unit for analysis. As a group we agreed that we reached “information power” to achieve the study objectives after interviewing 21 patients [15].

Each case was designated by a number assigned to each patient participant. To identify a variety of voices, we captured quotations from all three artifacts (encounter, patient interview, physician interview) within a case. Verbatim extracts are denoted by case number, followed by E for encounter, PA for the patient interview, and PHY for the physician interview (e.g., 1-PA would refer to the patient interview from case 1).

We recognize that our backgrounds and experiences influenced our conduct of this study. CW is a retired military obstetrician/gynecologist who has been both physician and patient in clinical situations similar to those studied here. EH brought a perspective of having met the patients face-to-face. DT is a clinician and researcher, with experience in activity theory. LM has significant experience in qualitative analysis and both she and EH bring the additional perspectives of being recipients of women’s healthcare, outside of the military setting.

We used the SRQR (Standards for Reporting Qualitative Research) checklist [16] to guide reporting.

Results

Twenty-one patients participated, including 3 Air Force, seven Army, and 11 Navy. Military ranks (which could be considered a proxy, albeit imperfect, for education level) included a combination of enlisted (n=16) and officers (n=5). The eight physician participants were both

military and civilians. Sixty-three audio files were transcribed (21 encounters, 21 patient interviews, and 21 physician interviews).

Across the 21 cases, we identified the elements of CHAT which facilitated our understanding of the patients' and physicians' tensions and synergies within and between their activity systems (Figure 1). We also recognized the central role of the object of an activity system. According to CHAT, the object is the purpose of the activity, constructed from the interactions of all other parts of the system. Therefore, we frame our results in relation to each patient's and physician's own objects and that which each dyad potentially shares. We begin by reporting the patient's and then the physician's objects represented in the cases. We then describe the interaction of their activity systems at the point of intersection, which is at the object level, to explore if a shared object was present or evolved during the interaction. Following this, we examine object-related contradictions and interactions within and across activity systems.

Shared object as co-constructed by interaction of patient and physician activity systems

Upon entering the clinical encounter, each patient's object was to obtain or change their contraceptive method; the object for each physician was to provide patients with a contraception method. Some physicians also noted goals of efficiency and/or educating patients about methods.

The interaction of the patient and physician activity systems frequently resulted in a shared object, which was constructed from elements from within both the patient and physician's activity systems. For example, in Case 21, the patient's initial object was to obtain a reliable contraceptive method that could also help with acne. The physician's object was to provide counseling about the variety of methods and provide the patient with a method. The shared object of the patient and physician was ultimately constructed from an evolution of each of their

individual objects, as mediated by tools such as the app, which empowered the patient to be more active in the decision-making process. She said the app helped her feel “more confident when I brought things up to the provider” (21-PA), as exemplified by her stating during the encounter that she was a shift worker and therefore timing of the method was a concern. The shared decision was evidence of a shared object as co-constructed by the patient and physician activity systems. Patient 21 said that the physician “helped a lot with the decision.” (21-PA)

Role of tools in construction of a shared object

Tools for the patient included both the app (physical tool) and knowledge and experience that the patient brought to the encounter (symbolic tool). In several cases, we observed the concept of information leading to knowledge and resulting empowerment of the patient (subject) to accomplish the object. For example, patient 17 stated “I can go home and actually sit down and actually think and do my own research . . . instead of going in and the doctor saying okay, no, you have to do this type of thing. So, yes . . . it’s more empowering.” (17-PA)

For the physicians, tools included their personal knowledge (symbolic tool) about contraceptives as well as the app and at least one other visual aid (physical tools). There was evidence of the app as a tool to achieve efficient decision making in several cases, such as the physician speaking about Patient 1: “I didn’t have to go in detail as much as I normally do because she already knew a lot . . . of the answers already, so it made my encounter shorter.” (1-PHY)

Tools also contributed to the construction of a shared object. For example, the physician speaking about Patient 14: “I really think [the app] gave her a good baseline and allowed her to think through things several steps beyond just ‘what’s available to me?’ And I think it guided the conversation quite a bit, because we weren’t just starting from ground zero, we were already

at the second or third step” (14-PHY). The app facilitated a conversation between the physician and the patient that led to a shared object—a shared decision about the contraceptive method that would best suit the patient’s needs.

Role of community in construction of a shared object

Community was represented in the patient activity system through references to partners, family, the military, and peers. Sometimes the community was noted as creating a tension for the patient’s object, but in other cases, the community was represented as supportive of the patient’s object. For example, a patient who needed a method to treat a gynecologic condition remarked “. . . me and my husband, we sat and had a discussion. . .” (17-PA).

Community was represented in the physician activity systems in the form of professional identity as a member of medical and military communities. Several physicians reflected on their responsibilities as physicians and as military officers, which contributed to their objects. For example, “it’s really important for patients to make their own choice with the caveat that they fully understand the risks and benefits, the efficacy of different options” (2-PHY) and “. . . counseling her about the benefits of different types of contraception for her life and for her military life . . . especially were she to deploy.” (1-PHY)

Community in some cases also contributed to the co-construction of the shared object. For example, a number of patients and physicians intimated that being part of the military community was important. From the patient’s perspective: “I want to put my career first” (8-PA) and “I needed to have something that was low maintenance because you never know when you’re gonna . . . deploy or have a shift schedule. . .” (21-PA). The physicians’ responsibility to the patient as a military member aligned in several cases with the patient’s object and a shared

object emerged. For example, in Case S: “The particular aspects of military medicine. . . that’s where as a physician in this setting I can give them some guidance if they were going to be deployed as the access to the contraception they chose or those considerations.” (19-PHY)

Role of rules in construction of a shared object

Self-imposed rules about tolerable side effects or how the method is used also helped shape the patient’s object and subsequently the shared object. For example, Patient 1 stated the app and the encounter “definitely highlighted which ones weren’t for me based on what I didn’t want from the side effects like weight gain.” (1-PA)

Physician’s rules were generally related to following clinical guidelines, such as the requirement that the patient not be pregnant at the time of a procedure. This rule sometimes created tension with the patient’s object of having a method started on the same day as the visit.

Rules also played a role in contributing to the co-construction of the shared object. For example, in applying the physician’s rules pertaining to medical contraindications and the patient’s personal rules about acceptable side effects, the patient and physician were able to identify a method that met both criteria. An object of completing the procedure on the day of the visit was not always accomplished because of the rules about not placing an intrauterine device (IUD) or implant until the physician can ensure the patient is not pregnant, but when the physician shared the explanation for this rule, the tension was resolved and the patient agreed to return at a future date: “We could set you up to just have it put in next week when you have the best of all worlds with regards to that, when we have the reassurance that you’re not pregnant . . . “ (19-E)

Role of division of labor in construction of shared object

Division of labor is represented in the activity systems of the patients with statements about the differing roles of patient and physician. Patient 18 stated about the physician: “I think patients are the only important role in decisions. . . . I don’t think doctors really decide anything for patients, especially when it comes to contraceptive use . . . but I really liked that she had acknowledged that I had concerns about it and addressed those and had a plan to sort of prevent and sort of side effects I was worried about . . .” (18-PA) A few physicians commented on their role and that of other physicians. For example, one physician said that the app could be used as a tool by primary care physicians to “maybe help tailor their counseling, so they don’t feel like, oh my gosh, I have to do everything. . . I think it would really help them. And then even if they do get referred to us as gyn, then they’ve been counseled on the IUDs . . .” (20-PHY) However, even with differing views of the division of labor from the patient’s or physician’s perspectives, the result was generally a shared decision with contributions from both.

Discussion

Through analyses of clinical encounters and interviews, we explored patient and physician perspectives of the clinical decision-making process to provide a unique understanding of the complex process of shared decision making. We contend that our identification of the patient’s and physician’s evolving individual objects, and our analyses of contradictions which, upon resolution, led to a shared object, may facilitate a richer understanding of the activity that is shared decision making. More specifically we consider our findings in relation to the recognition of a patient’s community, use of tools, and expansive learning, and discuss the implications for teaching strategies that facilitate enhanced patient agency, effective relational agency, and successful shared decision making.

In shared decision making, physicians must recognize that multiple perspectives and voices contribute to the interaction and ultimately the health decision, including the patient's community (e.g., family, friends, and sociocultural groups). Although patient agency is critical to shared decision making, the self is "embedded within sociocultural contexts and intrinsically interwoven with them" [17]. Each of these perspectives may create contradictions that the physician needs to address. The finding that community plays an important role in the development of the shared object refocuses our efforts on educating physicians to consider not only the individual person, but also their social and community context. Educational interventions about shared decision making, therefore, should include social determinants of health as well, including economic stability, educational background, healthcare access, and the patient's environment.¹⁸ Further, for physicians to be effective in this realm, cultural humility is required, which emphasizes lifelong learning and self-reflection in understanding others, their socio-cultural circumstances, and the power imbalances that often exist [3].

We also observed the important role of tools in shared decision making. Whether material (e.g., the app) or conceptual (e.g., knowledge, conversation), many of the tools identified in this study enabled pursuit of the object in the activity system. Educational interventions should, and mostly do, include the discussion of and practice with tools to facilitate shared decision making [19]. However, with a recent proliferation of digital tools for patients, health professionals need to be cognizant of not only the content of the apps, online tools, and other resources, but even more importantly, how these tools influence patient behavior. Our findings support the notion that, with tools such as decision aids, patients may come to the visit with enhanced agency and an expectation that their values and preferences are important to the decision-making process. How a physician responds to that, and whether a shared decision is achieved during the visit, impacts

not only that visit but future encounters as well. Tools can help the patient and physician deal with the tensions and contradictions in a clinical encounter and may assist with the sense-making and evolution of a shared object. The field of interactive design has utilized CHAT to guide an understanding of how “people act with technology” [20] and the important roles tools play in our lives and in healthcare. We can envision how these mediating artifacts can facilitate the collective transformation of multiple activity systems over time—leading to expansive learning. Application of Engeström’s concept of expansive learning can guide educators in designing educational interventions for shared decision making. “Expansive learning is a historically new type of learning which emerges as practitioners struggle through developmental transformations in their activity systems, moving across collective zones of proximal development” [10]. Learning involves a process of adaptation, which is a key feature of complex adaptive systems. Each encounter in which the physician achieves a shared object with a patient, evolved by working through contradictions, shapes that physician’s awareness of the importance of patient context, culture, values, and beliefs. An expansive cycle is, according to Engeström, one in which we see “construction and resolution of successively evolving tensions or contradictions in a complex system”[11]. Contradictions are not “problems”. Rather, in the case of our patient-physician dyads, they allowed discourse and consideration of factors that the physician may not have otherwise considered—and the shared object emerges from resolving the contradiction. No longer is the decision made in isolation, based only on the physician’s assessment of the medical issue, but instead it becomes one component of an interconnected, multidimensional, and evolving network of activity systems. With authentic practice and reflection on the effects of their behaviors, physicians can evolve and transform their practice. Some have identified the need for culture change for successful implementation of shared decision making [21,22]. We

propose that, as multiple activity systems interact, further expansive cycles may lead to a culture shift of professional communities and/or communities of practice of which the physician is part—with the goal of achieving shared objects with patients, regardless of the clinical context.

Our study benefited from the analysis of actual clinical encounters, followed by interviews with both patients and physicians. The 21 patient-physician dyads allowed for adequate “information power”. Our study’s chief limitation is that all encounters were from a single setting, which was a contraceptive clinic in a military hospital, with all physicians. This allowed analysis of a complex activity by limiting the variability of the setting, types of health professionals, and kinds of clinical decisions and the military setting allowed for a richer analysis of the influence of a specific community on both patients and physicians. However, the single setting and type of clinical decision may limit the generalizability of our findings.

Furthermore, we do not report in detail tensions between all elements of the CHAT framework (e.g., between tools and community, between community and rules, or between division of labor and tools). We focused on the tensions between each of the elements and the object of the individual activity systems and how resolution of the contradictions led to evolution of a shared object.

By analyzing clinical encounters with CHAT, we identified factors and tensions influencing behavior of individual patients and physicians when engaged in a clinical encounter. By using CHAT to study the complexity of co-constructing decisions, we can identify important characteristics of educational interventions for health professionals that may lead to successful shared decision making in all areas of healthcare.

Prior presentations: Findings from this study were presented at the American Association of Medical Colleges (AAMC) annual meeting, Learn Serve Lead 2021: The Virtual Experience, during the Quick Takes: Med Ed Abstract Presentations (LIVE), on 8 Nov 2021. The associated abstract was published in the *Academic Medicine* November 2021 RIME supplement.

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Figure 1. Representation of interacting activity systems of the physician and patient in a clinical encounter with shared decision making. Object 1 for the physician is influenced by a number of elements of the activity system, as is Object 1 for the patient. It is in the interaction that Object 2 evolves for each, where the values and preferences of the patient become a part of the decision-making process and ultimately lead to Object 3, shared decision making. Adapted from Witkop *et al* [9].

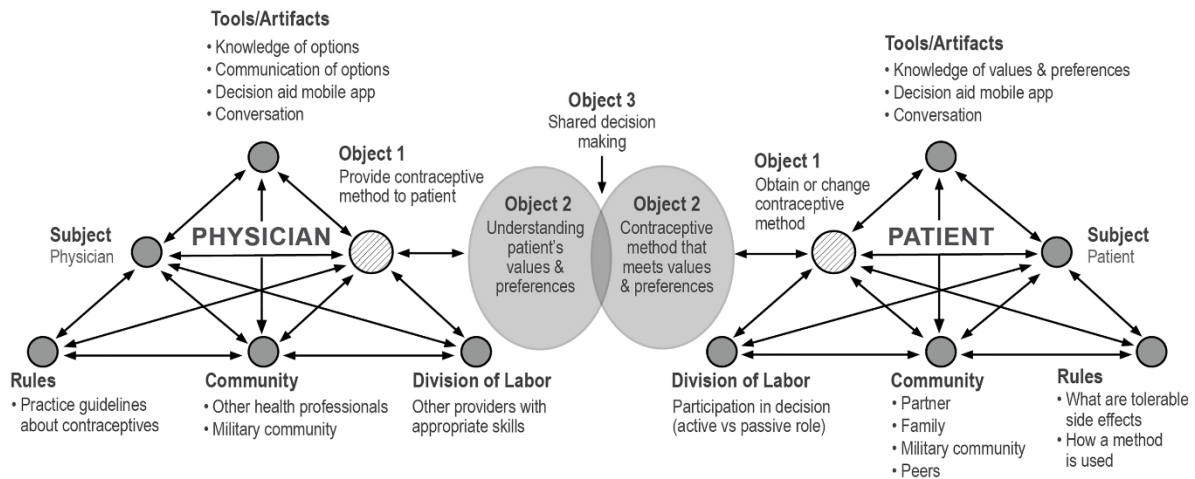


Table 1. Definition and Representative Quotes for Each of the Elements within Cultural Historical Activity Theory (CHAT) Activity Systems: Selections from Patient and Physician Participants in a Contraceptive Clinic, 2019

CHAT Element	Definition	Patient Quote	Physician Quote
Subject	The individual engaged in the activity who acts upon the purpose of the activity (the object).	Not applicable	Not applicable
Object	Purpose of the activity that is constructed as a result of the interactions of all other parts of the system; the meaning of an activity system that is interpreted and changed by the subject's actions.	I'm not trying to get pregnant right now (4-PA)	My job's really to help you come up with what's gonna work best for you (19-E)
Tools	Symbolic or physical objects that facilitate the accomplishment of a defined objective and/or contribute to the construction of the object within the activity system.	I've learned that the longer I look into things beforehand, going into the doctor's office with information makes it a lot easier to talk about things because then you're not just taking whatever suggestion is thrown at you. . . the app is very helpful because then you know things when you go in there. (7-PA)	So now I can provide this sheet to them and say okay well from what you already saw, are there any that are interesting to you or you want more information about I'm happy to talk more about. . . so that by them being able to review beforehand really saves me from having to go through everything about every option. (20-PHY)
Community	A group of any size which shares an interest in and involvement with the object of an activity system	. . . if it was up to my husband, I would have like 10 children right now. So four is fine, you know what I mean? (9-PA)	responsibility to help military women select appropriate contraception: "this is extremely important" (16-PHY)

Rules	Guidelines that reflect and regulate activities, may or may not be considered cultural norms, and may change as the activity system changes	And so I kind of need something that I can just, you know, set it and forget it. (3-PA)	No intercourse in the past two weeks, that's perfect, we'll place the Mirena today. (5-E)
Division of Labor	How activities are distributed among various members of an activity system or community (vertical, based on hierarchies; horizontal, based on proficiency or assignment of duties.)	. . . it was good because I sort of knew what my concerns were specifically, and she addressed each of that and we came up with a plan together. (18-P)	[If primary care physicians] get more familiar with the app . . . they then will feel more comfortable with the counseling. . . .And then if [patients] do get referred to us as gyn, then they've been counseled. . . (20-PHY)

Patient and physician quotes denoted by case number, followed by PA for patient interview, PHY for physician interview, E for encounter.

Appendix A: Patient Interview Guide

This guide will be used to interview patients following the visit for contraceptive counseling in which the decision aid was provided to the patient to work through and bring to the visit. The provider also had access to the decision aid prior to the visit.

Notes for the research assistant: Introduce yourself and your role in the study to the interviewee. Provide information about yourself so that the interviewee understands how your background may or may not be relevant to the interview.

For each of the following questions, use the numbered questions to guide the interview and use the bulleted questions as probes if needed. Once each of the bulleted points has been addressed (either because interviewee offered it up or you have asked the probe), move on to the next numbered question. If an interviewee answers one of the numbered questions while answering another numbered question, there is no need to repeat the question.

Please record the interview and ensure that voices can be clearly heard on the recording.

Thank you again for participating in the study. My name is [X], and I am a research associate on the study. This next part of the study will be a 15-20 minute interview. During the interview I will ask you some open ended questions about the contraceptive application itself, how the app impacted your conversation with your provider, and some questions that are specific to being a servicemember in relation to the study. Just as a reminder we will be recording the interview, and I am going to start recording now...

Section 1

Let's begin with some questions about the use of the app in your discussion of contraceptive options.

1. Approximately how much time in total did you spend using the app before the appointment?

2. Your preferences about your birth control method have to do with your personal choice about your method. In what ways, if any, did the app impact your ability to identify and communicate your preferences to your provider?

This question addresses the patient's perceived ability to identify and communicate preferences.

3. Your values have to do with the amount of weight you place on a particular characteristic of a contraceptive method. Did you feel empowered to talk about your own values with your provider?

This question addresses the patient's perceived ability to identify and communicate preferences.

If yes, in what ways, if any, did the app contribute to you feeling empowered to talk about your preferences or your values?

This question addresses the patient's comfort in communicating with the provider.

4. Do you feel that you and your provider made a shared decision about your birth control choice? Why or why not?

5. How comfortable are you with your decision about your birth control choice?

These questions get at the patient's perception of the shared decision-making process and therefore addresses the perceived effectiveness of the tool in enhancing shared decision making.

6. Do you feel that you had an important role in the decision about your birth control method?

This question gets at the patient's feelings about having agency in the decision-making process and therefore addresses the effectiveness of the tool in enhancing patient agency.

Section 2 (check time)

Thank you, now let's move onto some questions more specific to being a servicemember in relation to the study.

7. First, which Service are you in?

8. Second, in which of the following categories for your rank do you fall:

E1-E3

E4-E6

E7-E9

O1-O3

O4-O9

Warrant Officer W1-W5

9. What, if any, military-relevant concerns or issues influenced your contraceptive choice? For example, did you have any concerns related to a contraceptive option that were related to your assigned duties in the military?

This question gets at actually identifying whether or not the patient identified and/or expressed military-relevant patient values.

10. In some health situations you may have several options for care. For example, perhaps you could choose one therapy or another therapy. As a service member, how much input do you feel you generally have in making decisions in these types of situations?

-Think about the last time you had to make a medical decision. Did you feel empowered to make the decision?

-Can you think of a health situation when you felt as though you did not have a say in the decision, but felt like you should? Tell me about it.

This question gets at the patient's feelings about having a say in preference-sensitive decisions.

11. This app was meant to help you and your provider with shared decision making around a medical decision. Would you like to use an app like this (or another such tool) in the future for other medical decisions? Why or why not?

If yes, for what types of decisions do you think it would be most valuable to you?

This open-ended question provides the interviewee an opportunity to share any additional thoughts about their interest in participating in shared decision making in the future.

Appendix B: Physician interview guide

This guide will be used to interview providers following the visit for contraceptive counseling in which a patient used the decision aid app was provided to the patient to work through and bring to the visit. The provider also had access to the decision aid prior to the visit.

Notes for the research assistant: Introduce yourself and your role in the study to the interviewee. Provide information about yourself so that the interviewee understands how your background may or may not be relevant to the interview.

For each of the following questions, use the numbered questions to guide the interview and use the bulleted questions as probes if needed. Once each of the bulleted points has been addressed (either because the interviewee offered it up or you have asked the probe), move on to the next numbered question. If an interviewee answers one of the numbered questions while answering another numbered question, there is no need to repeat the question.

Please record the interview and ensure that voices can be clearly heard on the recording.

Questions

Thank you for meeting. I will be asking you a series of questions about today's clinical encounter in which you and the patient discussed contraceptive options and during which a decision aid was used in some way.

1. Prior to the visit, your patient was asked to use a contraceptive decision aid in preparation for this visit.

- Have any of your patients ever utilized a tool like the one that was used during this visit? If yes, would you say fewer than 3 patients, 4-10 patients, or more than 10 patients?

This question identifies the provider's previous experience with shared decision making and decision aids, in order to put the interview in context. Because the research question asks if the decision aid "facilitates" shared decision making, we need to know how familiar the provider may be with this construct.

2. How do you feel the use of the decision aid impacted/influenced your discussion of contraceptive options?

- What were some of the limitations or problems with using the decision aid to discuss contraceptive options?

These are open-ended question to elicit the provider's feelings about the encounter overall and sets the stage for more probing questions about the experiences of the provider in using shared decision making.

2. How did the decision aid change (if at all) what you would describe as your typical contraceptive counseling encounter?

These are open-ended question to elicit the provider's feelings about the encounter overall and sets the stage for more probing questions about the experiences of the provider in using shared decision making.

3. How did the decision aid impact your overall ability to discuss the range of contraceptive options?

- How did the decision aid impact your ability to discuss the benefits and risks of individual contraceptive options?

- How did the decision aid impact your ability to discuss individual contraceptive options in relation to the patient's individual situation/risk factors/preferences?

This question addresses the part of the research question about the provider's perceived ability to communicate contraceptive options.

4. What did you perceive were your patient's feelings about the decision aid? - How familiar did she seem to be with the information on the decision aid? - What questions or comments did she have or share that you felt were related to having read the decision aid ahead of time (or working through it together in the visit)?

- Did she provide any feedback about the decision aid (solicited or unsolicited)?

This question does not directly address a specific objective of the study, but addresses an issue that providers often bring up as obstacles to the use of clinical support tools – i.e., “the patient doesn't like it.” The answer from the provider can be compared to the analogous answer from the patient.

5. What personal values or experiences did the patient mention during the encounter that you think impacted her contraceptive choice?

This question gets at actually identifying whether or not the provider was actually able to elicit patient values (part of the research question about whether the decision aid facilitates the provider's ability to elicit values of the patient).

6. What military-relevant concerns or issues did the patient mention during the encounter that you think influenced her ultimate contraceptive choice? - For example, did the patient voice any concerns related to a contraceptive option that were related to her assigned duties in the military?

This question gets at actually identifying whether or not the provider was actually able to elicit military-relevant patient values.

7. What non-contraceptive benefits (if any) of one or more of the contraceptive options did you mention or highlight in the encounter?

- Were any of these relevant to the patient's role in the military? - Were any of these related to possible deployment?

This question further explores whether or not the provider was actually able to elicit military-relevant patient preferences.

8. Did the patient seem comfortable making a decision about her contraceptive choice?

- Did her preferences change during the visit? If so, how? - If her preferences changed during the visit, what about the encounter seemed to influence that change?

- What do you believe was/were the most important factor(s) in making her choice?

This question gets at the provider's perception of the patient's agency in the decision making process and therefore addresses the perceived effectiveness of the tool in enhancing patient agency.

9. How did you feel about allowing your patient to make the ultimate decision about her choice?

This question gets at the provider's feelings about encouraging patient's agency in the decision-making process and therefore addresses the perceived effectiveness of the tool in enhancing patient agency.

10. As a provider within the Military Health System, in the context of ensuring military readiness, what do you think is the role of shared decision making?

This question gets at the provider's feelings about the role of the provider community (and the MHS at large) in providing patient-centered care, while still ensuring readiness.

11. Is there training you would like in shared decision making and how to most effectively implement a decision aid in your practice?

This question addresses any desired education and training based on the provider's perspective.

12. What do you think of this decision aid overall?

- What would you change about it?

- Would you use it again in the future? If yes, are there any patients for whom you think this decision aid would not be appropriate?

- If you would not use it again in the future, how would you conduct your contraceptive counseling?

- Did you feel constrained by the decision aid? If so, how?

This final open-ended question provides the interviewee an opportunity to share any additional thoughts about the decision aid and indirectly about shared decision making. Based on the answers to this question, the decision aid could be modified in the future if similar themes emerge from the answers to this question.

13. Do you have any last comments and/or questions about today's questions or the app that you would like to share?

CHAPTER 6

The Doctor Helped Me Decide: A Functional Linguistic Analysis of Shared Decision-Making

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Abstract

Objective: We examine how patients narrate themselves and the roles of a decision aid and other individuals in contributing to agency when engaged in shared decision-making.

Methods: This qualitative study included patients, aged 17-45, who utilized a decision aid mobile application (app) before an encounter for contraceptive services. We used functional linguistic analysis to examine how patients narrated their interactions with physicians in semi-structured interviews, coding for linguistic markers of agency.

Results: 21 patients and 8 obstetrician/gynecologists participated. Patients narrated *individual* agency, identifying agentive tasks required for decision-making, including gaining knowledge, asking questions, voicing needs, and making choices. Patients narrated the app as a source of information, identifying questions, validating previous knowledge/opinions, and as a surrogate provider. Patients narrated physicians as supportive agents, cueing patient agency and actions during the visit. *Joint* agency of patient and physician and agency *distributed* across the patient, physician, app, and other resources were contributory.

Conclusions: Functional linguistic analysis can offer important perspectives into patient experiences and beliefs. The patient, physician, and decision aid app each played a role as agents during shared decision-making.

Practice Implications: Attending to agency can help health professionals more effectively conduct shared decision-making.

1. Introduction

Shared decision-making is a critical component of patient-centered care, with a growing number of practice guidelines calling for its integration in patient care [1,2]. Despite this, implementation barriers exist, including lack of training and systems-level issues [3]. Furthermore, it is a complex activity in which patient values and preferences contribute to the co-construction of a decision by the clinician and patient, each of whom is an individual agent with their own social and behavioral contexts.

Traditionally, the physician--having more medical knowledge--has acted as the agent in a clinical environment [4], but patient agency derived from a lived knowledge about patient values and preferences is equally important for successful shared decision-making. Agency is the “capacity for understanding and deliberative reasoning that we humans use to select, frame, choose, and execute intentional behavior [5].” Understanding patients’ conceptions of *individual*, *joint* (two or more people working together) and *distributed* (two or more people working in parallel) agency [6] in the encounter can help us to authentically support *their* notions of shared decision-making rather than our own.

Much can be learned about shared decision-making and a patient’s perceived agency by examining how a patient narrates their role in the process. Not just *what* a patient says, but *how* a patient tells their story can give us clues to their agency.

In this study, we examined the process of contraceptive decision-making. To help clinicians better understand what supports successful shared decision-making, we utilized functional linguistics to examine how patients narrate themselves and the role of a decision aid and others (e.g., doctors, family, friends) in contributing to agency.

2. Methods

Recruitment and data collection occurred at a walk-in contraceptive clinic at a military medical center in the United States (US) between April and July 2019. Our study included both patient and physician participants. Patient participants were females in the US military between the ages of 17 and 45 who were seen at the clinic and interested in contraceptive services. We obtained IRB approval prior to conducting the study.

Participants were excluded if they did not speak English, were infertile, currently pregnant, or desired to be pregnant within six months. Patient participants were recruited by two of the investigators while they were waiting to be seen. After consent, patient participants downloaded and completed a free contraceptive decision aid mobile application (app), Decide + Be Ready, on their personal device from the App Store (iOS) or Google Play (Android) [7].

Physician participants were Obstetrician/Gynecologists recruited during meetings with clinic staff, prior to patient recruitment. Upon recruitment, physician participants received basic information about navigating the app and had the opportunity to engage with it on their own mobile device.

Patient participants were seen in the clinic by a physician participant. The physician audio-recorded the initial part of the clinical encounter (including history, discussion of contraceptive options, counseling, and decision about contraceptive method) with the patient's consent.

Immediately following the medical encounter, an associate investigator conducted and audio-recorded a semi-structured interview with the patient. The interview guide was designed to elicit the patient's experience of the preceding visit (See Appendix A for interview guide). Questions elicited perceptions about empowerment to participate in decision-making, how the app and

other factors impacted the decision-making process, and past experiences with similar types of health-care decisions. Prior to deployment, the interview guide was pilot tested and revised based on feedback and was iterated over the study period based on analysis of participants' responses. Recorded clinical encounters and interviews were transcribed and de-identified by one of the investigators.

Coding was conducted in Dedoose (<https://www.dedoose.com>) and then transferred to Excel for further coding and data modeling. We applied functional linguistic analysis to transcribed patient interviews to examine the way patients narrate their interaction with the physician in the healthcare encounter [8,9]. Based on prior work in this field [10] we coded utterances for linguistic markers of agency, focusing in on who and what patients framed as *grammatical subjects*. To better understand how patients narrated the different agents of shared decision-making, we grouped these subjects into linguistic categories (Table 1).

Because of the importance of the experience of causation in agency [10], we also explored *causal relationships* between the *I* and *we* subjects and other agents. For example, the patient might say something like, “**The doctor** helped **me** understand,” noting that the doctor caused a change in her understanding. In this *distributed agency*, the patient frames herself as part of a causal *chain of agency*, committing agentive acts herself but depending upon others (e.g., the app, physicians, friends and family) to support that agency. To discern patterns from these codes within and across participants, we compared how patients framed past and present experiences and how different participants acted in response to similar contexts.

Representative quotes were identified to demonstrate particular thematic elements and are reported in the results with each patient participant case represented with a letter in parentheses. For example, a quote from patient participant R would be followed by “(R)”.

3. Results

A total of 21 patients and 8 physicians participated. In response to the question, “Do you feel that you and your provider made a shared decision about your birth control choice?” all but a single patient responded to some degree in the affirmative, endorsing shared decision-making. A sample quote from a patient who felt there was a shared decision was: “Yes. . . I felt like it was good because I knew sort of what my concerns were specifically and she addressed each of them and we came up with a plan together.” (R). Another quote demonstrates a more subtle endorsement of shared decision-making, but an endorsement nonetheless: “Yeah. . . So I wouldn’t say that the doctor--or the provider--made like a ‘you should do this’, but what I was. . . my plans and all that. . .and all that I was concerned with as far as health-wise kind of guided me toward a decision.” (F) The single patient who felt a shared decision was not made was clear on her decision prior to arriving for the visit and stated: “I don’t think so. . . this appointment mostly felt like, okay, I want to get the IUD removed and I want to get on the pill and that was pretty much [it]. . .” (L)

We describe patterns related to the various subjects represented in the transcripts, including “I”, the app, the physician, and “we”, which generally referred to the patient and physician, but sometimes had other referents (e.g., patient and support system). Note that we italicize the type of agency and bold the agent and action to facilitate following the analysis. Figure 1 visually represents our findings.

In analyzing the linguistic markers around “I” as subject, we learned that patients narrated their *individual agency* in unique ways. The specific agentive tasks as narrated by the patients during the interview varied between patients, but included gaining knowledge, asking questions, voicing needs, making choices, informing the physician of a decision, and communicating other issues or

concerns. For example, patient N narrated how she gained knowledge and how that impacted her agency: “after using the app and then going in there and talking with him, **I knew** more about the different types of IUDs and the implant and stuff and so **I knew** going in there what I wanted to talk about, based on what I read in the app.” (N) Patient C focused on inquiry: “So **I asked** him more questions about it. So once I read the app, I had questions, I had more questions about it. And then the provider helped me understand more.” (C)

Some patients gave voice to their needs: “I feel like I played a very important role because **I got to voice my needs** and what I was looking for versus feeling like I didn’t have much of an option.” (B) Two additional agentive tasks were making choices, “he kind of explained and it kind of helped **me make a more informed decision**” (F) and informing the physician: “**I just came out and said** I want the pill and she’s like okay.” (G) And finally, we identified examples of patients communicating preferences, issues, or concerns, as in this example: “[the] app was kind of helpful to kind of rack and stack what my priorities were and **to be able to clearly articulate** those to the doctor.” (K) And in this example, the patient explicitly compares her agency to that of the physician, noting that her preferences are driving the decision: “Because they can’t do anything until **I say yes or no**, so the fact that I was like, **I will agree** with you because it is right and it makes sense. . .he wouldn’t have been able to go any further if **I said no** anyway.” (S)

By the nature of the study, the app was a focal point of the patient interview for all participants and was generally described in a positive light. However, how the patient narrated the role of *the app as an agent* varied between patients and generally fell into four categories. The first was as a source of information: “**the app actually stated**. . .” (A). The second role of the app was in identifying questions that the patient can ask the provider: “And **it gave** me the questions I

needed to ask my provider. That helps me get on the right path.” (A) The app also helped validate patients’ previous knowledge/opinions: “**It** kind of **revalidated**, kind of **helped** me feel better about the one I was thinking about.” (U) Finally, for a few patients, the app was discussed as a kind of surrogate provider, personified. For instance, Patient B provided this exemplar quote: “**it understands** what you need and **it gives** you options to choose from, based on your needs. It’s like really simple, **it breaks** everything **down** . . . It’s like, it’s fun, it’s animated” (B)

Patients narrated a number of different ways that the *physicians acted as supportive agents*, cueing or supporting patient agency and actions during the visit. For example, physicians often asked questions: “**She** actually **asked** me quite a few questions. . . “(E) and the patients noted when physicians actually listened: “. . . she was a good sounding board, **she listened**, she was patient with me, she provided me with amplifying information” (J). The physician often was noted as providing information/options: “And for **him to be open about** . . .okay, because we do have so many different options and we are at liberty to choose which ones we want.”

(S). Sometimes, the physician was noted to validate/acknowledge a decision: “Because when I told her my information and **she agreed** that hey this is the best option for me because. . .” (O) and “. . . **she had confidence** that I knew what I wanted.” (L) Patients also reported that the physicians helped in various ways: “**she helped** me change my mind.” (G) and “And then the **provider helped** me understand more.” (P) Some patients noted that the physicians gave recommendations, for example: “. . . I was listened to, the **doctor made recommendations** based on what we discussed. . . “(K) And, finally, in a few interviews, the patient reported that the physician “let” her do certain things: “She was going to **let me do** Paragard if I really wanted to. . . “(A); “it’s probably better that she doesn’t [tell you what to do], that **she lets you choose**, because it’s your body.” (J) and “. . .then **let me make the choice**” (J) While this reflects a sense

that the physician still has more power in the relationship (i.e., “letting” signifying the physician is the one with the power to give permission rather than the patient inherently having it), these provider actions were nonetheless narrated as supportive of patient agency.

Yet, providers' actions were not always supporters of patient agency. For example, several patients compared their current experience to past encounters with other providers. They reflected on agency (or their description of an agentic action) through the lens of past experiences, often contrasting an example from the past with what they describe as a better experience this time around. Examples of how they narrated past provider behaviors that they perceived hindering their agency included: “told”, “made decision(s)”, “did not listen.” These can be seen in Figure 1 as potentially impacting the contribution of the physician as agent in supporting shared decision-making, as seen in these three examples: “. . . **they don’t really work with you. They tell you** what they have to offer and then if you don’t want to deal with that, it’s not your loss” (B); “**They made the decision** for me which turned out to be um you know a bad decision.” (O); and: “**[they] weren’t listening** to what I had to say until I became crazy and then they listened.” (O)

“We” subjects, when referring to the patient and physician, demonstrated *joint agency*, where the patient narrated a joint action that the patient and physician undertook together. The use of “we” subjects was not observed across all patients, even when a patient reported that shared decision-making took place. Joint agency emerged in only about half of the cases we observed. These joint “we” examples for patient and physician fell into two general categories: talking/discussing and deciding. Examples of talking/discussing included “**we did talk** about the options and what was best suited for my situation at the time. . . the doctor made recommendations based on what **we discussed.**” (K) and “. . . but **we did discuss** the other options.” (F) In terms of jointly

deciding, some examples were: “Using the app, I felt more informed about the methods, and then communicating with the doctor my values and preferences, **we were able to pinpoint** specifically which one would be best for my care and hopefully long-term care.” (M) and “So I felt like it was good because I knew sort of what my concerns were specifically and she addressed each of [them] and **we came up with a plan** together.” (R)

An interesting observation was the use of “we” to refer to patient joint actions with those *other* than the physician. Even though, in our model, this may not be directly related to shared decision-making, it is an important type of joint agency that may contribute to how individuals understand their own agency as patients. In these data, “we” often referred to the patient together with other women who work or other military women (those “like me”), indicating a joint experience, not necessarily shared decision-making. In this case, the verbs were often related to deploying, or having/not having something (access, knowledge, ability to participate, control). For example, referring to herself and other women, patient S says, “but if it is something **we have access** to prior, **we can look at it** and **take our time to say** okay, here we go. . .”. “We” was also used to refer to the patient together with family members or partners, for example, patient Q stated: “. . . me and my husband, **we sat and had a discussion.** . .”

In contrast to individual and joint agency, *distributed agency* narrates a number of agents working separately on actions toward the same goal (in this case, usually the goal of deciding on treatment), often with causal relationships between them. Following the arrows in Figure 1 demonstrates the numerous ways distributed agency was represented in the 21 patient interviews. Almost all participants narrated distributed agency during their interviews, but varied in which agents were involved. In several cases, the patients (“I” as subject) narrated distributed agency with the app alone. For example, patient C said the app “gave” her

information and questions to ask and described it as a source of low-stakes support to her which helped in exercising agency with the physician. She reports that in the past, she “felt pressure” during medical encounters, but said she did not in this case. (C) In other cases, the patient reported distributed agency with the physician, which in some cases ended with joint agency: “Because when **I told** her my information and **she agreed** that hey this is the best option for me because it’s the reduction in the hormones and **she also gave me** other options that could be a possibility, so **we went** with what I wanted.” (O) The back-and-forth of the separate actions of the patient and physician here culminate in the joint agency of a decision.

In some cases, agency was distributed across the patient, physician, and app. Patients narrated scenarios in which each of the three had roles that depended somewhat on the actions/impact of the others. For example, Patient P stated, referencing the app, “it was telling me about the IUDs, one’s hormonal, one’s non-hormonal” (P) Then, the patient stated: “Once **he asked...** By the time **I read the app**, I had already **changed my mind**. . . **I thought** about changing my mind to the other one and once **he asked** those questions, . . . Once **I asked** those questions to him, **he helped** and then **I changed** and then at the last minute **I decided** I wanted to get the hormonal...after **I looked at the app**.” (P) This patient explained the decision-making process as a sequential series of actions by the physician, the app, and herself (“I”). The app helped the patient understand her options and come up with questions. The provider responded to the questions and the resulting conversation evolved into shared decision-making.

In some cases, there were examples of the app’s role *starting* the chain of agency (demonstrated by following arrows in Figure 1). For example, for patient J, the app provided the patient with information and questions to ask; the patient then had a conversation with the physician who then “let” the patient make the decision: “One of the things I was concerned about was mood and

the app confirmed that the IUD has no traceable side effects to mood or depression or anything like that, so in my meeting **I was able to say**, hey, I know this to be true, having learned about the IUD and talked about it with my provider before and I just saw it on the app. . . .Well when **I asked** questions about the individual methods, or my decision today which was to keep the IUD or get it removed, **she heard** me out on reasons why I was waffling on that and then [**she**] **provided me** with more medical back up for why it's safe and side effects and things like that and then [**she**] **let me** make the choice.”(J)

4. Discussion and Conclusion

4.1 Discussion

Our study surfaced several themes which can help physicians and other healthcare providers more successfully facilitate shared decision-making and which may be utilized as elements in educational interventions for health professionals. The concept of agency is critical to understanding the complexity of shared decision-making. Because individual agency differs across individuals, our goal was to focus on how patients narrate their own perception of their agency and the influence of others on that perceived agency.

The patient, the physician, and the app each played a significant role as agents in patient narratives of the encounter. To facilitate patient agency, the physician can be intentional in ensuring that the patient has the opportunity for the agentive actions that patients narrated for themselves (e.g., gaining knowledge, voicing needs), perhaps even cueing these actions if they do not see patients initiating them. Physicians can also actively monitor themselves during encounters to determine if they are performing the supportive agentive actions participants narrated (e.g., asking, listening, validating decisions). Additionally, since we learned that shared

decision-making does not necessarily require evidence of joint agency (only present in about half of the narratives), providers' use of "we" may need to be tempered; not all patients will relate or commit to a joint action. Further, the use of "we" can lead to ambiguity in decisional responsibility as Gulbrandsen previously described: "While this wavering could be a sign that the physician is not clear about who owns the decision, it could also be due to lack of reflection about language—or both" [11]. Being selective and intentional in the use of "we" may help physicians better communicate their support of patients' agentic actions. Patient use of "I" and "we" can guide provider language during the encounter.

Patients' narration of *distributed agency* could further help providers, particularly in combination with an existing shared-decision making resource: the "three-talk" model, which was developed to enhance a patient's "autonomous capacity," focusing on the emotional and relational aspects of care and supporting the patient during the decision-making process [3,12]. The model represents shared decision-making as "a fluid transition between different kinds of talk": "team talk," "option talk" and "decision talk." [12] While this model provides a high-level framework for shared decision-making, our distributed agency findings provide clinicians with clues to *how* they can engage in each type of "talk." For instance, providing information or recommendations may spur patients' agentic actions like communicating concerns or making a choice; conversely, telling, making the decision, and not listening may hinder such actions.

The app also played a key role, which is important because decision aids are being developed and used for numerous other decisions within women's health, including treatment for fibroids [13], vaginal birth after cesarean [14], and others [15]. Our participants perceived the decision aid as *helpful* (e.g., identifying questions, supporting the physician) and in serving *itself as an agent* in the decision-making process. Although we cannot extrapolate these findings to all

decision aids, those containing certain standard elements may be most effective at facilitating shared decision-making [16,17]. We hypothesize that some elements may be more important to the effectiveness of the app serving as an agent in this process, including the provision of knowledge using pictorial representations of risks/benefits and the patient's active engagement in identifying values and preferences. Engagement with the app also provided many of the patients with questions to ask the physician during the encounter--and that act of inquiry led to distributed agency in almost all encounters and to joint agency in multiple cases.

There were limitations to our study. First, our determination if shared decision-making occurred was based on the patient's perception and answer to a single question rather than a validated tool. Second, although we report on how the physician and the app contribute to patient agency and shared decision-making, we do not report on how the patient narrates the community (including her partner, friends, family, other military women) in her decision-making. We offered some brief mentions of joint agency with others, but did not delve, in the interest of space, into additional evidence of others' roles in clinical decision-making outside the encounter.

4.2 Conclusion

In this study, we have demonstrated that functional linguistic analyses can offer important insights into patient experiences and beliefs; functional linguistics has also been used to explore agency within health professions education [18,19]. We propose that this and future studies utilizing functional linguistics can contribute to the development of educational interventions to facilitate more effective shared decision-making. What providers intend to say to patients may not always be what patients hear. By understanding how their words come across, providers may be able to help patients more successfully participate in decision-making.

4.3 Practice Implications

In clinical encounters where decisions are to be made, healthcare providers should be alert for and encourage actions and statements that demonstrate patients' attempts to actively participate in decision-making. Providers can engage in behaviors such as asking, listening, validating, and providing recommendations; patients identified these actions as helpful in their decision-making. Further, providers should be intentional in their use of “I”, “we”, and “you” when engaging in shared decision-making to further support patient agency. Educators can integrate findings from this study when designing interventions around shared decision-making, which may include practice of aforementioned behaviors.

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Figure 1: A visual representation of subjects represented in interviews with patients following use of a contraceptive decision aid mobile app and an encounter for contraceptive decision-making. Blue arrows represent connections between subjects that may facilitate shared decisions and the red symbol represents physician actions that may hinder shared decisions.

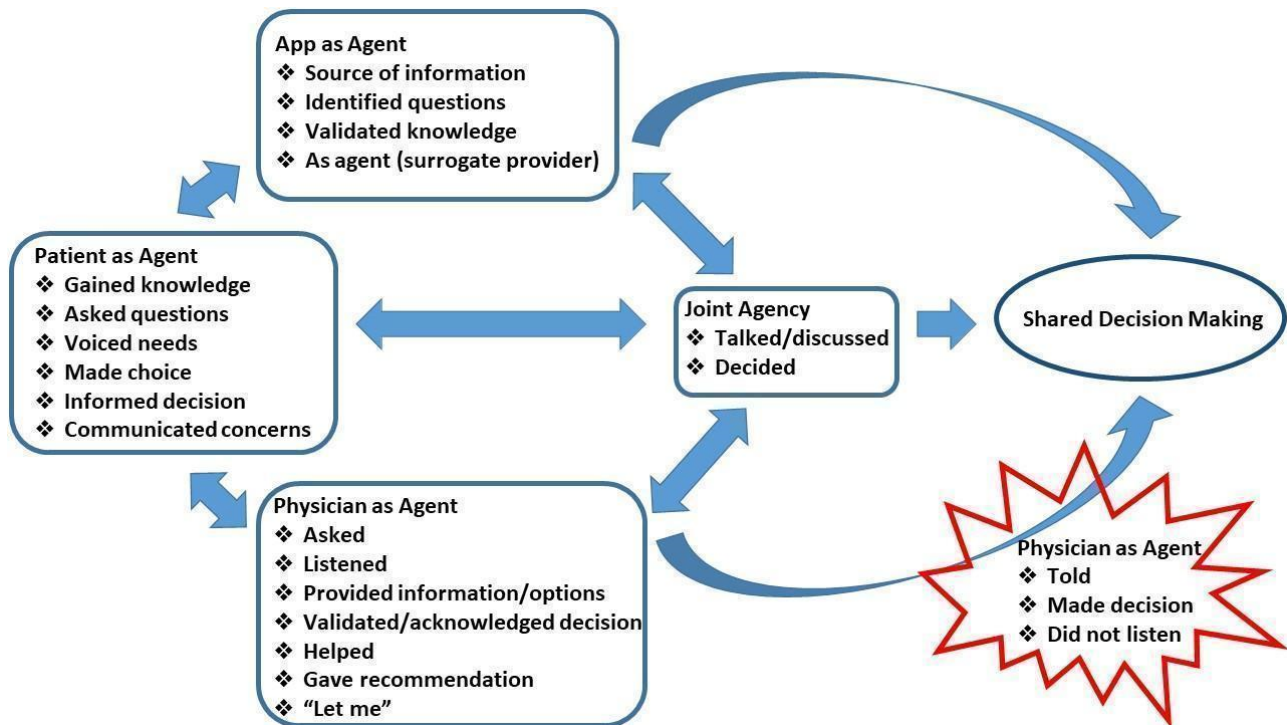


Table 1: Linguistic categories used to characterize agency in contraceptive decision-making clinical encounters

Linguistic category	Potential subjects	Type of Agency	Example
First-person singular “I” representing the patient	I	Patient as agent	I decided to get an IUD
Pronouns and nouns representing the app	it, the app	App as agent	The app suggested the IUD
Pronouns and nouns representing the doctor	she, he, the doctor	Physician as agent	The physician recommended the IUD
First-person plural “we” representing patient and others (either physician or other women)	We	Joint agency	We decided on the IUD

CHAPTER 6

DISCUSSION

In this dissertation, I sought to understand why shared decision making, a concept that seems so obviously beneficial for patient-centered care, has been so elusive. To do so, I described how Cultural Historical Activity Theory (CHAT) can be applied to shared decision making and other complex Health Professions Education (HPE) questions. I then explored the body of published educational interventions around shared decision making and examined if and how the concept of agency is addressed. Finally, I investigated the role of agency and other influences on shared decision making when an app-based contraceptive decision aid is provided to a military woman before a contraceptive counseling visit, utilizing CHAT and functional linguistics.

Chapters 2 through 6 described in detail the objectives, methodology, results and conclusions for each published study. I will summarize the findings here and then synthesize the findings from the body of inquiry as a whole in response to these three key questions:

- (1) Who (or what) are the agents participating in and responsible for shared decision making?
- (2) What are additional factors that influence the patient and healthcare provider as they participate in shared decision making?
- (3) What is the role of the healthcare provider in the process of shared decision making and what are the implications for educational interventions around shared decision making?

Summary of Findings

Chapter 2 - Perspective Paper

Seeing Complexity: Cultural Historical Activity Theory (CHAT) as a Lens for Shared Decision Making

In **Chapter 2**, we demonstrated how CHAT activity systems could be utilized to visualize the complexity of a clinical encounter through two hypothetical scenarios. In the first, where shared decision making does not take place, we describe the physician and patient both in relatively passive roles. The physician shares his knowledge about the options, but comes to a decision with minimal input from the patient; the patient tries to share a bit about her previous knowledge, but then is prevented from sharing any more. In our second scenario, we present an interaction where the physician actively pursues the elicitation of the patient's objective and her social and community context. We then think through potential tensions that might exist within the two activity systems, propose the types of inputs that might influence the decision-making process, and show how they can be categorized and managed as discrete parts of a complex framework.

Chapter 3: Systematic Review

Educational Interventions for Shared Decision Making and the Role of Patient Agency: A Systematic Review

In **Chapter 3**, we conducted a systematic review of educational interventions for shared decision making that reported on patient outcomes. We learned that successful interventions included some common elements: use of tools such as decision aids, small group discussions, and role play or practice with simulated patients. The fact that role play and practice with simulated patients were key elements of effective interventions gives us a sense of the context in which educators may want to couch future interventions. A strength of this study was that all included studies were found to be of high quality based on Medical Education Research Study Quality Instrument (MERSQI) scores ranging from 13.5 to 18, although heterogeneity among studies prevented a meta-analysis from being performed. However, very few of the identified studies

contained a qualitative component and patient agency was not directly addressed in any of the reported interventions.

Chapter 4: Methods Paper for Development of Decision Aid Mobile App

Decide + Be Ready: A Contraceptive Decision-Making Mobile Application for Servicewomen

In **Chapter 4**, we described the process by which we enhanced an existing evidence-based decision aid to meet the needs of military servicewomen and introduced the military medicine community to that mobile app, laid out a roadmap for integration within the Military Health System, and explored its applications for health professions education in the realm of shared decision making. Development of the app was of critical importance for my research. Participating in app development from start to finish assured me that the tool was evidence-based and designed specifically to facilitate shared decision making. Utilizing our knowledge of previous research around decision aids, we ensured the app contained all the required elements of decision aids. In this way, findings of our research related to the process of shared decision making presented in **Chapters 5 and 6** might be considered more generalizable to other medical decisions as well.

Chapter 5: Qualitative Study Utilizing CHAT

Complexity in Shared Decision Making: A Qualitative Analysis of Clinical Encounters and Patient/Physician Interviews

In **Chapter 2**, we established a potential role for CHAT in health professions research, using a hypothetical case. In **Chapter 5**, we carried out a CHAT-informed analysis on 21 actual patient-physician dyads in a contraceptive services clinic. In each case, we identified the object of the patient and physician upon starting the encounter and analyzed how the object changed over the

course of the visit, in particular, by evolving into a shared object. Further, we described multiple factors that influenced evolution of the object. Physicians often assume that their intentions to engage the patient in shared decision making are enough and that the patient's knowledge of their values and preferences (tools in the patient's activity system) will be as evident as the physician's knowledge of effectiveness, side effects, and potential contraindications (tools in the physician's activity system). What we actually saw in **Chapter 5** was the complexity of what the patient brings to the encounter. Even with a decision as seemingly straightforward as contraception, multiple perspectives and voices contribute to the patient's values and preferences. The patient's agency is interwoven with their community, with tools they may have used, with rules they may perceive as critical. In order for a physician to come to a shared decision with the patient, these influences need to be uncovered and any tensions acknowledged, addressed, and potentially resolved.

Chapter 6: Qualitative Study Utilizing Functional Linguistics

“The Doctor Helped Me Decide”: A Functional Linguistic Analysis of Shared Decision Making

In **Chapter 3**, we investigated whether the role of agency in interventions for shared decision making had been explored previously, but learned it had not. In **Chapter 6**, we sought to better understand the role of agency in encounters for contraceptive decision-making. To do so, we utilized functional linguistic analysis to reveal how the 21 patients, described previously in **Chapter 5**, narrated their own perceptions of agency and the influence of other agents on that agency. We learned that the patient, the physician, and the app played important roles. The patients were able to describe their own agentic actions in the encounter, including gaining knowledge, asking questions, voicing needs, making choices, informing decisions, and

communicating concerns. The physician also had a role as an agent, by carrying out the following actions: asking, listening, providing information/options, validating, helping, giving recommendations.

The most notable finding was the realization that the app itself acted as an agent. The patients reported, as expected, that the app provided knowledge. We recognize that this is one of the intended goals of a decision aid—educating the user by using tools designed to engage the patient (images, graphs). However, patients also reflected that the app identified questions to ask the physician and validated knowledge; in a couple of instances, the patient’s narrated the app as a kind of “surrogate” provider. These agentic actions as narrated by the patient validated the values clarification intent of a decision aid as the app was indeed designed to help the patient discern their personal values and preferences and actively engage in shared decision making.

Synthesis of Findings

Who (or What) are the Agents Acting in Shared Decision Making?

The word “agency” has a number of definitions and theories associated with it, many of which have been applied within medical education.^{1,2} In the next sections, we describe the meaning and application of “agency” as used in our studies.

In **Chapter 2**, we introduced Giddens’³ theory that in order to have agency, the individual must act intentionally, have the capacity to act on his or her intentions, and have the power to create a new event or intervene in an existing event; further, agency is not inert, but shaped, facilitated, or constrained by social structures. In **Chapter 3**, we focused on what we referred to as “relational agency”, as described by Edwards and D’Arcy⁴: “joint action on the object of activity” and later

by Edwards⁵ as: “the capacity to work with others to expand the object that one is working on by bringing to bear the sense-making of others”. And, in **Chapter 6**, where we focused on language that humans use, we include yet another description of agency, which is “capacity for understanding and deliberative reasoning that we humans use to select, frame, choose, and execute intentional behavior”.⁶

These varying definitions reflect not contradictions in what we mean by “agency” but rather the various dimensions of this concept. What these definitions have in common are intentionality and action. The additional emphases related to *human* agency include notions of power, influence of social structures, and capacity for understanding, sense-making, and reasoning. These nuances of human agency are relevant for our work, as we delved into communication between patient and physician. However, one of our most surprising findings is that the app also acts as an agent in the shared decision making process; this will be discussed in further detail below.

Patient as Agent

In **Chapter 5**, we demonstrate the ways that the patient is important as an agent. The patient in the encounter has intentionality, the object that emerged from the CHAT analysis. The patient also acts—she comes to the office, speaks with the physician, and participates to varying degrees in the shared decision making process. **Chapter 5** focuses on the varying influences on her actions and on the object, including all the different elements in the patient’s activity system and also the influence of the physician (as represented by the interaction of their activity systems). Each of these elements influence the patient’s agency and ultimately shape the outcome of the interaction (the shared decision). Rather than seeing the patient as possessing unchanging

attributes, we demonstrated what others have described as “the self as being embedded within sociocultural contexts and intrinsically interwoven with them.”⁷

In **Chapter 6**, by analyzing the language the patient uses to narrate herself, we learn about the agentive actions of the individual patient. The patient has historically not been the dominant agent in decision-making in the medical setting, and has by default, sometimes been considered the passive participant. Patient Valerie Billingham stated at a Salzburg conference in 1998, referencing inclusion of patients in healthcare decisions: “Nothing about me without me.”⁸ This phrase has become a call to action for the practice of shared decision making. Patients’ voices and actions are necessary for shared decision making, but are often not heard or ignored. By studying how the patient interacts with the physician and the app in terms of joint and distributed agency, we have a better understanding of what works and what does not to mitigate the often-present power differential.

Physician as Agent

The physician must also act. Decision-making is itself an action; just because it is shared, does not relieve either party of the work that is required to achieve it. In fact, coming to a shared decision likely requires more work for both patient and physician. Both perspectives need to come together on level ground, so each understands the other and comes to the decision that takes all the information into account.

The physician has traditionally been the agent, but making decisions based purely on medical facts requires a different skill set than shared decision making. In **Chapter 5**, we stated that “. . . physicians must recognize that multiple perspectives and voices contribute to the interaction and ultimately the health decision, including the patient’s community.” The sociocultural context of

patients has historically not been considered in medical decision-making. Now that the medical community recognizes its importance, the physician has a responsibility to consider and in some cases elicit the patient's preferences and values, which are derived from their sociocultural context. In applying the CHAT framework in **Chapter 5**, we demonstrated that shared decision making is an activity that has a number of inputs and contradictions that arise and need to be resolved; this decision-making process requires work.

Chapter 6 contributes to our understanding of physician agency by showing what kind of action may be needed by the physician. We identified actions that facilitate the process: asking, listening, providing information, validating, helping, giving recommendations. And we identified those actions (or lack thereof) that hindered: telling, making the decision, not listening. We learn that an action that is typically thought of in a positive light, "making the decision", needs to be modified. The work, the activity, in shared decision making is more nuanced: "listening" and "helping" can be more challenging in a busy practice than "telling" and "making a decision".

App as Agent

We embarked on this journey with a supposition that the decision aid would be a useful tool for the patient, but did not know how that would manifest. In **Chapter 5**, we saw that the app played a significant role in the evolution of the patient's object to a shared object. In our analysis and conclusions, we said that tools "enabled pursuit of the object" and ". . . with tools such as decision aids, patients may come to the visit with enhanced agency and an expectation. . ." In CHAT language, it was a "mediating artifact."

In **Chapter 6**, we had the opportunity to more closely examine the way *patients* narrated the role of the app and it became clear that the app was an agent in the decision-making process. The app

acts in various ways: it “stated”; “gave me questions”; “revalidated”; “helped me”; even more, “it understands”; “it gives you options”; “it breaks everything down”. One might ask whether the app has intentionality and I would argue that it does. It was intentionally designed to achieve exactly what patients narrated it was doing. Kaptelin and Nardi utilize activity theory to further explore this:

“The design of agent-based user interfaces, which seek to enact high-level intentions while sparing users the details, is one approach to bringing intentions in the user interface. The current state of designing and using information technologies in education also clearly indicates the importance of taking intentionality into consideration. There has been a growing realization that to have a positive impact on education, technologies should be designed to support purposeful actions of the human actors involved in everyday educational practices (Gifford and Enyedy 1999)”^{9(p.12)}

To differentiate from the uniquely human “need-based agency”, Kaptelin and Nardi⁹ expand on concepts of actor-network theory and explore typologies of agency. If a definition of agency is “the ability to act” or “the ability to produce an effect”, then a definition of acting can be “producing an effect according to an intention”.^{9(p.242)} In the end, they conclude that nonliving things, such as the app, possess delegated agency in which they realize intentions, but of somebody or something else.^{9(p.248)} Most interestingly, they point out “an interesting tension: every agent is capable of producing effects for which there is no intention”^{9(p.248)}; this is certainly something health professionals need to keep in mind when they or their patients utilize any new technology.

Returning specifically to our conclusions regarding the app and its role as an agent in shared decision making—it is an agent as it was intentionally designed to provide information and to help the patient identify their values and preferences. Combining our understanding of app-as-agent with the findings from our CHAT analysis in **Chapter 5**, we do note that the physician cannot

assume the app has done all the work, and in each case in our study, it did not. Ultimately, it is still the physician's responsibility to ensure the patient's needs are addressed and if a decision is warranted, that shared decision making occurs and a decision is made.

Factors that Influence Patient and Provider Actions in Shared Decision Making

There are countless determinants that influence the patient and provider's actions during an encounter for a healthcare decision. In order to make sense of these factors, we organize them in the framework of the patient and provider activity systems. First, social and community context are dominant inputs for shared decision making. Because our study was limited to a particular patient population and a specific medical decision, we were unable to demonstrate the entire spectrum of factors that may shape shared decision making. We did observe, however, that the patient was heavily influenced by their community, which included family, friends, partner or spouse, social group, and their work counterparts (e.g. other military women). We also saw the influence of the app, which is described in detail above, and which we need to understand assumes a level of privilege in which a patient is able to access a mobile app on a personal phone. Another area which we did not explore extensively, but which helps us understand some additional social context for our patient population is the influence of rules—in particular rules around deployment, who the patients can see for their physician, what they can receive as a contraceptive method, for example, if there is a possibility they may be pregnant.

Although our study was not designed to investigate the impact on shared decision making of the full scope of social determinants of health, including economic stability, educational background, access to care/tools, home/work environment, we can postulate, based on the findings in

Chapter 5, that these likely have a role in how the patient navigates a clinical encounter and makes decisions. In particular, several patients reflected that access to particular types of providers may have affected previous decisions and others discussed deployment as a clear influencer on decision-making.

Others have explored how shared decision making can help health professionals address social determinants of health and health disparities.^{10,11} For example, Enard and Hauptman¹⁰ emphasized the importance of shared decision making in decisions related to heart failure, a complex condition that often presents with comorbidities such as hypertension, diabetes, obesity among others. They suggest shared decision making should apply not only to complex, high-cost procedures, but also early in the disease process, to attempt to delay or eliminate progression. “Shared decision-making may begin with discussions about the effect of the diagnosis on the ability to carry out work, family dynamics, and finances. As patients and clinicians work together to manage HF, patients will become more familiar with SDM principles and better able to articulate their preferences, values, and, of critical importance, their needs, based on their changing clinical condition and socioeconomic circumstances.”¹⁰

Our findings also reinforce recommendations regarding shared decision making when the provider and patient come from different cultures.¹² As Derrington states:

“When it comes to SDM in cross-cultural encounters, we recommend that clinicians acknowledge their own cultural beliefs and values (including those stemming from the culture of medicine), maintain awareness of potential biases and assumptions, appreciate the complexity of patient and family identities and narratives, practice cultural humility, understand the moral relevance of culture, and respect patient and family preferences for SDM.”¹²

Our work, using CHAT, demonstrates how culture could potentially influence decision-making, for example if contradictions arise in the patient’s activity system and prevent the patient from

effectively engaging with the provider. A healthcare provider who enters such an encounter with an understanding of the influences on their own activity system (e.g., rules and experiences of the medical community or of a particular culture) will likely approach that patient with cultural humility. That may allow the provider to better appreciate the contradictory influences of the patient's community or culture on the patient's health goals; by putting their own biases aside, the provider can respectfully help the patient understand and possibly resolve the contradictions.

Role of the Healthcare Provider and Implications for Educational Interventions Around Shared Decision Making

We have shown that the healthcare provider has a critical role in shared decision making, with specific responsibilities that may not have been previously delineated. The provider must ensure that the patient's values and preferences are incorporated into the discussion and decision, including the patient's community and other social determinants of health. The provider needs to not only act as an agent in decision-making but engage with the patient in such a way that it supports the patient's agentic actions and allows for joint agency in the encounter. Even those who voice support for shared decision making for the complex patient, however, suggest that clinicians often do not have the "resources, training, or time to implement SDM in clinical settings, particularly when working with medically complex disadvantaged patient populations who face multiple SDoH barriers."¹⁰

This is where our research has significant implications for health professions education. As seen in **Chapter 3**, there are many educational interventions that address shared decision making, and any future interventions should build off the findings in that study. I believe that our findings in

Chapters 5 and 6 allow the educators and health professionals the ability to visualize the complexity of shared decision making and take away concrete lessons on how language can influence the process. Existing interventions do not need to be completely recreated, but our results using CHAT and functional linguistics can provide educators with tools to layer onto existing approaches.

Based on the findings of **Chapter 3**, in which simulation and standardized patients were utilized as a part of successful multi-pronged interventions, future interventions should include these components. First, it is critical to practice the work involved in shared decision making. As seen in **Chapter 5**, the patient's activity system includes multiple components. Training health professionals to think about all such inputs may require a paradigm shift, but practice with simulated patients could alleviate the stress when beginning this work. Second, **Chapter 6** highlighted some of the considerations for specific skill development around language—mastering such communication skills would also benefit from practice and feedback. Further, simulation and standardized patients would likely appreciably contribute to the process of evaluating new interventions.

Tools should be utilized where possible and new instructional strategies can incorporate our findings regarding the role of a decision aid. Health professionals should recognize patients will rely on tools to varying degrees. In some cases, patients may lean on a decision aid as much or more than they rely on the provider, but that does not relieve the provider of their responsibility to engage in decision-making with the patient. In fact, even if the tool, like a decision aid, is developed intentionally to align with the object of the visit, its role during the actual visit is no longer as an active agent (unless used during the visit). The balance of the joint agency that has been established is generally shifted to the patient and provider rather than the app.

Another area where our findings may enhance already existing approaches is related to the “three-talk” model for shared decision making, which we discussed briefly in **Chapter 6**.^{13,14} In this model, “team talk” has the provider and patient working together, discussing choices, offering support, and asking about goals; “option talk” includes alternatives using risk communication principles; and “decision talk” refers to getting to informed preferences and making preference-informed decisions.¹⁴ The model includes at its center the need for active listening by the health professional and deliberation by the patient. The authors recognize that there is still work to be done: “To evaluate this version, we plan to assess its ability to support skill development, with and without additional training, and with and without the use of encounter based decision aids.”¹³

While the “three talk” model provides a framework for shared decision making and addresses specific types of conversations that are needed to be successful, there is room to expand on it. Our research, in particular **Chapter 6**, provides concrete examples of *how* a health professional can most effectively engage with the patient in each type of “talk.” Communication skills require practice and this is where we can build on previous studies.

As mentioned above, educational interventions for shared decision making can and should include use of simulations and standardized patients. For healthcare providers learning to think about a patient’s activity system, influenced by tools, community, and other social determinants of health, communicating with a patient may feel overwhelming. However, feedback from standardized patients and from educators observing simulated encounters will help shared decision making behaviors become more familiar and increasingly natural. Once a health professional has had the opportunity to practice in a simulated setting, however, it is in the workplace that Engeström’s concept of expansive learning can take hold.

Learning involves a process of adaptation with each cycle of activity.¹⁵ Each encounter in which the health professional engages actively, as a joint agent with the patient, will contribute to expansive learning. Using suggested language to facilitate the patient's agency and working through contradictions to achieve a shared object will shape that provider's awareness of the importance of patient values, preferences, and sociocultural context. An expansive cycle is, according to Engeström, one in which we see "construction and resolution of successively evolving tensions or contradictions in a complex system".¹⁶ Contradictions allow discourse and consideration of factors that the physician may not have otherwise considered—and the shared object emerges from resolving the contradiction. Contradictions exist in both the patient's and the provider's activity systems and between their activity systems. The shared decision evolves from working through the contradictions. With authentic practice and reflection on the effects of their behaviors, physicians can evolve and transform their practice.

From a CHAT perspective, the health professional's agency will also be empowered by these expansive cycles. As mentioned in an earlier discussion about theories of agency, we know agency is co-constructed and shaped in social settings.^{1,3,17,18} Not only will the health professional gain experience in skills of shared decision making with each encounter, but engaging in the discourse that results from the interacting activity systems will increase the health professional's sense of their own agency—their ability to adapt and act. But just as engaging in shared decision making (including the agentic actions required on the part of both provider and patient) is work, health professions learners will realize that continuing to practice and advocate for shared decision making in a challenging health systems environment will also require work.

Many have identified the need for culture change for the successful integration of shared decision making.^{19,20} CHAT would suggest that the activity system of an individual provider and

individual patient become part of an interconnected, multidimensional, and evolving network of activity systems of all providers and all patients. As Engestrom²¹ describes it: “Such transformations proceed through stepwise cycles of expansive learning which begin with actions of questioning the existing standard practice, then proceed to actions of analyzing its contradictions and modeling a vision for its zone of proximal development, then to actions of examining and implementing the new model in practice.” As multiple activity systems interact, further expansive cycles may lead to a culture shift of professional communities and/or communities of practice of which the physician is part.

Military Relevance

As mentioned in **Chapter 1**, the health and readiness of our service members is an important goal within the Military Health System. Shared decision making is a critical component of high quality patient-centered care. All health professionals who provide care within the Military Health System should be adept at shared decision making. Some examples of clinical scenarios where shared decision making could be helpful or even critical include: decisions about when to begin routine cancer screening, such as for breast or prostate cancer; decisions about surgical versus medical management for back or knee pain; and decisions about whether to begin a statin for elevated cholesterol.

As we discussed, mitigating the power differential between patient and provider is an important step toward shared decision making. Especially in a medical system where rank and other hierarchical structures lead to power differentials beyond the provider-patient relationship, healthcare encounters are vulnerable to lapse into historically prevalent paternalistic experiences. With this dissertation, we hope we have provided health professionals with some tools to tackle this issue.

Finally, **Chapter 4** clearly lays out the importance of shared decision making and the decision aid for the health of military women. In part as a result of this research, we have provided the military community, both patients and providers, with numerous tools to assist with shared decision making in contraceptive counseling: the app; inclusion of information about contraceptives and the app in the annual Periodic Health Assessment that all service members complete; an episode within the podcast series “Wise Health for Women Warriors” in which I am interviewed about the app and shared decision making; and multiple presentations to communities of practice and at research and healthcare conferences. Finally, I had the opportunity to co-develop, with a colleague and the Connected Health Branch of the Defense Health Agency, a webinar designed as a continuing medical education activity for providers about shared decision making. While not directly tied to my research, development of this webinar drew on my entire research program and all five chapters in this dissertation.

Strengths and Limitations

One of the strengths of this dissertation lies in the analysis of shared decision making using CHAT, which has not previously been applied to shared decision making. While it has been utilized previously in other complex HPE topics, the application of CHAT to examine the interaction of the patient and provider in a clinical encounter was a novel way to pull apart the different elements of shared decision making, with an eye toward identifying targets for educational interventions.

While CHAT was the unifying theory that threaded through the entire body of work, the dissertation also benefited from three different ways of approaching this complex topic: a systematic review, a qualitative study using template analysis, and a functional linguistic

analysis. Each was specifically chosen to address a research question that appeared to be best answered by a robust methodology.

Two additional strengths pertain to **Chapters 5 and 6**, in which we analyzed actual clinical encounters and interviews with the patient and physicians immediately following the encounter. As mentioned in **Chapter 1**, because the values and perspectives of patients are central to shared decision making, the patient voice absolutely needs to be included in any studies of shared decision making. Although additional steps and approvals were needed to include audio-recorded clinical encounters and patient interviews, we felt these were critical to the study and is a clear strength of this educational research.

The final strength is that the use of a single setting with a specific population of patients (active duty women) and a single provider type (physician) allowed for the analysis of the activity of shared decision making and the language of agency within shared decision making in a pointed and deliberate manner. The setting and patient population allowed us to better understand an important population within the Military Health System, one that has been somewhat understudied and for whom issues with empowerment and agency may be obstacles to high quality care.

Our first limitation is one of generalizability. Because, as mentioned in the Strengths section above, we used a single setting with a specific patient population (military hospital and patients were all active duty women), our findings may not be more broadly generalizable to other settings and patient populations. Although the patients were of varying ages from 17 to 45 and varying ethnic and socioeconomic backgrounds, these details could not be captured in the transcriptions and therefore we could not document nor guarantee the heterogeneity of the patients. Furthermore, clinical encounters were limited to contraceptive care with a physician.

Whether the findings of our study apply to other healthcare decisions with other health professionals is not known.

Second, we did not explore the full range of data in the studies. For example in the CHAT study, we did not explore tensions between all the elements of the CHAT framework. We purposefully decided to focus our attention on the object because, as the object is the purpose of the activity and constructed from the interactions of all the other parts of the system, it has a central role in the activity system. Similarly, in the functional linguistics study featured in Chapter 5, we did not examine the joint agency between the patient and the other potential individuals or groups (e.g. friends, family, or the community writ large). We did not report on how the patient narrates the community in her decision making and suggest this is an area ripe for future research.

Finally, as mentioned in **Chapter 1**, methodologically, studies from a critical theorist or constructivist perspective would benefit from patients being involved in the design of the study. Although the patient voice was included in development of the patient interview guide and was prevalent in the data, patients were not included in the design of the study. In the Reflexivity section of **Chapter 5**, we do share that each of us has also been a patient at varying times and this would suffice for the purposes of the patient voice in designing the study.

Future Study Directions

As this dissertation demonstrates, education of health professionals around shared decision making has not suffered from a lack of interest in the topic nor appreciation of the importance of this skill. Health professions educators have developed many multicomponent interventions that have demonstrated effectiveness using available outcome measures. Our studies have demonstrated that interventions can benefit from an emphasis on health professionals eliciting a

greater depth and breadth of the patient's sociocultural context and how it influences their decision-making.

Future studies can use CHAT to further explore shared decision making around other complex topics and to evaluate how interventions potentially impact the discussions that a health professional has with a patient. This will clearly require qualitative approaches in addition to the more prevalent quantitative studies in the literature. Template analysis was a useful tool for our study and could be used in future studies as well, but it is certainly not the only methodology that would be appropriate. Our research has clearly demonstrated CHAT has tremendous value in examining shared decision making and we join a number of esteemed educational researchers who have utilized CHAT to tackle complex health professions education topics.²²⁻²⁵

Our research has also demonstrated that agency is an important concept to address in educational interventions for shared decision making. Health professionals may not fully appreciate the agentic role they play in shared decision making—not necessarily in making the decision, but rather in the process of facilitating the patient's agency and eliciting the information about the patient's sociocultural context that is critical to the decision-making process. Future interventions should incorporate didactics about this role and practice in demonstrating this skill. Further, evaluation studies need to determine if health professionals have successfully incorporated these skills in their work.

Finally, our research has provided educators with an introduction to the use of functional linguistic analysis to study shared decision making. Functional linguistic analysis can be used in the future either as a primary methodology to explore the words patients and providers use in clinical encounters around any type of medical decision or as an adjunct to analyze the impact of educational interventions that address agency.

Conclusion

“Care is what patients and clinicians create. You can read about dance, hear the music, and see a chart with the steps, but dancing starts and ends with the dancers’ bodies responding to the music and to each other.”^{26(p.135)} Dr. Victor Montori is one of the most passionate and tireless advocates for shared decision making and has dedicated his career to research, writing, and speaking about patient-centered care. This image of the relationship between patient and provider is the most compelling I have ever read. It resonates with me as a former ballet dancer, as a physician, and as a researcher and educator.

In his book *Why We Revolt*, Dr. Montori²⁶ shares personal essays to communicate problems with “industrial healthcare” and how it has stopped caring; he proposes “a revolution of compassion and solidarity, of unhurried conversations, and of careful and kind care.”²⁷ He goes on to write:

“Care is a fundamentally human act, one that manifests in the dancing art of conversations. This is the art of knowing what to say and when and how to say it. The art of drawing people into a productive conversation and bringing those conversations to a close. This is the art of silence. In conversations, clinicians demonstrate their competence and compassion as patients feel understood, seek understanding and skilled help, and find healing. A revolution of patient care must harness the power of conversation.”^{26(p.139)}

Shared decision making is indeed an ideal approach for patient-centered care. It has the potential to be a beautiful pas de deux, with both partners executing their individual roles, while also relating and supporting each other to achieve their shared goal. But, as we have demonstrated, shared decision making is a complex activity that involves manifold perspectives and inputs. Developing effective educational interventions for health professionals requires us to appreciate the complexity and see as our object that exquisite dance between two partners. The methodologies and findings shared in this dissertation will hopefully provide a solid foundation for that future work.

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