University of Alberta

The roles of culture and context in nurses' research utilization

by

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Abstract

In today's health care system, the majority of health care professionals work within complex organizational structures, yet the influence of these contexts on health care professionals' behavior has not been explored. Notably, organizational context has been consistently identified as an important factor in nurses' use of research yet it has not been adequately studied. In response to these knowledge gaps, the doctoral dissertation research reported here examined the roles of culture and context in influencing nurses' research utilization. The overall aim of this research was to determine the effects of the local, or nursing unit, culture and context on nurses' research utilization behaviors. The first paper is a conceptual article in which I explored the potential mechanisms through which culture might be significant in shaping the research utilization behaviors of nurses in acute care settings. In the second paper, I synthesized the existing nursing research on organizational culture with a twofold intention of assessing methods used to examine organizational culture and determine whether the organizational culture research points to reasons for both how and why culture is integral to the fostering of research utilization. In the third paper I conducted an ethnographic study of a pediatric intensive care unit to understand the influence of the organizational context on research use behaviors. The primary characteristic of this nursing unit was uncertainty and subsequently, I argued that *a context of uncertainty shaped the research utilization behaviors of nurses in this setting.* I identified four sources of uncertainty: (a) the precarious status of seriously ill

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patients, (b) the inherent unpredictability of nurses' work, (c) the complexity of teamwork, and (d) inconsistency in management. In the fourth paper I put forward strategies for nurse managers to reduce uncertainty in their context, thereby setting the stage for successful interventions to increase research utilization.

The combined findings of this dissertation demonstrate that organizational factors contribute to nurses' research utilization behaviors. Through my research, I was able to identify several ways by which organizational culture and context exert an influence on research utilization behaviors and to observe mechanisms by which uncertainty shapes research utilization behaviors.

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Dedication

I dedicate my dissertation to my children, Matthew, Alex and Sela who have filled my life with unconditional love, kindness and joy. My children's incessant inquisitiveness drives me to be forever questioning, wondering, and inquiring myself. Also, Kevin's unwavering support has been critical factor in getting me here today. Thank you.

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INTEGRATING CHAPTER

Introduction and Overview

In today's health care system, the majority of health care professionals work within complex organizational structures. Until recently, the influence of these contexts on health care professionals' behavior has not been explored, although it has often been mentioned as a significant factor in shaping behavior. In the ongoing discussion about how to increase the use of research to inform clinical practice, attention has recently been focused on the influence of context. A recent report by the Canadian Health Services Research Foundation (2006) on evidence-based practice concluded that context has an essential role to play in health care decisions. Identifying two types of scientific evidence, context-free evidence and context-sensitive evidence, the report acknowledges the importance of both in evidence-based decision making. In the quest to improve health care outcomes, the community has come to understand that the context in which decisions are made must be taken into account. This obvious gap in knowledge between the acknowledgement that context is important and the lack of empirical study of context in the research utilization and the larger fields of knowledge utilization and knowledge translation became the focal point for my doctoral program of research.

My Motivation

My motivation for conducting this research grew out of my knowledge of the research utilization field as well as my personal experience as a

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pediatric health care professional and university nurse educator. As a university-educated practitioner, I had been exposed to research and believed in the benefits of using it as a foundation for clinical decision-making. While practicing as a clinician, however, I experienced great frustration while trying to improve patient care by increasing my use of research findings. When I started working within a large tertiary health care center, I soon realized that many policies were not based on the latest research, and the organization did not support my attempts to change the status quo. Looking beyond my personal experience, I became intrigued with how new nursing graduates, who relied on research findings for clinical decision-making while in their nursing education, quickly stopped this practice when they started their first job. These experiences taught me that the onus for implementing research-based practice cannot rest entirely on the shoulders of individual practitioners. Rather, the influence of the environment (context) in which health care professionals work must be understood and subsequent interventions developed and targeted at this organizational level if resistance to using research in clinical practice is to be overcome.

Background

The tenor of the knowledge utilization field has been captured in a recent issue of *The Journal of Continuing Education in the Health Professions.* This special issue (Mazmanian, 2006) emphasizes the crux of the problem in this rapidly evolving and emerging field: despite the considerable investment of public funds into health care research, the transfer and uptake of

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these innovations is frequently a slow and unpredictable process (Agency for Health Research and Quality, 2001). The dynamic nature of the field of research utilization, and the larger field of knowledge utilization, has led to constant debate not just about terminology (Estabrooks, Thompson, Lovely, & Hofmeyer, 2006; Graham et al., 2006) but also about the conceptual models of the process of putting research into clinical practice. The very liveliness of these debates is an indication of the importance and vitality of this field. In this exchange of ideas, however, researchers have focused extensively on the evidence base but have neglected to examine the influence of the organizational context (Dobrow, Goel, & Upshur, 2004). Notably, organizational context has been consistently identified as an important factor in nurses' use of research (Brett, 1987, 1989; Crane, 1989; Pettengill et al., 1994), yet it has not been adequately studied (Estabrooks, 2001, 2003). Recently, nurse scholars such as Kitson and colleagues (Kitson, Harvey, & McCormack, 1998; McCormack et al., 2002; Rycroft-Malone et al., 2002) have begun to investigate more thoroughly the importance of organizational factors that shape or influence research utilization, so although nursing scholars have been successful in identifying features that influence research utilization, more sophisticated investigations into the role of context have not been completed.

Through the collective findings from nearly 50 in-depth case studies following attempts to introduce evidence-based practice, Dopson and Fitzgerald (2005) offered that context has an active and sophisticated role in

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the shaping of these initiatives. The essence of one of their main arguments is that context "trumps" evidence. Their idea is unique as until recently most of the emphasis in this field has been on the development of generic interventions to put research into practice with an underlying assumption that the interventions will not yield different results depending on the context. They believe otherwise and, consequently, have suggested that evidence-based health care change interventions are highly context dependent and are not likely to have generic effects. They tempered their perspective, however, by offering that they subscribe to a position where patterning or commonalities related to contexts can be discerned. In particular, they argued that the core dimensions of context that shape efforts to get research into clinical practice can be, and consequently need to be specified.

It is to this emerging subset of the research utilization field that my dissertation contributes. When I started my dissertation program, organizational context was mentioned in the literature as a significant factor but with little discussion and debate. However, during study three, and as a result of the emerging analyses during that study, I decided to shift my focus from organizational culture to the broader organizational context. This shift enabled me to capture the more structural aspects (e.g., leadership) of the unit studied in the ethnography. Recently, the arguments about the role of context have become more advanced. Dopson and Fitzgerald (2005), for example, have focused on the organizational context. The ideas that I have developed through my thesis will contribute to the literature in this area.

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Before describing my dissertation research, I will define key terms related to this work.

Key Terms

Context can be understood to refer to the overall environment or setting in which practice takes place (Kitson, Harvey, & McCormack, 1998; McCormack et al., 2002). From the perspective of the developers of the PARIHS framework (Kitson et al.) *context* is viewed as one of three elements essential to move research into practice – the other two are the nature of *evidence* and the mechanisms by which change is *facilitated.* Furthermore, within this framework, context has been divided into three core sub-elements: 1) an understanding of the prevailing culture, 2) leadership, and 3) evaluation (Kitson et al.; McCormack et al.). Dopson and Fitzgerald (2005) also view context as a key feature shaping the implementation of research into practice. They define contexts as a socially perceived and enacted multidimensional configuration of forces which interact in complex ways. Dopson and Fitzgerald argue that a more sophisticated and active understanding of context is needed in the organizational and research implementation literature to more fully understand the gap between research and its implementation. The relationship between context and culture is complex; however, an understanding of context as the specific environment in which utilization of research takes place facilitates a clearer understanding of *culture as a characteristic or one aspect of context (Kitson et al., 1998).*

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As I describe in the review paper outlined below (Paper Two), multiple conceptualizations of *organizational culture* are found in the literature on culture. Definitions of culture, while highly consistent within conceptualizations, vary, as would be expected, between conceptualizations. The main conceptualizations, using Hatch's (1997) three perspectives on organizational culture are: (a) modern, (b) symbolic-interpretive, and (c) postmodern. Briefly the aligned definitions of culture within these are (respectively):

(a) In the modern perspective culture is understood "as a variable to be manipulated to enhance the likelihood of achieving desired levels of performance from others within the organization" (Hatch, 1997, p. 231). In this perspective cultures are seen to be an attribute of the organization and organizations are conceptualized as concrete entities which can be understood through objective, scientific research.

(b) From the symbolic-interpretive perspective culture is "a context for meaning making and interpretation" (Hatch, 1997, p. 231). In the symbolic – interpretive perspective organizations *are* cultures.

(c) In the post-modern perspective, organizational culture cannot be simply characterized as harmonious and shared or full of conflict. Rather, in this perspective, consensus, dissensus and confusion coexist.

A limited number of organizational culture conceptual frameworks are used in nursing, the most common one being that of Schein (1992). Schein's

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work can be located most closely with in the modern perspective described above; however, Hatch (1997) revised Schein's framework to make it fit the symbolic-interpretive perspective. In Schein's framework, culture is viewed as manifesting itself at three hierarchical levels: 1) observable artifacts (what one sees when entering an organization); 2) values (the explicitly articulated norms, social principles and ideologies having intrinsic worth and importance in the organization), and 3) basic underlying assumptions (the deepest level or core of culture, providing expectations that influence perceptions, thoughts and feelings about the organization). In Schein's view artifacts are manifestations of values, while values are manifestations of assumptions. The three levels are connected and constantly shape each other in an iterative process. For the purposes of this dissertation, organizational culture was taken to mean the set of values, assumptions, and beliefs that shape and guide the behaviors of members of an organization (Schein, 1992).

Research use, or *research utilization*, is a multifaceted behavioral process largely occurring at the cognitive level. Given the complex, implicit nature of this concept, it is difficult to construct a definition that is both precise and comprehensive. For this dissertation, I interpreted research utilization as the "the use of research findings in any and all aspects of one's work" (Estabrooks, 1999, p. 277).

The Papers

This paper-based dissertation represents the output of a doctoral research program on the role of context in the field of research utilization and

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reflects the sequential development of ideas throughout my studies. The overall aim of this research was to determine the effects of the local, or nursing unit, context on pediatric nurses' research utilization behaviors. This doctoral research comprised three projects that led to four manuscripts for publication. The manuscripts have been formatted to the specifications of the journals to which they have been submitted. The first two manuscripts are foundational works. One is a conceptual article in which I explore the potential mechanisms through which culture might be significant in shaping the research utilization behaviors of nurses in acute care settings. In the second, I synthesize the existing nursing research on organizational culture with a twofold intention of assessing methods used to examine organizational culture (and thereby inform an ethnographic study) and determining whether the extant organizational culture research points to reasons for both how and why culture is integral to the fostering of research utilization. These first two studies significantly influenced my thinking in terms of how I designed study three. Specifically, through the results of the critical review, particularly in terms of the lack of consensus in the field on how to most effectively 'measure' culture, I decided to conduct an interpretive study to explore the role of organizational culture of a nursing unit in shaping research utilization behaviors.

I began study three intending to examine the role of culture (based on what I learned in papers one and two); however, as I analyzed my data context emerged as the more appropriate and useful phenomenon of focus for this

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study. In this work, I use the term *context* as the overarching concept within which organizational culture is one aspect. This perspective is used by others in the research utilization field, such as Kitson and colleagues (1998), who see culture as one sub-element of context. In this third paper of the thesis, I report the findings of the ethnographic study and elaborate on the role of context in shaping research utilization behaviors by suggesting that some level of particular organizational qualities or features (specifically certainty) must be present for a clinical environments to be receptive to interventions to increase and sustain the use of research by its clinicians.

Building on the findings of this study, I developed paper four, in which I propose strategies for nurse managers to optimize clinical environments by addressing uncertainty in the clinical context so that research utilization efforts are more likely to be successful and to be sustained. In this paper, I suggest that decreasing or managing uncertainty in the context is a prerequisite to research utilization interventions.

The relationships among the three projects and the four papers resulting from this research are illustrated in Figure 0.1. Together, these three studies and four papers constitute a thesis that forms the basis for an ongoing and future program of research.

In the following paragraphs I provide a short summary of each of the four papers and elaborate on the connections between them.

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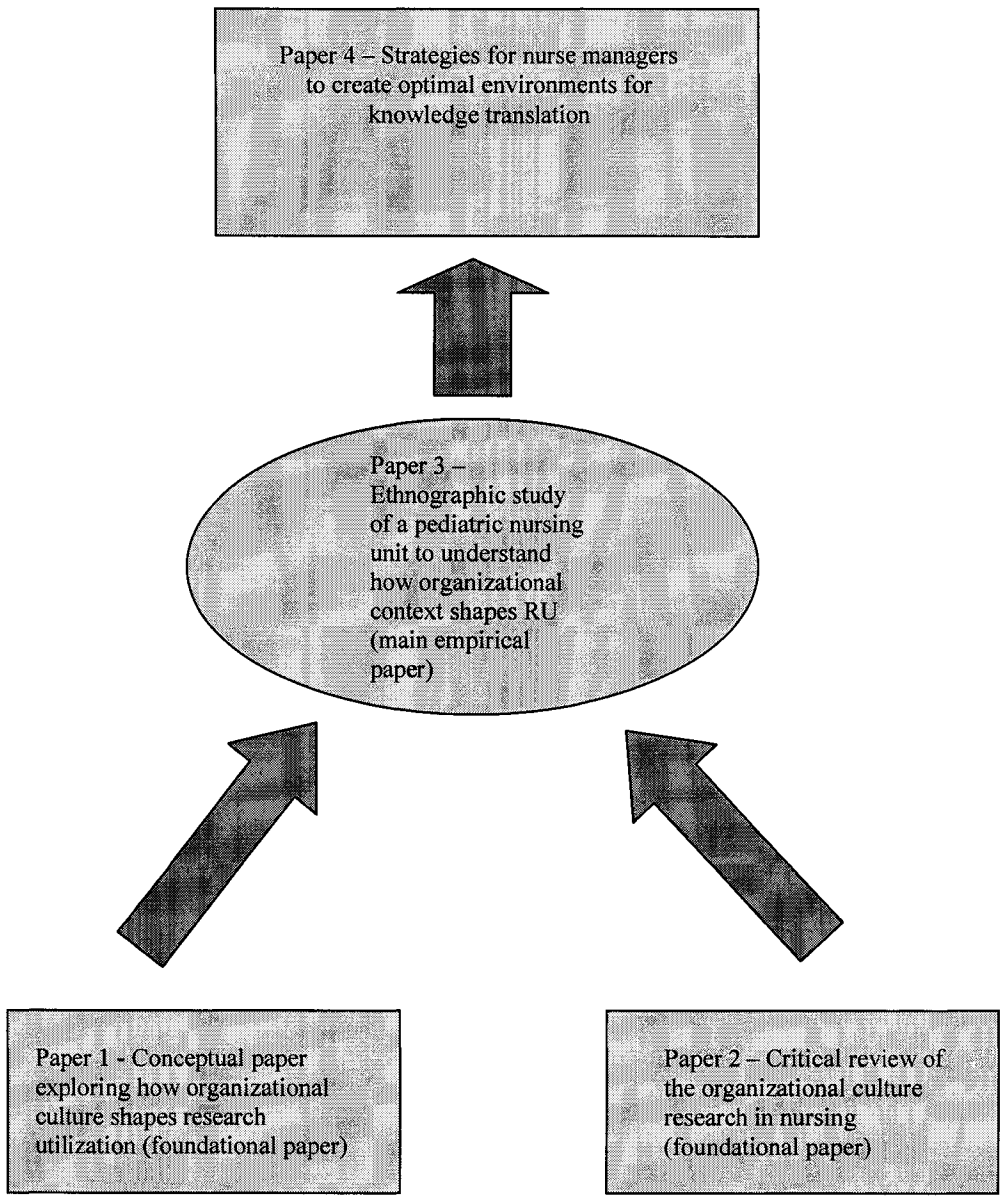
Figure 0.1. Relationships among the four dissertation papers



Paper One: Understanding How Organizational Culture Shapes Research Use

In this conceptual paper, through the application of organizational science theory and exemplars from acute care nurses' work, I develop a way

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of thinking about how organizational culture might shape research use. The main finding from this foundational paper is that organizational culture guides and shapes the research use behavior and attitudes of practitioners by providing a context in which particular ideas, activities, people, or events are valued more highly than others. Furthermore, I suggest three specific ways in which organizational culture affects practitioner research use: (a) it influences how work gets completed in an environment, as well as suggesting what types of work activities are appropriate; (b) it determines what types of knowledge are valued and used in practitioners' work; and (c) it creates settings or contexts for bringing people together for interactions. I also propose leadership strategies that managers might use to facilitate evidence-based practice. Through an understanding of how organizational culture can either hinder or facilitate practitioners' research use behaviors, managers are well positioned to leverage culture to improve evidence-based practice sustainability in their organizations.

This paper is published as:

Scott-Findlay, S., & Golden-Biddle, K. (2005). Understanding how organizational context shapes research use. *Journal of Nursing Administration, 7/8*, 356-362.

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Paper Two: A Critical Review of the Organizational Culture Research in Nursing

A next logical step was to systematically explore the organizational culture research in nursing as I continued to grapple with the role of culture in shaping research utilization behaviors. In this second foundational paper, I synthesize the research on organizational culture in nursing to (a) review theoretical and methodological characteristics of the studies in the final dataset and (b) draw inferences specific to the state of knowledge in this field. Using the findings from Mark's (1996) review as a benchmark, I demonstrate significant advances. Comparing the number of studies in my review ($N = 29$) with Mark's ($N = 12$ studies in both health services and nursing research) suggests solid progress over a 9-year period. Yet, considering the widespread interest in the topic of organizational culture, evident from the results from my initial search strategy (nearly 7,000 hits), the number of empirical studies is small, suggesting that much of the discussion about organizational culture is not based on research evidence.

In this article, I categorize studies using Hatch's (1997) three perspectives of organizational culture: (a) modern, (b) symbolic-interpretive, and (c) postmodern. In classifying the studies, I found that modern perspectives dominated ($n = 22$), but symbolic-interpretive approaches were an emerging group ($n = 6$); one study was unclassifiable. My findings expand current cultural instrument reviews by pinpointing tools that have previously been overlooked and identifying ongoing theoretical and methodological

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challenges for researchers. Through completing this review I learned that there was little agreement in the discipline as to the most effective tool to measure culture and that 'measuring' culture was a highly debated practice in nursing and more broadly in the organizational sciences. These findings, in combination with the emergence of symbolic-interpretive perspectives of organizational culture research (Hatch's framework) influenced how I decided to explore culture's role in research utilization behaviors in the ethnographic study – that is, by means of an interpretative design to overcome many of the challenges that I identified in the critical review.

This manuscript has been accepted (April 4, 2006) with revisions: Scott-Findlay, S., & Estabrooks, C.A. (accepted with revisions). A critical review of the organizational culture research in nursing. *Journal of Advanced Nursing.*

Paper Three: A Context of Uncertainty: How Context Shapes Nurses' Research Utilization Behaviors

Building upon what I had learned in papers 1 and 2, I conducted an ethnographic study of a pediatric intensive care unit to understand the influence of organizational (unit) culture on nurses' research utilization behaviors. Up to this time, I had theorized potential ways that culture could shape research utilization behaviors and had critically explored all of the organizational culture research in nursing. Through these two initial studies I learned that the previous claims that culture was significant in facilitating research utilization were accurate; however, the foundational work fell short

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of having the potential to uncover the mechanisms and processes through which culture was important. This gap necessitated the ethnographic study.

To understand the influence of the organizational culture of the nursing unit, I conducted an ethnographic study of a pediatric intensive care unit. The primary characteristic of this nursing unit was uncertainty. Consistent with Papers One and Two, I started to explore the role of organizational culture; however, in the course of data analysis and interpretation context emerged as the dominant phenomenon. Thus, I shifted to the concept of context. Through shifting from a cultural understanding of uncertainty to a more structural (aligned with context) understanding of uncertainty, I was better able to handle data analyses and interpret my findings. Subsequently, I argued that *a context of uncertainty shaped the research utilization behaviors of nurses in this setting,* and I identified four sources of uncertainty: (a) the precarious status of seriously ill patients, (b) the inherent unpredictability of nurses' work, (c) the complexity of teamwork, and (d) inconsistency in management.

The context of uncertainty affected all aspects of the unit, particularly the nature and structure of nurses' work. In this setting nurses had come to perceive that the behaviors expected of them were determined arbitrarily by physicians and managers in charge and consequently, they had little confidence in their own judgement. One mechanism by which this affected nurses' willingness to use research was in the nurses' reaction to the uncertainty; in an attempt to reduce uncertainty, they developed a significant reluctance to step outside of highly structured, routine and largely physician-

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ordered nursing care. They were not confident in their own decision-making and so they elected to not make decisions; their practice was not based on research but on an unusually high allegiance to routine with little scope for autonomous decision-making even on matters clearly within the explicit domain of nursing practice.

The first two sources of uncertainty are inherent in the patient population and setting and are not amenable to change. However, the other two sources of uncertainty are potentially modifiable and open up the possibility of effective strategies that center on decreasing and managing uncertainty – the substance of Paper Four. Furthermore, my findings add new information to the context dimension of the Promoting Action on Research Implementation in Health Sciences (PARIHS) framework (Kitson, et al., 1998), one of the most influential theoretical frameworks in the field.

This paper has been prepared for and is ready for submission: Scott-Findlay, S., Estabrooks, C.A., Golden-Biddle, K., & Allen, M.N. *A Context of Uncertainty: How Context Shapes Nurses' Research Utilization Behaviors. Research in Nursing & Health.*

Paper Four: Dealing With Uncertainty: Optimizing Environments for Knowledge Translation

In this paper I put forward strategies for nurse managers to reduce uncertainty in their context, thereby setting the stage for successful interventions to increase research utilization. Referring to the findings reported in the third paper, I propose that nurse managers can play an integral role in

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optimizing clinical environments so that knowledge translation can occur. Contextual uncertainty has not previously been identified in the literature as a factor in research utilization. I propose strategies that may prove useful in decreasing the uncertainty arising from management inconsistencies, potential strategies ranged from the creation of interdisciplinary forums for knowledge exchange to enhanced access to unit policies through the availability of different distribution channels. This paper also serves as a knowledge translation product for decision makers, in that the findings from the empirical study (Paper Three) have been transformed into discrete, actionable items for nurse managers.

This fourth paper is being prepared for submission:

Scott-Findlay., S. Dealing with uncertainty: Optimizing environments for knowledge transfer. *Canadian Journal of Nursing Leadership.*

Conclusion

The combined findings of this sequence of papers in my thesis demonstrate that organizational factors contribute to nurses' research utilization behaviors. First, findings from Paper One point to organizational culture's shaping research utilization of practitioners by providing a context in which particular ideas, activities, or events are valued more highly than others. Second, the findings from Paper Two, the critical review, demonstrated that in nursing there is increasing interest in organizational culture research, yet to date, researchers have not explored the role of culture in shaping research

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utilization behaviors. Third, findings from the ethnographic study (Paper Three) suggest that the success of research utilization efforts rely heavily on the context in which they are attempted. In this study, I also discovered that uncertainty had a powerful effect on much of the behavior in the setting that I studied, and I went on to discover four sources of uncertainty. Finally, the findings from Paper Four emphasize that decreasing uncertainty might be precursory to more traditional research utilization interventions. Consequently, I provided potential strategies for nurse leaders, such as the creation of interdisciplinary forums for the discussing and sharing of knowledge that might prove useful in decreasing uncertainty in their clinical environments.

Contribution to Nursing and Research Utilization Theory

Taken as a whole, this dissertation has contributed new knowledge to several theoretical and research domains within nursing and the research/knowledge utilization fields. My findings have the strongest relevance for the nursing research utilization literature. In particular, the new knowledge that I have developed regarding the role of context is significant in four primary ways. Through my conceptual work (Paper 1), I offer one of the first descriptions in the published literature of how organizational culture might influence research utilization behaviors. This is important because organizational culture is consistently cited albeit with little if any empirical support as a factor in the establishment of research-based practice. Next, my critical review of the organizational culture research in nursing is a solid

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contribution to the field, as it demarcates the progress that has been made over the past 9 years, and categorizes cultural studies by cultural conceptualization. Third, in the same article, I recommend suggestions for advancing organizational culture research in nursing. My most significant contributions come from the ethnographic study. Fourth and most importantly, the findings of my ethnographic study suggest that uncertainty is a powerful mechanism for shaping practitioners' behaviors, in this case, research utilization behaviors. Through studying the role of context in a setting characterized by significant levels of uncertainty, I was able to disentangle the role of context and some of the mechanisms by which it shapes research utilization. The notion of uncertainty as a potential contextual factor influencing research utilization has not been previously reported and opens up opportunities for future research studies, such as revising and testing existing research utilization frameworks to possibly include uncertainty, measuring uncertainty prior to interventions, and developing interventions to target it. While my work was unable to determine if uncertainty is a key contextual factor in many health care settings, through exploring the context of a nursing unit which may have had unusually high levels (even extreme levels) of uncertainty I was able to 'see' the mechanisms by which it shapes research utilization behaviors. I believe that this is the most significant contribution that I have made in this dissertation.

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Paper 1

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In the climate of evidence-based practice, practitioners are expected to use research in their day-to-day clinical work; however, it is generally accepted that much health care is not based on research. The authors suggest 3 specific ways that organizational culture affects practitioner research use and propose leadership strategies that managers may find facilitate evidence-based practice. Through understanding how organizational culture can both hinder and facilitate practitioners' research use behaviors, managers are well positioned to leverage culture to improve evidence-based practice sustainability in their organizations.

It is generally accepted, though not well substantiated, that the majority of practitioners do not base their practice on research. The magnitude of the lack of research use is demonstrated from studies in the United States and the Netherlands that suggest 30-40% of patients do not receive care complying with current research evidence and 20-25% of the care provided is not needed and may be potentially harmful.[1] Health care decisions makers throughout North America and the around the globe are increasingly interested in rising to the challenge of making their organizations evidence-based. This is based on the belief that if practitioners base their decisions on the latest research patients will receive the most effective care. Nurse managers are ideally positioned organizationally to facilitate evidence-based practice and therefore must be instrumental in this clinical practice paradigm shift.

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Consistent with the era of personal and professional responsibility, the reluctance of practitioners to use research has been attributed largely to individual attributes such as the practitioners' inability to understand research (a lack of research skills and inadequate educational preparation), age and attitude toward research.[2-5] Subsequently, the majority of the research has centred on trying to understand the barriers and facilitators to research utilization, that is, what influences the individual practitioner to use research.[6-10]

We argue that attempting to understand research use as an individual issue is misguided. Importantly, the majority of health care professionals work within very complex organizational structures. For this reason, we believe that directing future energies toward developing a better organizational-level understanding of practitioners' research use is a promising approach. Up to this time, several scholars have proposed that the organizational context is an important factor in facilitating the use of research[2,8,11,12] and have started to investigate its role,[13] However, they have been unable to provide specific detail as to *how* organizational context matters for research use. In this paper we tackle this gap in our understanding.

We develop the idea that there are organizational reasons that shape practitioners' application of research to practice. We focus on understanding how one aspect of the organization, culture, shapes research use. Organizational culture has been suggested as an important influence in research use.[12-17] Here, we augment this work by suggesting organizational

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culture shapes research use of practitioners by providing a context where particular ideas, activities or events are more highly valued than others. Through applying theory from the organizational sciences and drawing on examples of typical events in acute care nurses' work, we develop a way to think about *how* organizational culture may shape research use. Prior to proceeding we need to briefly define our terms research use and culture.

What is research use? Research use or research utilization, as it is often termed, is a specific form of knowledge utilization.[14,18,19] Research use is the use of research findings to support decisions. It is a complex process that occurs primarily at the cognitive level. The process of using research is a situated behaviour or practice enacted in the context of the social communities that give it life.[20,21] Research-based information is read, discussed, critiqued and potentially used in decision-making. Currently the health sciences sanction *research-based knowledge* as the most legitimate form of knowledge and the evidence-based practice movement is testimony to this. The use of research as a basis for decision-making is seen as being rational and objective, thereby leading to better clinical practice.

What is organizational culture? There are two distinct views of organizational culture[22-25] that prevail in the organization theory literature. Some researchers see organizational culture as a variable within the organizational context, which can be manipulated or changed[24, 26] to achieve better control and to improve organizational effectiveness. The goal of this

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approach is to understand the relationship between culture and other facets of the organization (such as structure and leadership) in order to improve organizational performance. Others see culture as a means to conceptualize the organization.[22,24,27-31] in this view, organizational culture and the context cannot be untangled; in essence – culture is what the organization *is*. Practitioners implicitly draw on the organizational culture to understand how things operate within the organization and culture implicitly shapes action. Thus, the influence of organizational culture on organizational practitioners can be seen at the *behavioral level.* It is through culture, the taken-for-granted assumptions, shared beliefs, meanings, norms and values, that action or behavior is guided or influenced. From this perspective, organizational culture is a socially constructed phenomenon, expressed in the patterns of behaviors (including physical, cognitive, and affective behaviors) of its practitioners.

How does organizational culture shape research use? To develop an understanding of how organizational culture shapes practitioner research use we drew on the work of Edgar Schein, an organizational scholar. Then, we used his theoretical framework to attempt to better understand research use in acute care nurses' work.

Schein[32] developed a highly influential conceptual framework for analyzing and understanding an organization's culture that suggests organizational culture manifests itself at three fundamental levels, represented in a hierarchical fashion: 1) observable artifacts; 2) values; and 3) basic

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underlying assumptions. Artifacts, the most accessible elements of culture, are what one sees when entering an organization. Values are the explicitly articulated norms, social principles and ideologies considered to have intrinsic worth and importance within the organization. And finally, assumptions, the deepest level or core of culture, provide expectations that influence perceptions, thoughts and feelings about the organization. Assumptions are the taken-for-granted beliefs about reality and human nature that practitioners of an organization share.

In Schein's view, assumptions, values and artifacts are linked in that artifacts are manifestations of values, while values are manifestations of assumptions, in essence, there is an iterative, back and forth nature amongst the three levels. The iterative nature of his framework captures the dynamic nature of culture, and in this case, the health care system. As we all know, healthcare is a complex and dynamic entity that must recurrently adapt to societal priorities and the need for fiscal responsibility. Organizational members, in this case, practitioners, draw on the organizational culture to understand how things operate. This suggests that practitioners actively redesign and reorganize their work, decision-making, behaviors, and attitudes to respond to the currently held ideas, realities and values in the environment. Therefore, the significance that people assign to events, ideas or routine activities is in constant flux.

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According to Schein, fundamental assumptions are at the core of culture. In the development of his model, he borrowed from work in cultural anthropology[33] and applied it to organizations. Schein[32] identified six dimensions of organizational culture, which can help us understand them. These dimensions are: 1) the organization's relationship to its environment; 2) the nature of activity; 3) the nature of reality and truth; 4) the nature of time; 5) the nature of human nature and 6) the nature of relationships. These dimensions provide the foundation or essence of an organization's culture.

Applying the cultural framework to research use and acute care nursing practice

Considering aspects of Schein's work illustrates how culture can affect research use. More specifically, drawing on this framework, we can identify three cultural reasons why acute care nurses might not use research in practice. From Schein's theory we drew specifically on one dimension, the nature of human activity. We will discuss Schein's theory and how when it is applied to acute care nurses' work that it can explicate organizational culture's influence on practitioners' research use behaviours.

We chose to apply this dimension of Schein's work because the provision of health care services to clients (activity or work) is a central goal in healthcare organizations. A culture's basic assumptions about the nature of activity shape the structuring of work. We will demonstrate that the assumptions underpinning activity or work in an organization guide: 1) how

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work gets completed in an environment, as well as suggesting what types of work activities are appropriate, 2) what types of knowledge are valued and used in practitioners' work, and 3) the creation of settings or contexts for bringing people together for interactions.

The approach to work. First, the organizational approach to work influences how practitioners use or don't use research in their practice. Drawing on one of Schein's cultural assumptions, the nature of activity, there are two extreme positions as to how work is construed and valued. [32] An organization may be oriented either towards doing or towards being. A doing orientation focuses on tasks, implicitly values working hard to achieve an outcome, and is therefore consistent with an efficiency value set. An orientation towards being focuses on the here and now with an acceptance of an inability to change an outcome. Practitioners feel that "things that happen are beyond our control."

Applying this idea to current health care organizations in general and more specifically to acute care nurses' work we see a strong preference for doing. Acute care nurses' need for doing is evidenced through the importance of moving patients through the health care system as quickly as possible. Such indicators as decreasing lengths of stay and increasingly complex procedures being done in outpatient settings are evidence of this typical assumption in acute care nurses work. In today's healthcare environments, doing is valued

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over reflection, busy is valued over sitting, and a fast pace is valued over a slower pace.

Transposed directly onto acute care nurses' work, doing is what is valued. Considered further, nurses are not expected to reflect upon their work and keep up to date at work, but rather that is something for nurses to do on their own time. A common expectation is that acute care nurses' time at work is for getting things done. This expectation is illustrated through the typical shift that happened in many health care organizations in the last decade. This shift was propagated in response to reducing health care costs and consequently many of staff position and resources that were cut during this time were related to professional development and ongoing nursing education. Consequently since that time, there have been decreasing resources for in-services and continuing education. The common message is that nurses must do this on their own time.

Implicitly, this decision may be interpreted as these activities are not valued because they are not happening during in the context of nurses' professional responsibilities. The valuing of doing is further stressed in many of the workload measures utilized in acute care settings as value is placed on the very physical, highly observable aspects of nursing care. Moreover, the reality in many acute care healthcare organizations is that of higher patient practitioner ratios, increasingly complex medical conditions and the ever increasing nursing shortage, thereby adding magnitude to this mindset. In many acute care settings there exists an implicit valuing of doing and busyness

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that is iteratively created and perpetuated by practitioners, administration, and the public.

Yet, using research requires opportunities for practitioners to reflect on and in their practice and time to keep abreast of emerging research in their areas. To understand how particular values associated with the nature of acute care nurses' work assumption shape research use, nurse managers can ask questions such as: How is "being busy" shaping the opportunities nurses have to use research? How can activities such as reading a research article or reflecting on one's practice be introduced in a unit and organization that values 'busyness'? What constitutes "real work" in the unit – and how does research use fit in to this perspective? How would colleagues, who are left with the "real work" of the unit, view a nurse who spent time looking up information on the Internet? How can a unit promote group as well as individual learning from sponsoring attendance at conferences?

In light of Schein's cultural theory, then, the emphasis on evidence-based practice (or research-based practice) in the context of many acute care health care organizations creates a tension between nurses *doing* – specifically, performing tests and procedures, giving medications, monitoring patients and *being*. In the prevailing *doing* culture of the current health care context, nurses looking physically busy is highly regarded and some may argue rewarded. By contrast, using research in practice, as conceived in

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evidence based practice, requires time for *being* as it involves reflection, time for accessing, reading and critiquing the latest studies.

Types of knowledge. Second, the types of knowledge that are used and valued in the acute care setting are shaped by the nature of the nurses' work. Practical knowledge derived from experience is more associated with a *doing* orientation to work than knowledge reported in research journals. For example, the twenty-year veteran nurse on a neonatal unit may decide not to rely on certain findings derived from published research because they do not accord with her experience. Similarly, other nurses may be positively acknowledged for using the veteran nurse's advice or balked in using research. This may be evidenced in the reactions of fellow practitioners or leaders. Thus, culture shapes what knowledge is perceived as important or relevant through the colleagues' normative responses to choice and use of particular types of knowledge (e.g., reward, punishment, embarrassment, success) in respective nursing units.

Furthermore, it is reasonable to consider that academic health care settings would be more valuing of research use as compared to health care settings that are not university affiliated because of the respective organizational culture. One place where the values of the setting are reflected, transmitted and enforced is in routines such as patient rounds. There, implicit aspects of the organizational culture are rendered visible as practitioners explain or instruct other practitioners in "proper" procedures to be followed –

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"the way we do things around here," such as who gets to participate in rounds, and who is allowed to speak during rounds. In many cases rounds serve as an important teaching venue. In this context, practitioners 'model' their behavior for future health care professionals. Rounds are an example of cultural artifacts in Schein's framework: they embody and transmit the values of the organization. If practitioners value practical experience rather than research, then they will communicate this value in this venue, perhaps not explicitly, but by way of the course of actions and in their rationale for their decisions. The values underpinning these routines, such as rounds, can be so powerful that they prevent research from being used or even considered.

The structure of work. Third, the structuring of practitioners' work shapes how they use or don't use research. Nurse managers and other healthcare decision makers design work in accordance with basic assumptions about work. When acute care settings are oriented towards *doing*, then less "space" will be created in systems, forums and procedures for interacting and collaborating.[34] For example, in some hospitals, rounds have been restructured so that nurses need not attend but instead the charge nurse represents all of the nurses on the unit. This change has been instituted so that the nurses can continue with their "work" even though rounds are arguably the most important venue for interdisciplinary exchange. In other words, the inherent assumption here is that attending rounds is not work, but rather an unnecessary aspect of nurses' work.

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The assumptions concerning both the nature and structure of acute care work shape who has access to forums such as rounds, who contributes in rounds and how individuals collaborate in clinical practice, and so forth. Also, in many intensive care environments the nurses are expected to remain at their assigned patient's bedside for the duration of their shift. Therefore, if resources such as computers are not physically accessible, both in respect to sufficient numbers of equipment and the placement of the computers, the structure of nurses' work is a direct impediment to research use and the associated behaviours of reflection and interaction. Also considering the assumptions implicit in the structuring of many acute care nurses' work suggests that using research in practice is not even an expectation of nurse managers and administrators.

The busyness value. Using Schein's framework and focusing on one dimension about the nature of work or activity, it is clear that deeply held assumptions about acute care nurses' work affect these nurses' behaviors and actions, in this case research use behaviors, in the organization. This is because culture provides unconscious and taken-for-granted prototypes for how practitioners behave and interpret experiences. The values and deeply held assumptions about the nature of nurses' work (e.g., structure, nature and pacing) shape practitioners' actions or behaviors. Therefore, if *doing* is valued, the activities necessary to use research, that is reflecting on one's practice,

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reading research, and networking with others will not be considered "real" work and therefore, will be discouraged implicitly and perhaps explicitly.

Considered as a whole these three specific ways that organizational culture affects practitioner research use render explicit how the value of being busy (i.e., "doing" is valued) shapes acute care nurses' choice of activities while they are at work. Activities such as reading research and looking up new information on the Internet do not fit with a busyness value set, as these activities are not 'doing' work. Indeed concrete consequences made by nurse managers and supervisors such as the "floating" of a staff member to another unit that "looks busier" may actively punish such reflective behavior. The value for nurses being busy may also be translated into tangible aspects of the organization. For instance, within many acute care health care organizations, a common staff position that enforces the "busyness" or efficiency value is the resource or hospital bed utilization coordinator. These staff are responsible for the ensuring the most efficient patient flow through the hospital. Their focuses are patient volumes, wait lists, and the most efficient allocation of staff; unfortunately, professional development of individual practitioners and the application of research in practice are not outcomes of interest for these professionals. Rather their decisions are commonly guided with lengths of stay, discharging patients and keeping costs to a minimum in mind.

These valued outcomes shape the behavior of acute care nurses and other practitioners – in other words, putting research into practice is not

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valued, rewarded or monitored. Commonly, this position is coupled with resource utilization meetings, which further emphasize the focus on "busyness." In this organizational culture, then, the reality is that reading, reflection, and other related behaviors, which encourage the acquisition of new research-based knowledge, are regarded negatively. These examples illustrate that moving toward research-based practice is an organizational challenge where all members, from the top of the organizational hierarchy down are affected. Senior administrators, nurse managers and other administrative personnel must value research in order to facilitate this shift.

Returning to Schein's work, practitioner thinking and activity are further shaped through the artifacts that practitioners select to symbolize (or make meaning of) their behavior. Artifacts both reflect and shape culture. Consider an artifact common in many acute care health care organizations, the publicly visible whiteboard. The whiteboard displays all of the room numbers and names of the patient occupants. Although the whiteboard serves as an important organizational communication tool for staff, it is also a symbol to explain practitioners' behaviors.

The whiteboard commonly is used to uphold the value of "busyness" as it publicly justifies, to hospital administration and the general public, the level of activity and number of staff on the nursing unit. The whiteboard also conveys that practitioners must justify the number of staff on the unit to others, including organizational administrators and the public. Considered

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another way, it may also imply that tools such as whiteboard must be highly observable as particular groups of practitioners behaviour needs to be overtly monitored.

Strategies for nurse managers

We have three strategies that nurse managers may find useful in facilitating the move toward evidence-based practice. First, to this point, we have shown how artifacts uphold or reflect a culture's values and assumptions; the underlying theme has been consistency. However, the iterative nature of Schein's framework is especially useful in alluding to the conflict that may occur when a proposed change is in opposition to extant values and assumptions. Therefore, the first strategy is that if a major change is implemented nurse managers and other healthcare decision makers must consider the congruent adaptation in the organization's values and assumptions.

The culture of an organization is like a hanging mobile. When one area of the mobile is touched, the entire mobile moves to recover stability. Consequently using our model of culture, the move toward research use will challenge the all-encompassing "busyness" value set and will demand its replacement with a value set where ongoing reflection and learning are expected and rewarded.

Nurse managers and healthcare executive need to know that this shift is a transformational change and it will take time for the organization and its

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employees to recover stability. This is not to suggest that practitioners using research is not efficient, rather the contrary and this point leads directly into the second strategy for nurse managers, that being the need for them to readjust their outcomes of interest. Healthcare decision-makers currently tend to look at evaluating outcomes in the very short term yet realizing the benefits of using research may take longer. That is, the benefit of using research may go beyond the patient's current hospital admission. Hospital administrators' focus tends to be on decreasing the current length of stay, rather than a critical, more long-term evaluation of the health of the patient.

Our final strategy is related to the fact that replacing the value of 'busyness' is neither an easy task for nurse managers nor one to be taken lightly. Certainly the debate on whether to launch this change could take years. From Schein's theory, we can see that a change made that is consistent with existing organizational assumptions and values, an incremental change, will be easier to implement. If we take this insight, then a third – perhaps interim – strategy to facilitating research use emerges.

Using this third approach nurse managers would implement research activities into the regular work on the unit. That is being busy would now incorporate and be consistent with research use in some respect. For example, placing concise research-based information about the importance of adequate acute pain management in post-surgical patients in the medication room, a place where nurses go routinely or restructuring the physical space of a

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nursing unit and installing more sinks in convenient locations and purchasing Microsan waterless hand sanitizing products to encourage practitioner hand washing. This information while stating the research-based benefits of adequate pain management (e.g., decreased risk of infection post surgery, shorter lengths of stays, etc.) and adequate and frequent hand washing it also "fits" with the extant busyness value set.

The benefit is that the information does not require reworking of the structure of work, does not detract from the value of busyness and takes the onus off of the individual nurse to read research. Thus, this final approach requires less transformational change as it shifts the onus from individual nurses to the organization, specifically nurse managers. In this case, nurse managers need to know more about unit and organizational cultures (e.g., how to present the information, etc.) in order to develop creative approaches for putting research findings into acute care nurses' clinical practice.

Conclusion

With enormous pressure on practitioners to use research in their practice, few resources exist to facilitate practitioners' clinical practice paradigm shift. We argued that there are organizational reasons for why practitioners do not apply research to practice. In particular organizational culture is important. Through overlaying typical events in acute care nurses' work with theory from the organizational sciences we develop a way to think

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about how organizational culture shapes practitioners' use of research in practice.

Overall we claim that organizational culture guides and shapes the behavior and attitudes of practitioners by providing a context where particular ideas, people or events are more highly valued or deemed of worth that others. Thus, explicit norms, artifacts and patterns of thinking and behaving (action) are manifestations of an underlying meaning system. We have outlined for nurse managers three specific ways that organizational culture shapes practitioners' research use behaviors and have proposed leadership strategies that administrators may find useful as they attempt to meet the challenges of an evidence-based health care climate.

Organizational culture provides a useful lens for nurse leaders to understand the integral role of context in the move toward evidence-based practice. Understanding the culture of an organization is an important approach to explain the behavior of the practitioners. Therefore, nursing leaders are charged with the responsibility to reflect upon the assumptions and implicit values underpinning their organizations. Grasping the values that underpin behavior is essential in the move towards using research in clinical practice.

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Paper 2

A critical review of the organizational culture research in nursing

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A CRITICAL REVIEW OF THE ORGANIZATIONAL CULTURE RESEARCH IN NURSING

Background

Today's health care professionals face demands for increased accountability and transparency in their decision-making at clinical practice and policy levels. This demand is justifiable given that at least 30-40% of patients do not receive care premised on current scientific evidence and that 20% or more of health care provided is not needed or potentially harmful to patients (Grol & Grimshaw 2003). The use of research in clinical practice is often suggested as a mechanism to enhance transparency in decision-making, to overcome unwanted variation in individual clinician decision-making and to improve patient and system outcomes (Sackett et al. 1996). While using research in practice is often proposed as a solution, statistics such as those cited above suggest a gap between optimal practice recommendations (research) and what is actually done in health care (practice). This research-practice gap is essentially a failure of implementation, that is, a failure to implement research in practice (Allmark 1995, Fealey 1997, 1999). Overcoming the challenges of implementation requires a detailed understanding of several factors including individual practitioner hurdles, the context where decisions are made, and the barriers to change (Grol 1997).

The nursing discipline has a rich 30-year history in research utilization, (Estabrooks et al. 2004a, Estabrooks et al. 2004b). However, despite this

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history, scholars remain uncertain as to what influences research utilization. Until recently, the bulk of the scholarly effort in nursing was invested in attempting to understand research utilization influences at the individual level rather than at the organizational level. A systematic review of individual determinants of research utilization, (e.g., Estabrooks et al. 2003) found little consistency in research findings regarding which individual factors predicted research use. Further, when individual determinants have been studied, investigators have frequently studied determinants that are not amenable to change (e.g., age, gender, years of nursing experience). Shifting focus toward studying organizational determinants of research utilization is important given that the majority of health care professionals work in complex organizations. Yet, relatively little is known about organizational influence on providers' behaviors, in particular research use behaviors. However, in nursing one organizational aspect, organizational culture, is increasingly cited as a significant influence on the use of research by clinicians (Kinnunen 1988, 1996, Stiefel, 1996, Kitson et al. 1998).

As part of an ongoing program examining the determinants of research utilization for nurses, we undertook a review of nursing organizational culture studies to determine the state of the science of this body of literature. The overarching objectives of this study were to 1) review theoretical and methodological characteristics of the studies, and 2) draw inferences specific to the state of knowledge in this field.

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What is organizational culture?

Organizational culture is not consistently described in the literature. Multiple definitions of organizational culture exist with many of them centering on enduring attributes of culture such as values, assumptions and beliefs. Organizational culture gives a sense of what is valued and how things should be done within the organization. It can be thought of as the 'normative glue' in organizations that preserves and strengthens the group through maintaining equilibrium (Sleutel 2000). Also it is a sense-making and control mechanism that guides and shapes the behavior and attitudes of an organization's members (Weick, 1995, Robbins 1996). Rooted in anthropology, the concept of culture goes back centuries. Organizational culture research can be traced back to the 1930s (Trice & Beyer 1993). The concept began to receive serious attention in the organizational sciences in the 1980s in response to works by Peters and Waterman (1982) and Ouchi (1981). These scholars began linking culture with organizational performance and outcomes. In nursing, the term organizational culture first appeared in 1986 (Del Bueno & Vincent, 1986).

There are a limited number of organizational culture frameworks in the literature. One of the more commonly cited frameworks is that of Schein (1992). In Schein's framework, culture manifests itself at three fundamental levels, represented in a hierarchical fashion: 1) observable artifacts; 2) values; and 3) basic underlying assumptions. Artifacts, the most accessible elements

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of culture, are tangible or visible aspects of cultures. Values are the explicitly articulated norms, social principles and ideologies considered to have intrinsic worth and importance within the organization. And finally, assumptions, the deepest level or core elements of culture, provide expectations that influence perceptions, thoughts and feelings about the organization. Assumptions are the taken-for-granted beliefs about reality and human nature that practitioners in an organization share. In Schein's view artifacts are manifestations of values, while values are manifestations of assumptions. The three levels constantly shape each other in an iterative process. Other conceptual frameworks of organizational culture include the works of Hatch (1993) and Trice and Beyer (1993) amongst others.

Previous reviews

We located only one review in nursing of organizational culture research (i.e., Mark 1996) and two papers specific to reviewing organizational culture instruments used in nursing and health services research (i.e., Scott et al. 2003, Gershon et al. 2004). In Mark's (1996) review paper she : 1) discussed the theoretical culture literature from the perspective of the organizational sciences, 2) reviewed the empirical studies in nursing and in health services research, 3) examined methodological and conceptual issues in organizational culture research, and 4) made suggestions for future organizational culture research. In 1996 she included 12 studies – eight studies

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in nursing, four outside of nursing. Our review updates Mark's review and demonstrates increasing developments in this field of research.

Methods

Search strategy

First, we searched CINAHL, Medline, Health Star, ABI inform, Psychinfo (see Figure 2.1). Dissertations and 'grey literature' (e.g., conference proceedings) were not included in the search strategy. Our experience has been that exhaustive searching for grey literature yields relatively little material of relevance, while incurring significant investments of time and money. Grey literature is relatively inaccessible to researchers and practitioners and therefore we argue has less impact than published studies. Furthermore, as we are not doing meta-analysis, we are not concerned with inflating effect sizes by virtue of only including published research studies.

Inclusion criteria

We reviewed published articles in English that examined organizational culture. We re-ran our searches without restricting to English and found few non-English titles. Using CINAHL as an example, when we compared the two searches, 97% of the papers were captured in the search limited to English only, suggesting limited bias when searching with English only as an inclusion criterion.

We made no restriction in the research design of the articles included. The search strategy generated over 6500 titles and abstracts. The first author

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electronically assessed the titles and abstracts (when available) using preliminary inclusion criteria (must be a research study on organizational culture). A high number of non-applicable papers resulted from our broad search terms. Many non-applicable papers focused on such topics as cultural diversity, trans-cultural workplaces and opinion pieces on how to create a specific type of organizational culture (i.e., how to create a culture of safety). These papers were not relevant to this review.

Using the preliminary inclusion criteria, 108 articles were identified. After removal of duplicates, 92 articles remained for the full inclusion/exclusion screening process. The results of this process are illustrated in Figure 2.2. All 92 articles were successfully retrieved.

Screening and data extraction

The final inclusion screening was guided by three inclusion criteria: 1) the report of an original research study, 2) a study focus on nurses in a particular context, and 3) a conceptualization of culture that included at least one of three indicators of organizational culture. The three indicators for organizational culture were created from Martin's general conceptualization of culture. Specifically these indicators were: 1) conveys a sense of values in the setting, 2) conveys a sense of how things should be done, and 3) facilitates making "sense" of activities in the setting. The final screening was completed by the first author.

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Twenty-nine articles remained in the dataset after the final screening. Table 2.1 outlines the reasons for exclusion and the frequencies with which studies were excluded from the final dataset. The following data were extracted from the remaining studies: research design, setting, sample type, sample size, theoretical underpinnings, definitions of culture, cultural perspective, instruments used, unit of analysis, and analytical procedures. Table 2.2 outlines the final set of included studies and their characteristics.

We categorized the remaining studies using Hatch's (1997) three perspectives on organizational culture, namely 1) modern, 2) symbolic-interpretive, and 3) postmodern. In Table 2.3 we outline the differences among the perspectives. The modern view is premised on the belief that there is an objective, physical reality in question. Investigators who subscribe to the modern perspective view culture as a variable that can be modified. In contrast, investigators who ascribe to symbolic-interpretive and postmodern perspectives propose that no single objective reality exists; rather, reality is socially and subjectively constructed. Consequently, multiple truths are accepted. This group of investigators generally views culture as a metaphor or as a way of understanding the organization. Symbolic-interpretive researchers are concerned with understanding how organizational realities or multiple truths are socially constructed (1997) whereas postmodern researchers focus on the ways in which cultures are ambiguous, inconsistent and in a constant state of flux.

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Results

Descriptive Findings of Studies (n=29)

Productivity and journal venues. The Journal of Nursing Administration (n=12) was the most common venue for studies included in our dataset with scholars from the United States (n=20) the most prominent authors. When the number of research publications is compared to the eight nursing studies in Mark's 1996 review, we are able to see substantial growth in the field.

Unit of analysis. In organizational culture research, the appropriate definition and treatment of the 'unit of analysis' is an important and complex methodological issue. The dilemma is that organizational culture can be conceptualized as a psychological variable with the data collected at the individual level or it can be understood as a group or organizational level variable. In the latter case the individual level data are commonly aggregated to a higher (i.e., group, unit or organizational) level. The authors of studies included in this review analyzed their data at different units of analysis (see table 2). In six studies the individual was the unit of analysis, in 20 studies data were analyzed at the group level (i.e., nursing unit, or specialty group). The unit of analysis was ambiguous in three studies. In seven studies (i.e., Fleeger et al. 1993, Grzyb-Wysocki et al. 1996, Webb et al. 1996, Jones et al. 1997, Bond et al. 1998, Ingersoll et al. 2000, Gifford et al. 2002) where data were aggregated to a unit or higher level, the authors did not specify the data aggregation processes. In particular, the authors did not specify if averages of

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individual scores were used as an indicator of group performance or if alternative methods (e.g., reliability, within-group agreement) were used.

Definition of sample. In 12 studies (Table 2.2) nurses constituted the study sample, *unit staff* was the sample in four projects. The term "unit staff" was ambiguous as it did not identity what levels and types of nurses were included, and further if ancillary service workers including aides and unit clerks were involved. In 11 studies, the sample was nurses, managers, and/or other health care professionals. One study examined nursing faculty members and in the last study, the sample subjects were not clearly identifiable.

Other factors studied. One of our objectives was to gain an understanding of the factors (e.g., research use, job satisfaction) studied in relation to organizational culture. Given that organizational culture has been frequently cited as an influence in health care professionals' use of research in practice, we had a particular interest in determining if research use had been studied in any of these studies. Only one study assessed research use and organizational culture. In this action research study Newman and colleagues (2000) investigated organizational systems and culture to support evidence-based practice. The investigators attempted to increase the systematic use of research by nurses in clinical practice. Action research, incorporating both quantitative and qualitative approaches, was used to explore how the organization and culture of practice could be developed to make evidence-based practice part of the 'normal' approach to practice. While they stated that organizational culture was primary to their investigation, they did not

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explain the influence of culture on nurses' research use behaviors. The other 28 studies in this review investigated organizational culture and other factors such as nurse job satisfaction, patient satisfaction, organizational changes, and nurse turnover.

Analytic Findings of Studies

Information on four dimensions was extracted from all articles: organizational culture definitions, theoretical underpinnings, cultural perspective, and organizational culture instruments used.

Organizational culture definitions. The definitions of organizational culture used in the articles are found in Table 2.2. The definitions referred to something (e.g., values, norms, assumptions) held in common or shared by a group of people. The notion of a shared value structure was implicit in several of the definitions in our dataset. Some of the articles used terms inconsistently, for instance, Kangas and colleagues (1999) used organizational culture and work environment interchangeably. Wilson and colleagues (2005) used the terms organizational culture and climate interchangeably, thereby sending a message that the two terms are synonymous.

Theoretical underpinnings. Investigators used theory from the organizational sciences. Schein's (1992) work was the most frequently used (n=6) theoretical perspective. He was among the first to develop a conceptual framework of organizational culture, and consequently his work has been widely used and cited. The work of Van Maanen and Barley (1985) (n=3) on

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subgroup cultures and Cooke and Lafferty's work (1989) on cultural types were also used (n=2). In four studies the theoretical underpinnings were not specified and in the remaining 17 studies unique theoretical frameworks from within the nursing discipline (e.g., McClure et al.1983) and beyond nursing (e.g., Braskamp et al. 1985, Smircich 1983, Brown 1998) were used.

Cultural perspective. The 29 studies were categorized using Hatch's (1997) schemata (Table 3). The perspective of the research was implicit and therefore we had to infer perspectives based upon how the researchers had operationalized culture in their studies (i.e., by answering the following questions: What were the methods used? Was culture measured?). Twenty-two (76%) studies used a modern conceptualization. The study by Wilson and colleagues (Wilson et al. 2005) was categorized as having a modern conceptualization (Table 2.4) because while they understood organizations to be cultures and subsequently used both qualitative and quantitative approaches to data collection, they sought to measure organizational culture. The researchers in six studies(i.e., Coeling and Wilcox, 1988, 1990, Grau and Wellin, 1992, Manley, 2000, Conway and McMillan, 2002, Yamaguchi, 2004) (21%) held a symbolic-interpretive perspective (Table 4) where they understood organizations to *be* cultures. These researchers immersed themselves in the setting under study to attempt to obtain an in-depth, multifaceted emic perspective of the setting. We were unable to determine the culture position for one study (Newman et al. 2000) because of limited

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explanations of methods and findings. None of the studies in our dataset employed a post-modern perspective.

Organizational culture instruments. Consistent with a modern perspective on organizational culture is the belief that culture is a variable and consequently it can be measured. Twenty-two studies (76%) measured culture (Table 2.2, culture instrument, column six). We could not determine if culture was measured in one study (Newman et al. 2000) and the remaining six articles used qualitative approaches. The tool used by Wilson and colleagues (2005) was not included in this table because they used a staff satisfaction questionnaire, rather than a culture instrument, however, they claimed to be 'measuring' culture by means of participant observation and the satisfaction instrument. An inventory of the culture instruments used in these studies is presented in Table 2.5. Our inventory demonstrates the development of cultural instruments within nursing (e.g., NUCAT, Nursing Assessment Cultural Assessment Tool, Coeling and Simms 1993a) and outside of the nursing discipline (e.g., Competing Values Framework, Cameron et al. 1994, Organizational Cultural Inventory, Cooke & Lafferty 1989).

Discussion

Our review 'takes stock' of this field of research and compares findings with the only other review in the organizational culture literature in nursing (Mark 1996). Our findings identify that there has been an increase in the quantity of organizational culture research in nursing, a move beyond an

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exclusive use of the modern or functionalist cultural perspective and a larger pool of cultural instruments than has been previously reported. We end by discussing the challenges for researchers studying organizational culture.

Taking stock

Using the findings from Mark's (1996) review as a benchmark, our review demonstrates significant advances in organizational culture research in nursing. Comparing the number of studies in our review (n=29) with Mark's review (n=12 studies in both health services and nursing research, 8 studies in nursing) suggests solid progress over a nine-year period. Yet, considering the widespread interest in the topic of organizational culture as evidenced by the results from our initial search strategy (nearly 7000 hits) the number of empirical studies (n=29) is small, suggesting much of the discussion about organizational culture is not based on research evidence.

Our findings also demonstrate that the research undertaken has become increasingly sophisticated. Mark's findings suggested uniformity in perspective, specifically a functionalistic perspective. Although in this review we chose to classify the perspectives that investigators used in their studies using Hatch's framework (1997) given its currency in the organizational sciences, rather than Smircich's (1983) approach (as used by Mark), strong parallels exist between the two approaches. In Table 2.3 we have transposed Smircich's categorizations onto Hatch's framework to illustrate the comparability between the approaches. Both Smircich (functionalist) and

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Hatch's (modern) perspectives understand culture as a variable thereby implying that culture can be changed or modified. Our findings suggest that while the majority of empirical work in nursing still adopts a modern or functionalistic perspective (implying an implicit ability to change the culture of an organization) an interpretive perspective is emerging.

In our review, 22 studies (76%) employed a modern perspective, that is, culture is something has organization has. Administering cultural surveys to health care professionals can be less burdensome, less expensive and less time consuming compared to the intensive fieldwork that is demanded by symbolic-interpretive perspectives. However, from this body of literature it is unclear if researchers realize the implicit assumptions underlying the use of surveys to 'measure' culture. To take this perspective suggests that culture can be understood by means of an instrument score and that culture is a 'variable' or an element of an organization that is malleable and controllable. As we mentioned above, there are potential benefits to this perspective; however, we argue that exclusive reliance on this approach cannot yield a complete understanding of organizational culture.

It is encouraging to see the emergence of interpretive approaches in culture research. These approaches can capture the rich descriptions of organizational culture that functional perspectives miss. We are not proposing that interpretive approaches to cultural research are more applicable than other perspectives or that researchers in this field remain exclusive to one

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perspective or paradigm. In fact, we propose that the field could benefit from researchers using a variety of cultural views in combination. While there is evidence of an emerging acceptance of paradigm crossing (Schultz & Hatch 1996) in the broader organizational sciences, a sense of paradigm incommensurability (Burrell & Morgan, 1979, Jackson & Carter 1991, 1993) or a general disapproval of scholars crossing paradigms (in this case changing cultural perspectives) lingers. A more complete discussion of the issue of paradigm crossing and incommensurability is beyond the scope of this review paper, yet we believe the co-existence of various cultural views in nursing will benefit knowledge development in the field and potentially generate new types of understanding.

Extending current cultural measurement reviews

The findings of our review expand previous reviews of culture instruments and identify instruments previously not reported (Table 5). We located eight different culture instruments in nursing (as well as two self-developed instruments), while previous reviews (Scott et al. 2003, Gershon et al. 2004) located two (within nursing) and nine instruments outside of nursing. Our findings extend both works by highlighting instruments that are not included in these reviews (e.g., Cultural Assessment Survey, Murdaugh, 1994, Nurse Assessment Survey, Maehr & Braskamp, 1986; Organizational Culture Profile, O'Reilly C. et al. 1991). Gershon and colleagues (2004) report on 12 instruments available to measure organizational culture and climate, yet upon

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critical examination, only two of the tools (i.e., Organizational Culture Index and Organizational Culture Inventory) were specific to organizational culture. The other ten instruments that Gershon and colleagues (2004) examine are specific to measuring climate, for instance, the Organizational Climate Questionnaire (Litwin et al. 1968), the Organizational Climate Measure (Wallace et al. 1975), and Work Climate Survey (Deci et al. 1989). Furthermore, the work of Scott and colleagues (2003) focuses more broadly on instruments available to measure culture in health care settings and fails to identify three instruments that have been used in nursing studies.

Future organizational culture research

Development of theory. Nursing scholars researching organizational culture have been heavily influenced by organizational science theory. While the practice of incorporating theory from other disciplines is reasonable and efficient, it limits the development of discipline-specific theory and contribution to broader knowledge development. This body of research is a case in point as the majority of studies lack the explication of a theoretical framework and are descriptive and context-specific thus limiting the ability of investigators to use the studies' findings to contribute to broader knowledge development. This is not to suggest that using theory from the organizational sciences precludes the development of relevant nursing theory or that organizational culture theory is best developed by nurses, but rather the contrary.

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We argue that the conventional nature and structure of nurses' work in institutional acute care settings offers an optimal opportunity to investigate organizational culture and to contribute to development of organizational culture theory. In these environments, nurses with similar preparation work in groups in various nursing units. This structure yields an ideal ground for research into subgroup culture (at the nursing unit level), as these groups are situated within a larger institutional setting.

While we found increasing growth and development in culture research in nursing, we also found evidence of two challenges facing researchers in this area, namely conceptual ambiguity and unit of analysis challenges.

Conceptual ambiguity. One of the largest challenges in this literature is the nomenclature used. Sleutel (2000) draws attention to the host of terms used in this field, terms such as practice environment, work environment, work culture, and organizational culture. In many cases researchers fail to define or consistently define these concepts leaving the reader unclear as to how the work 'fits' into existing nursing knowledge. Our findings demonstrate continued inconsistent and imprecise use of terms such as using organizational climate and culture interchangeably. We also found that the term 'culture' is frequently used, and in many cases overused, to make reference to the 'softer' or less tangible features of an organization (i.e., identity, values) as compared to the 'harder' aspects of the organization such as structure. While

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terminology precision would facilitate the comparison of studies and potentially the sequential development of ideas within this field this demand is impractical, particularly with the increasing use of interpretive approaches.

The unit of analysis. The appropriate unit of analysis is a crucial issue in organizational research as in many cases the focal unit of interest is a group, unit or organization. In the case of organizational culture research, the dilemma is that the variable of interest, culture, is often measured at the individual level. In other words, individuals are asked for their perceptions about the culture of their workplace. This results in differing levels of data measurement and analysis that is, data is collected at the individual level, but the analysis takes place at the group level as culture is a collective phenomenon (an acceptable approach if defensible aggregation processes are used). In order to aggregate individual data to a group level, correspondence is needed among the cultural definition, the level of data collection (e.g., individual, group, unit, hospital) and the data analysis to ensure methodological congruence. In six studies, data were reported at the individual level yet organizational culture is a group or collective phenomenon. An individual-level analysis fails to account for the collective group effects that a group or organizational analysis captures (Sellin 1990) – in organizational culture research grasping the collective effects is fundamental to 'doing' culture research. Furthermore in two of these studies (i.e., Bond and Fiedler, 1998, Kangas et al. 1999) investigators collected and analyzed data at an

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individual level but then made generalizations at a group level, otherwise known as an ecological fallacy. The problem in this case is that the process of aggregating data may conceal the variations in the data (Scott et al. 2003, Shortell et al. 2000). In other words, assumptions made about individuals based on aggregate data may be vulnerable to the ecological fallacy and need to be interpreted with caution.

An associated challenge is that when researchers do aggregate individual level data to a 'higher' (i.e., organizational) level, the method of doing so is not described. The usual method of data in these types of situations is to aggregate individual level response to a value more representative of the group, in many cases this translates into taking the mean value of the individual responses. However, if there are extremes in the individual level data, averages do not capture the essence of the within-group variability (Verran et al. 1992, 1995). Therefore, investigators need to demonstrate that a variable measured at one level (individual) is functionally equivalent when aggregated to a higher level (Verran, 1992). The unit of analysis challenge has two components. First, the level of data collection and second, the processes used to aggregate data. The two questions that researchers must ask themselves are: 1) how confident are they that the individually collected data is functionally similar when aggregated to a higher level, and 2) are the results meaningful after data aggregation? In organizational culture research, both issues need to be addressed.

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Conclusion

The current evidence-based health care climate demands increased research use by health care professionals. Yet, we do not fully understand how research is used, what shapes its use, and how its use can be increased. Organizational culture is frequently proposed as an important factor in shaping health care professionals' research use behaviors so in an attempt to acquire potential ideas on culture's influence we assessed the current state of this field of research. Our findings expand the results of two existing reviews of organizational culture instruments. In addition, examining our findings in light of one other review of organizational culture research in nursing (Mark, 1996) enables us to demonstrate considerable advances in both the volume and the diversity of perspectives of studies of culture in nursing over the past nine years. In spite of the positive results of our review, our findings point to methodological and conceptual challenges for researchers and suggest areas for future research.

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Figure 2.1

Search strategy for first search

The following bibliographical databases were searched: CINAHL (1982 – February week 4 2005), Medline (1966 to February week 4 2005), Health STAR (1975 to November 2004), ERIC (1966 to July 2004), ABI Inform (1970 to May 2004), PsycINFO (1985 to February week 4 2005).

exp Organizational culture
exp work environment
organizational/organisational culture.mp OR
organizational/organisational climate.mp OR
organizational/organisational context.mp OR
organizational/organizational trait.mp OR
organizational/organizational environment.mp OR
organizational/organization environment.mp OR
work environment.mp OR
practice environment.mp OR
work culture.mp OR

AND

Nurs$ OR
Nurs*

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Figure 2.2

Search and retrieval process for first search

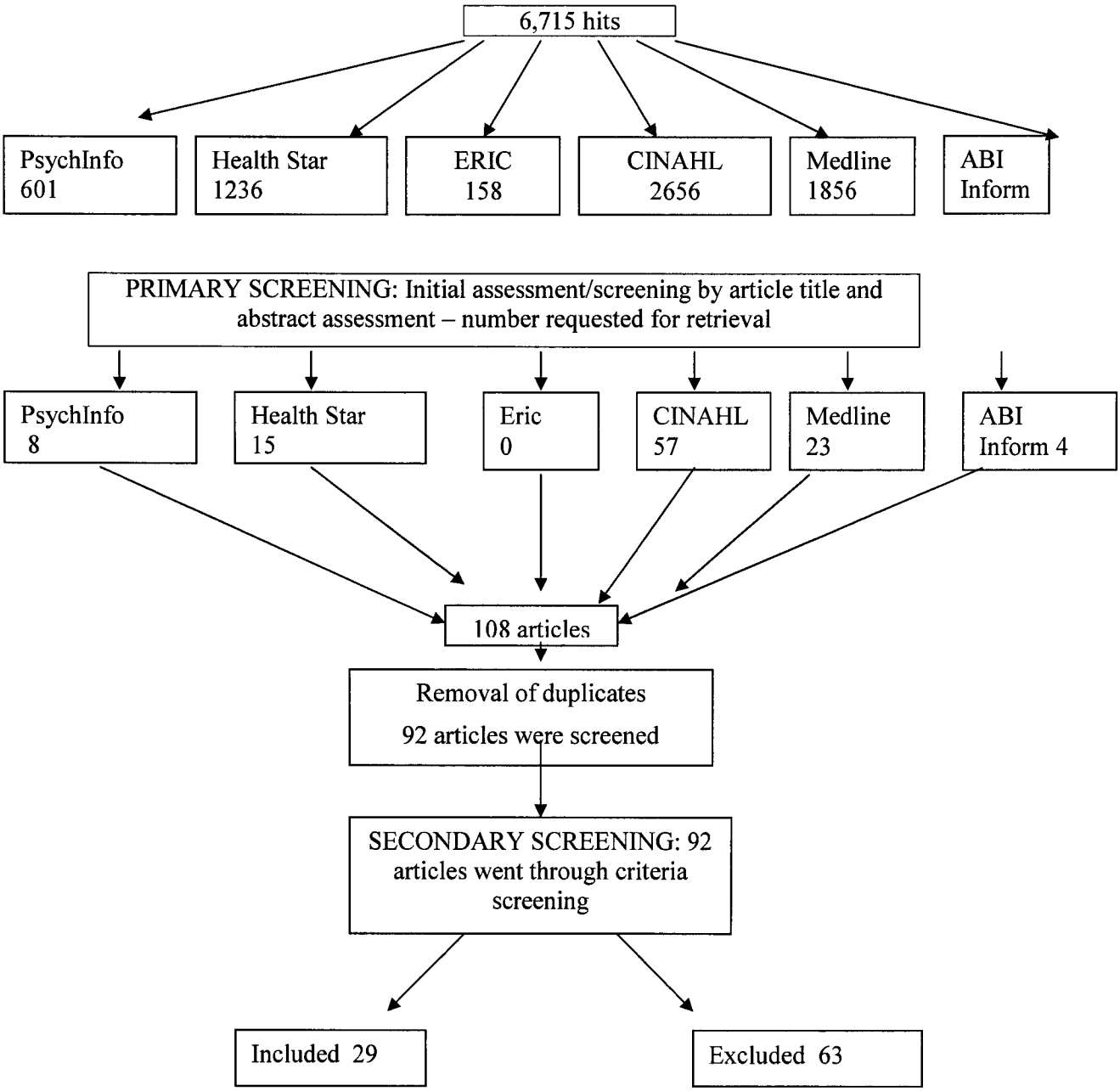

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Table 2.1

Reasons for articles not being included in the final dataset

Reason	Frequency
Not a research article	22
No indicators of organizational culture	39
Research not done by nurses or on nurses	2

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Table 2.2

Characteristics of Included Studies

Author & year	Journal	Subjects	Definition of organizational culture	Theoretical influences	Culture instrument	Other factors studied	Methods approach (a) and unit of analysis (b)
Bond & Fiedler (1998)	Journal of Nursing Administration	Staff, family members, hospital leaders	"a unique set of shared attitudes, norms and behaviors"	Not specified	Self developed	n/a	(a) quantitative (b) group
Coeling & Wilcox (1990)	American Nephrology Nurses' Association (ANNA)	Nurses	"a set of solutions devised by a group of people to meet specific problems posed by the situations they face in common"	Van Maanen & Barley (1985)	n/a	Change process	(a) qualitative (b) unit

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Author & year	Journal	Subjects	Definition of organizational culture	Theoretical influences	Culture instrument	Other factors studied	Methods approach (a) and unit of analysis (b)
Coeling & Wilcox (1988)	Journal of Nursing Administration	Nurses	"a set of solutions devised by a group of people to meet specific problems posed by the situations they face in common"	Van Maanen & Barley (1985)	n/a	Nursing admin decisions	(a) qualitative (b) unit
Coeling & Simms (1993b)	Journal of Nursing Administration (part ii)	Nurses	"culture is the pattern of behaviours developed by groups to solve work related problems and survive in their job"	Van Maanen & Barley (1985)	Nursing unit cultural assessment tool (NUCAT)	n/a	(a) quantitative (b) unit
Conway & McMillan (2002)	Nursing Leadership Forum	ICU nurses	Not specified	Not specified	n/a	Staff morale, commitment	(a) qualitative (b) unit
Fleeger (1993)	Nursing Management	Nurses	"an amalgam of symbols,	Wilkins (Wilkins & Ouchi, 1983)	Adaptation of Harrison's tool	n/a	(a) mix-method (b) not specified

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Author & year	Journal	Subjects	Definition of organizational culture	Theoretical influences	Culture instrument	Other factors studied	Methods approach (a) and unit of analysis (b)
			language, assumptions and behaviors that overtly manifest themselves in a setting"				
Gifford (2002)	Journal of Healthcare Management	Unit staff	Not specified	Cameron & Quinn (1994)	Competing Values Framework	Quality of worklife	(a) quantitative (b) unit
Goodridge & Hack (1996)	Journal of Nursing Care Quality	Nurses (RN, LPN, NA)	"a pattern of shared basic assumptions that the group learned"	Schein(1992)	NUCAT-2[1]	n/a	(a) mix-methods (b) group/program

[1] NUCAT -2 is a revised version of NUCAT (nursing unit cultural assessment tool)

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Author & year	Journal	Subjects	Definition of organizational culture	Theoretical influences	Culture instrument	Other factors studied	Methods approach (a) and unit of analysis (b)
Grau & Wellin (1992)	Qualitative Health Research	Administra-tion, social workers, recreational therapists, RN, LPN, NA	"fairly stable set of taken for granted assumptions, shared beliefs, meanings and values that form a type of backdrop for action in organizations"	Smircich (1983)	n/a	External regulatory controls	(a) qualitative (b) unit
Grzyb-Wysocki (1996)	Seminar for Nursing Management	Not specified	"the mix of values, beliefs, meanings, and expectations the members of a particular organization hold in common"	Deal & Kennedy (1983)	Cultural Assessment Survey	Patient-care restructuring	(a) mix-methods (b) not specified
Hawks (1999)	Nursing Outlook	Nursing faculty	"the assumptions, values, beliefs, expectations,	Schein(1992)	Survey of Organization Culture	Empowering teaching behaviors	(a) quantitative (b) individual

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Author & year	Journal	Subjects	Definition of organizational culture	Theoretical influences	Culture instrument	Other factors studied	Methods approach (a) and unit of analysis (b)
			principles, and behaviors shared by members of an organization"				
Ingersoll et al. (2000)	Journal of Nursing Administration	Nursing, administrative and ancillary support	"ways of thinking, behavior and believing that members have in common"	Sociotechnical systems theory	Organizational Culture Inventory (OCI)	Organizational commitment & readiness	(a) quantitative (b) group/hospital
Jones, et al. (1997)	Nursing Economics	Caregivers, personnel in other departments involved in patient care (e.g., pharmacy)	"Deep underlying assumptions and beliefs that are shared by members of an organization and that operate unconsciously"	Schein(1992)	Competing Values Framework	Patient-focused care implementation	(a) quantitative (b) group/unit

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Author & year	Journal	Subjects	Definition of organizational culture	Theoretical influences	Culture instrument	Other factors studied	Methods approach (a) and unit of analysis (b)
Kangas et al. (1999)	Journal of Nursing Administration	Nurses and patients	Not explicit definition; however, organizational culture used interchangeably with work environment	Magnet hospital work, McClure et al. (1983)	Organizational Culture Index	Organizational structure	(a) quantitative (b) individual
Luk et al. (1998)	Hong Kong Nursing Journal	Nurses, physicians, administration, allied health, support staff	"the ways of thinking, behaving, and believing shared by members of an organization"	Harrison; Schein(1992)	adaptation of Harrison's (1992) tool	n/a	(a) quantitative (b) group
Manley (2000)	Nursing Standard; Nursing in Critical Care	Unit staff	organizations are cultures; organizational culture is the shared values and beliefs	Brown (1998)	n/a	Consultant nurse post	(a) qualitative (b) unit

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Author & year	Journal	Subjects	Definition of organizational culture	Theoretical influences	Culture instrument	Other factors studied	Methods approach (a) and unit of analysis (b)
Manoj-lovich & Ketefian (2002)	Canadian Journal of Nursing Research	Nurses (includes managers and CNS)	"underlying values and beliefs of an organization as perceived by its employees"	Braskamp & Maehr (1985)	Nurse Assessment Survey	Nurse professionalism	(a) quantitative (b) individual
McDaniel (1995)	Journal of Nursing Administration	Staff nurses and managers	"ways of thinking, behaving and believing that members have in common"	Cooke & Lafferty(1989)	OCI[2]	Ethics, work satisfaction	(a) quantitative (b) individual
McDaniel & Stumpf (1993)	Journal of Nursing Administration	Staff nurses and managers	"ways of thinking, behaving and believing that members have in common"	Cooke & Lafferty(1989)	OCI	n/a	(a) quantitative (b) group
Newman et al. (2000)	Evidence-Based Nursing	Unit Staff	Not specified	Not specified	Not specified	Evidence-based practice	(a) unclear (b) not specified

[2] OCI is the Organizational Culture Inventory

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Rizzo et al. (1994)	Journal of Nursing Administration	Nurses	Patterns of behaviour	Coeling and Simms (1993a, 1993b)	NUCAT[3]	n/a	(a) quantitative (b) unit
Seago (1996a)	Journal of Nursing Administration	Nurse managers & administrators	"the shared philosophies, ideologies, values, assumptions, beliefs, expectations, attitudes, and norms that knit a community together"	Kilmann (1985)	Self-developed	Troubled work groups	(a) quantitative (b) individual
Seago (2000)	Journal of Nursing Administration	All staff in adult med/surg units	"the shared norms and expectations that guide the thinking and behavior of the group members"	Cooke & Rousseau(1988)	OCI[4]	Job position & behavior styles	(a) quantitative (b) individual

[3] NUCAT is the Nursing Unit Cultural Assessment Tool
[4] OCI is the Organizational Culture Inventory

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Seago (1996b)	Journal of Nursing Administration	Nurses	"Pattern of shared values and assumptions that are demonstrated by the behaviors of the group developed over time to solve problems	Coeling and Simms, 1993a), Schein(1992)	OCI	Workplace stress, nursing unit outcomes	(a) quantitative (b) unit
Tzeng et al. (2002)	International Journal of Nursing Studies	Nurses	"a set of shared beliefs, values and norms about the ways things should be done in an organization"	Braskamp & Maehr (1985)	Nurse Assessment Survey	Job satisfaction	(a) quantitative (b) unit
Vanden-berghe (1999)	Journal of Organizational Behaviour	All professionals (physicians, nurses) and managers	Not specified	O'Reilly et al.(1991),	Organizational Culture Profile	Individual organizational fit	(a) quantitative (b) organization
Webb et al. (1996)	Journal of Nursing Administration	Nurses and managers	"set of appropriate responses, devised by work	Coeling & Simms (1993a)	NUCAT-2[5]	Authority & responsibility	(a) quantitative (b) unit

[5] NUCAT – 2 is a revised version of NUCAT (nursing unit cultural assessment tool)

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			group members to the situations they encounter as they work"				
Wilson et al. (2005)	Journal of Advanced Nursing	Registered Nurses and Midwives	"the way things are done around here,' and encompasses a shared understanding of beliefs and actions" (p. 28)	Cooke & Rousseau(1988)	Yes, staff satisfaction questionnaire (Traynor & Wade, 1993) and participant observation was used to 'measure organizational climate' (p. 30)	n/a	(a) mix-methods (b) unit
Yamaguchi (2004)	Nursing and Health Sciences	Registered nurses	"organizationally relevant norms, beliefs and values shared by most employees" (p. 263)	Kotter (1978)	n/a	n/a	(a) qualitative (b) unit

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Table 2.3

Three perspectives to study organizational culture: Based on Hatch (1997)

Attribute	View 1	View 2	View 3
	Modern[6]	Symbolic-Interpretive[7]	Post-Modern
Definition of organizational culture	"culture is a variable to be manipulated to enhance the likelihood of achieving desired levels of performance from others within the organization" (Hatch 1997, p. 231).	"a context for meaning making and interpretation" (Hatch 1997, p. 231)	Organizational culture within this tradition cannot be simply characterized as harmonious and shared or full of conflict. Rather, organizational members share some values, disagree about some and are unaware of others. Consensus, dissensus and confusion co-exist

[6] Comparable to culture as variable approach (Smircich, 1983)
[7] Comparable to root metaphor perspective, or culture is something an organization is (Smircich, 1983)

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Attribute	View 1	View 2	View 3
Main assumption	Cultures are an attribute of organizations	Cultures are socially constructed realities; organizations are cultures and therefore cultures are contexts	Ambiguity is an inevitable aspect of organizational life.
Epistemology	Take an objective stance to investigation	Cultural meaning can only be encountered and understood from within the cultural system	An acceptance of multiple truths and realities and of ambiguity
Focus	Organizations are viewed as concrete entities which can be revealed through objective, scientific research	Describing how organizational realities are socially constructed	Focuses on the ways in which organizational cultures are dynamic, ambiguous and inconsistent (Hatch and Schultz 1997) as well as deconstructing the sense-making processes
Perspective	Emerges from that which is shared between colleagues in an organizations	Entire systems of experiences and interpretations distributed across all the culture's members	The boundary around an organizational culture is permeable and ambiguous. Understands organizations to be socially and discursively constructed not concrete

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Attribute	View 1	View 2	View 3
			entities.
Goal	To develop generalized knowledge that can be applied across contexts	To formulate patterns which are recognizable to cultural members; to understand the particular organizational culture from the inside.	To deconstruct reality to develop knowledge that is critical. interpretative, noncausal. plural and relational
Data focus	Organizational phenomena (e.g., artifacts, values and assumptions are some of the more common focuses for data collection)	Symbols which consist of both a tangible form and the associated wider meanings	Qualitative approaches used to gave a multiplicity of interpretations of phenomena.
Data collection approaches	Surveys, sometimes the supplementation of qualitative approaches. Only one interpretation given as it is presumed that all members share the interpretation.	Ethnographic methods	Multiple interpretations are given because the meaning is ambiguous and inconsistent.

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Table 2.4

Distribution of organizational culture studies categorized by Hatch's classification schema[8]

View 1	View 2	View 3
Modern	**Symbolic-Interpretive**	**Post-modern**[9]
Bond & Fiedler (1998).	Coeling & Wilcox (1988)	
Coeling & Simms (1993b)	Coeling & Wilcox (1990)	
Fleeger (1993)	Conway & McMillan (2002)	
Gifford, Zammuto, Goodman, & Hill (2002).	Grau & Wellin (1992).	
Goodridge & Hack (1996)	Manley (2000)	
Grzyb-Wysocki & Enriquez (1996)	Yamaguchi (2004)	
Hawks (1999)		
Ingersoll, Kirsch, Merk, & Lightfoot (2000)		
Jones, DeBaca & Yarbrough (1997)		
Kangas, Kee, & McKee-Waddle (1999)		

[8] Categorizing Newman et al. (2000) was unclear

[9] No studies had a post-modern perspective

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View 1	View 2	View 3
Luk, Chen, Yau, Tsang, & Leung (1998)		
Manojlovich, & Ketefian (2002)		
McDaniel (1995)		
McDaniel & Stumpf (1993)		
Rizzo, Gilman, & Mersmann (1994)		
Seago (1996a)		
Seago (1996b)		
Seago (2000)		
Tzeng, Ketefian, & Redman (2002)		
Vandenberghe (1999)		
Webb, Price, & Coeling (1996)		
Wilson, McCormack & Ives (2005)		

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Table 2.5

Description of instruments used to measure organizational/contextual culture

Tool & Tool development citations	Frequency	Description of tool & example of instrument items	Psychometric properties of instrument
Competing Values Framework, CVF (Cameron & Quinn 1994)	2 articles (e.g., Jones et al. 1997; Gifford et al. 2002)	Adopts a typological approach for understanding an organization's culture. A four-cell model of value systems (clan, adhocracy, hierarchy, market) within two axes, reflecting different value orientations: 1) organization's focus – internal or external environment, 2) organization's structure - preference for flexibility or control. 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) Item example: *My institution is a very formal and structured place. People pay attention to procedures to get things done.*	Robustness of tool: internal consistency using Cronbach's alpha, 0.9357 (Jones et al. 1997)
Cultural Assessment Survey, CAS (Murdaugh 1994).	1 article (e.g., Grzyb-Wysocki and Enriquez, 1996)	Examines environment, values and heros. The CAS is based on the writings of: Deal & Kennedy and del Bueno and Freund. The measurement scale includes seven open ended questions that facilitate individual responses. Content analysis is used to analyze the data. Instrument item examples: *Describe the person who 'fits in' on this unit.* *Describe how people work together on this unit.*	Robustness: not reported

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Tool & Tool development citations	Frequency	Description of tool & example of instrument items	Psychometric properties of instrument
Harrison's Organizational Culture Survey, HOCS (Harrison, 1972, 1985)	2 articles (e.g., Fleeger 1993; Luk et al. 1998)	The questionnaire consists of 15 items to assess staff's perception of the culture in terns of: 1) power, 2) role, 3) task/achievement, 4) person/support. For each statement the respondent ranks four statements in each item in terns of how representative they are of 1) the organization and 2) the respondents own preferred organizational culture. The instrument is designed to diagnose organizational ideology. Instrument item examples: *not available*	Robustness: good face validity (Scott et al. 2003)
NUCAT: Nursing Unit Cultural Assessment Tool (Coeling and Simms, 1993a)	4 articles (e.g., Coeling & Simms, 1993b; Rizzo et al. 1994; Goodridge & Hack, 1996; Webb et al. 1996)	Consists of 50 (NUCAT 2 and NUCAT 3) or 55 (NUCAT) different cultural behaviors that are indicators of behaviors that are important to practicing nurses and that differ between units. Using a 4 (NUCAT-2), 5 (NUCAT 3) or 6-point (NUCAT) Likert scale respondents rate behaviors that they prefer versus those they believe occur typically on their unit[10]. Instrument item examples: *How important is it to work in an efficient manner?* *How acceptable is it to compete with your co-workers?*	Robustness: validity established through qualitative and quantitative studies (Coeling and Wilcox, 1988)
OCI: Organizational	1 article	The OCI is a 120 item survey instrument that is used to profile	Robustness: 0.67-0.94

[10] Details of the NUCAT development were received from its developer, Dr. Harriet Coeling (April 5, 2005)

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Tool & Tool development citations	Frequency	Description of tool & example of instrument items	Psychometric properties of instrument
Culture Inventory (Cooke & Lafferty1989)	(e.g., McDaniel and Stumpf, 1993; McDaniel, 1995; Seago, 1996b; Ingersoll et al. 2000; Seago, 2000)	three culture-type composites (constructive, passive-defensive, aggressive-defensive) based on 12 distinct yet interrelated, interpersonal and task-related styles. The OCI is designed to be used in a variety of business organizations. It was not specifically designed for health care environments. Items are scored on a 5 point scale (1=not at all to 5 = to a very great extent). Instrument item examples: due to copyright cannot cite specific item examples.	(internal consistency scores for subscales) (Cooke and Rousseau, 1988)
Survey of Organizational Culture, SOC (Tucker et al. 1990)	1 article (e.g., (Hawks, 1999)	55 item scale that measures organizational culture as 13 subscale scores (e.g., impact of mission, decision making/autonomy). Responses to each item are measured on a 5-point Likert scale (ranging from strongly disagree to strongly agree). Instrument item examples: *not available*	Robustness: reliability measured by alpha coefficient values ranges from 0.62-0.90 (Tucker et al. 1990).

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Tool & Tool development citations	Frequency	Description of tool & example of instrument items	Psychometric properties of instrument
Organizational Culture Index, OCI (Wallach 1983)	1 article (e.g., Kangas et al. 1999)	The Organizational Culture Index was developed by Wallach (Wallach, 1983). The Index categories organizational culture into three dimensions: bureaucratic, innovative and supportive cultures. The Index has 24 items divided into three subscales (one per dimension), each subscale has eight items and are answered on a 4-point Likert scale (0= does not describe my unit, 3= describes my unit most of the time). The dimension with the highest score is considered to be the dominant dimension for that environment. Instrument item examples: *not available*	Robustness: Subscale alpha coefficients from 0.75-0.91(Koberg & Chusmi 1987)
Self developed tools	2 articles (e.g., (Seago, 1996a; Bond & Fiedler, 1998)	Bond & Fiedler, (1998) developed a series of scales to describe the organizational culture. The tools measured: 1) organizational culture, 2) team performance, and 3) staff encouragement. Seago (1996a): A list of 25 characteristics of troubled work group cultures that respondents answered dichotomously (present or not present). The items were developed from the literature and from the author's previous work.	Robustness: not reported Robustness: not reported

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Tool & Tool development citations	Frequency	Description of tool & example of instrument items	Psychometric properties of instrument
Nurse Assessment Survey, NAS (Maehr & Braskamp1986)	2 articles (e.g., (Manojlovich & Ketefian, 2002; Tzeng et al. 2002)	The Nurse Assessment Survey was developed using personal investment theory as a theoretical foundation. The instrument consists of 91 items and 11 scales presented in a five-point Likert design. The scales were designed to collect meaningful information on nurses' perceptions, attitudes, and culture within a hospital setting. The culture measure consists of 5 subscales: 1) accomplishment, 2) affiliation, 3) power, 4) recognition, 5) and strength of culture. Item example: *Around here, we're encouraged to try new things.* *Power and influence count a lot around here.*	Robustness of culture subscales: 0.51-0.87 (Braskamp & Maehr 1985).
Organizational Culture Profile, OCP (O'Reilly C. et al. 1991)	1 article (e.g., Vandenberghe, 1999).	The OCP is composed of 54 values and can be used to provide overall value profiles of organizations or individuals. The OCP is based on Q-sort methodology; respondents sort items into nine categories ranging from the least to the most characteristic of their organization. Instrument item examples: *an emphasis on quality, fairness and decisiveness.*	Robustness: The average reliability coefficient 0.88 (O'Reilly C. et al. 1991).

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Paper 3

A context of uncertainty: How context shapes nurses' research utilization behaviors

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"There's not a consistent approach," said the young nurse. "While one physician might be supportive, you know, to the way I choose to manage pressure sores or bed baths, for instance – those issues are really nursing – another [physician] would not be. So one day you can do it your way, but the next day, it would have to be different and there would be huge opposition. This keeps us on an uneven ground all the time. I can't stand the fact that one day it is yes and the next day it's no, so for me it's like I don't care. You just tell me what to do and I'll do it." The nurse puts her head down and shakes it.

This vignette captures the essence of the organizational context of this nursing unit, uncertainty. This uncertainty arises from various sources: the patients are extremely ill, the work on the unit differs from day to day and sometimes from hour to hour, numerous health care professionals must work together to care for these fragile patients, and both managers and physicians often differ in their approach to patient care. The uncertainty is particularly striking in this environment because of the efforts put forth to control and monitor everything affecting the patient's condition – in short, to *reduce* uncertainty.

While she talks to me, her young patient, a baby boy, just lies there; he is motionless. He is naked with the exception of a diaper. Technology surrounds him and keeps him alive; he is connected to many machines. The machines flash numbers and beep insistently. Everything is controlled and monitored: his respirations, his heart rate, his temperature, his level of consciousness, his blood pressure and fluid levels. Several IV lines pump medications and intravenous fluids into his small body. Everything is documented; everything appears 'controlled.' The young nurse sits quietly at his bedside, vigilantly watching the monitors, watching the medications, watching the baby. She documents everything. She stays at the bedside continually – this is her place, her chair, her bedside. She speaks to her colleague at the next bed about mean arterial pressures, ECMO, FONTAN, and PEP – her language is a clinical vernacular. They talk about their patients, how these patients are doing in comparison to previous patients with similar conditions whom they have cared for. They discuss patient assignment, expressing both trepidation and excitement as they anticipate caring for the most complex of patients. They wonder aloud, "Could I manage that patient assignment?"

This nursing unit, like a neighborhood, a school, or a hospital, can be described as a 'micro-society' with its own rules, rhythms, activities, shared stories, and jokes – its

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own organizational context. Organizational context has been frequently cited as a key influence on research utilization behaviors; because ethnography is a good method of studying organizational context, this approach has been used to examine this nursing unit and to clarify its influence on people's research utilization behavior.

Background

The research-practice gap

The recent increase in availability and accessibility of scientific research findings, particularly related to the influence of electronic media, has led to appeals for health care decisions to be based on research. The gap between what we know and what we do, often termed the research – practice gap (Allmark, 1995; Fealey, 1997, 1999), has been studied under several traditions, such as knowledge utilization, research utilization, evidence-based practice, knowledge transfer, and knowledge translation. Despite multiple terms, the general goal is the same – to increase use of research in the practice area.

Individual explanations for the research-practice gap

Nurses form the largest single group of health care practitioners, so increasing the extent to which nurses base their practice on research could significantly improve patient care. In nursing, challenges in putting research to use were first attributed to individuals (Ketefian, 1975; Shore, 1972) and continue to be largely ascribed to individual determinants such as education level (Butler, 1995; Parahoo, 1998), involvement in research activities (Bostrum & Suter, 1993; Butler, 1995), conference attendance (Coyle & Sokop, 1990; Michel & Sneed, 1995), and the practitioners' ability to understand research (Funk, Champagne, Wiese, & Tornquist, 1991a, 1991b; Pettengill, Gillies, & Clark, 1994; Rodgers, 1994). However, in a recent systematic review of literature on the

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individual determinants of research utilization, Estabrooks, Floyd, Scott-Findlay, O'Leary & Gustha (2003) reported equivocal results, arguing that placing the responsibility for failure to use research on the individual was misguided. They suggested energy should be focused on understanding organizational influences on research utilization.

Organizational explanations for the research-practice gap

Research utilization scholars have consistently identified the organizational context as an important factor influencing research use (e.g., Brett, 1987; Crane, 1989; Stetler, 2003), yet they have not examined its influence in great detail. Because the majority of health care professionals work within complex organizational structures, it makes sense to examine these structures. The role of organizational context in the use of research in health care has been emphasized by two British research groups. The first group to highlight the role of context was the *Promoting Action on Research Implementation in Health Sciences* group (Kitson, Harvey, & McCormack, 1998; Rycroft-Malone, Kitson & Harvey, 2002). The members of this group suggested that context is one of three central factors (the others being evidence and facilitation) that influence research utilization by nurses and others in healthcare settings. They understand context to be the physical environment in which practice takes place (McCormack et al., 2002). In the PARIHS framework, context has three characteristics or components, one of which is culture. The PARIHS groups conceptualize culture as "the forces at work which give the physical environment – the context – a character and feel" (Kitson, Harvey, & McCormack, p. 152) thus pointing to the direct relationship between context and culture. It is these definitions of context and culture that will be used in this article.

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The other group, whose collective thoughts on the nature of context's influence have been captured in the recent book, *Knowledge to Action?* (Dopson & Fitzgerald, 2005), suggested that *context and social processes* are fundamental to knowledge production and use in health care settings. The work of this group highlights the links between organizational structures and contexts and the use of knowledge and argues that the concept of context requires theoretical development.

In the nursing literature, in particular, local context or nursing unit context has been recognized as important in promoting research use (e.g., Angus, Hodnett, & O'Brien-Pallas, 2003; Gerrish & Clayton, 2004), yet the scope of its influence has not been explored. Recently, Pepler et al. (2005) examined how nursing practices were built on research. In their work, unit culture was identified as the principal factor linked to patterns of research use. Pepler et al. saw unit culture as a composite of interdependent factors including the level of understanding of research and research utilization, the conduct of research on the unit, structural factors such as work and communication patterns, the pattern of decision-making as a basis for practice, characteristics of the nurses, and the process of facilitation. Although the findings from this study add support to the central role of local culture in shaping the utilization of research, their findings did not explain the *process* by which culture exerted its influence.

In recent conceptual work, Scott-Findlay and Golden-Biddle (2005) developed the idea that there are organizational factors that shape practitioners' application of research to practice. They proposed that organizational culture provides a context where particular ideas, activities, people, or events are more highly valued than others; these values in turn shape behaviors. Drawing upon Schein's (1992) theory of organizational culture and

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examples of typical events in acute care nurses' work, they proposed a way to think about how organizational culture shapes research use. They claimed that the assumptions that underpin work in an organization guide: 1) how work gets completed in an environment, 2) what types of knowledge are valued and used in practitioners' work, and 3) the creation of settings for bringing people together for interactions. They also recognized that to develop a more comprehensive understanding of culture's role in research utilization, empirical validation is necessary. Nevertheless, what emerges is a growing realization that context (and, therefore, culture) is complex and important to fostering research use in health care professionals; however, the process through which this occurs is unknown.

Purpose

The purpose of this study was to explore the organizational context of a single nursing unit in order to understand the process by which this local context influenced the research utilization behaviors of the nurses in the unit. Building on this understanding, we expect to be able to identify significant themes to which we can attend in other settings where research utilization is of interest.

Methods

We used Fetterman's (1998) focused ethnographic methods to explore the nursing unit context of a pediatric critical care unit in North America.

Data collection procedures

Data were collected from two sources: 1) in-depth observation, and 2) interviews with unit nurses, managers, and other health care professionals. A maximum variation sampling strategy (Patton, 2002) was used to purposefully sample events where research

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use occurred (e.g., patient care rounds and reports). To focus the observations, an 'attentional framework' (see Table 3.1) was developed from previous conceptual work (Scott-Findlay & Golden-Biddle, 2005). The framework identified particular research-associated events, people, and activities that helped the observer identify the context's influence.

Observations were completed by the first author (SSF) over a seven-month period. Observation episodes averaged approximately two hours in length and occurred approximately three to four times per week for a total of 77 episodes. Observations were made on all nursing shifts and on all days of the week. Patient rounds, nursing report times, breaks, communication patterns, and unit routines were systematically observed and recorded in field notes.

We used purposive sampling techniques to guide the selection of participants for interviews. Twenty-nine unit members (nurses, nurse leaders, physicians, allied health care professionals) were interviewed for one to four hours, with an average interview lasting 75 minutes. All interviews were tape recorded and transcribed verbatim. Analytic memos were recorded following each observation session and interview. Data collection generated a large amount of data (1,640 pages of typed single-spaced field notes and interview transcripts and 596 pages of handwritten memos).

Data analysis

Analysis was guided by Fetterman's (1998) two phase approach to ethnographic analysis: 1) analysis or 'making order of the data' and 2) interpretation. First, to give order to the data the field notes and interviews were read several times. Next, data were systematically coded and the codes and categories were compared, contrasted, and sorted

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until trends and patterns in the data were identifiable. Matrices of patterns were then developed to facilitate the systematic comparison and contrasting of data. The second phase, interpretation, involved attaching meaning and significance to the analysis to explain the patterns.

Results

The setting

The setting where this study took place is a 16-bed multi-system pediatric critical care unit. Eight patient beds are located in a large open room in the centre of the unit with seven isolation rooms each with glass patio doors located around the perimeter of the unit. The nursing station, a small crowded space, is located in the centre of the unit. Bright fluorescent light illuminated the unit and the continuous beeping of monitors, IV pumps, and ventilators vied with the voices of staff. The environment was loud and intense. Early field notes capture the newness of this environment:

> *I have not worked in an environment physically structured like this one. On many units, the nursing station is the hub of all activity – it is where nurses tend to gather to share information, to spend down time, to look at charts. Not here – it is different here; the physical environment is shaping the way in which the nurses work – nurses do gather at the nursing station – but not in the same way. The social chit chat that tends to occur at the nursing station in many units occurs at the bedside here. What strikes me is how everything appears "controlled"...staff are very used to "controlling" everything... patients are all connected to monitors that are continuously read and documented. In the majority of cases, the patients' breathing is controlled via ventilators which are monitored and cared for by the staff There is a strong sense of control and hyper-vigilance.*

The nurses in this high-intensity environment cared for patients ranging from 1 month to 16 years of age. The patients all required intensive monitoring and treatment, thus demanding extensive medical technology, constant nursing care, and the close proximity of a range of health care professionals. The majority of the patients had

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recently undergone cardiac surgery and were sedated and ventilated. Death came frequently on this unit. Exhausted and anxious parents and family members of the ill children 'stood guard' at the bedside often expressing overt emotion: "*the infant's parents are still at the bedside, his mother is crying continuously as her husband holds her.*"

A multidisciplinary, team approach to patient care was present in this setting; physicians (n=6), residents, fellows, clinical assistants, nurses (n=130-140), a nurse practitioner, respiratory therapists, pharmacists, social workers, and a dietician worked in close proximity. Given the critical condition of the patients, nurses were commonly assigned a single patient. Nursing care was organized by the nurse-in-charge in consultation with the unit manager. Unit manager responsibilities were shared by five individuals. These five unit managers then reported to the Patient Care Director, Child Health Critical Care. Physician coverage was offered by six highly specialized pediatric intensivists, one of whom was always "in house" or "on-call." Additionally, pediatric residents, clinical assistants, and intensive care fellows had a significant physical presence in the unit.

The concept of uncertainty

The dominant characteristic of the context of this setting was uncertainty. Uncertainty is a cognitive state of being unable to anticipate the meaning and/or outcome of an experience. For instance, one nurse said, "*I could tell you a thing or two about the dynamics [of this unit] but it would be entirely different tomorrow.*" Another nurse explained, "*I do not know how my day will be, it depends on so many things, my patient assignment, the physician who is on, and the nurse in charge.*" In this setting, uncertainty

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was also conveyed when nurses commonly responded to questions by saying, "*It depends.*"

Sources of uncertainty

In this unit, we discovered numerous sources of uncertainty caused by patient status, unit management practices, and general inconsistencies in the nurses' work. The four sources we identified are outlined below and Table 3.2 shows data excerpts to support these sources.

Precarious condition of patients. Nurses cared for critically ill children who were medically unstable and who required intensive levels of care and/or emergency interventions. The medical condition of these children can change quickly, creating an atmosphere of uncertainty.

Inconsistency in management. Nurses experienced uncertainty because different nurse managers and different attending physicians expected different sets of behavior.

Inherent unpredictability of nurses' work. In this complex environment, nurses were not able to predict what each shift would hold; admissions and discharges of patients depended on outside factors, the timing of typically anticipated events (e.g., rounds) could change, a co-worker could become ill, or the unit could be overcrowded. This unpredictability, inherent to the environment, created uncertainty.

Complexity of teamwork. On any typical shift many different health professionals with different, yet overlapping roles and skills worked together in the unit. With so many members in the team environment, it was difficult to ascribe responsibility and to co-ordinate efforts. Uncertainty resulted from the many different responsibilities and personalities involved.

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The impact of each of these sources of uncertainty can be seen in all of the four themes that also emerged from the data: the nature and structure of nurses' work, the structure of authority in the unit, the response to errors and receptivity to change, and the nature of valued knowledge (Figure 3.1). The nature and structure of nurses' work and the nature of valued knowledge in the unit are the most significant of the themes for research utilization. Therefore, in this paper, we will examine the influence of the organizational context of uncertainty in only these two areas.

Nature and structure of nurses' work

> *As we talked, the oxygen stat monitor rings off – "65%" it reads. The nurse gets up and turns it off. About a minute later, it reads "63%" – she stands up again and turns it off. She looks up at her patient. She puts a face mask on the patient. The patient is irritable and she is thrashing her head from side to side; she can't keep the face mask on her. The little girl is sitting up in a sturdy foam chair. She is an infant. She has a face mask on with oxygen running – her colour is bluish. "I am going to go and get an RT [respiratory technician]," she says as she leaves the room. She continues to tell me that the patients in this unit are incredibly sick. "Some of these children are so sick that nurses in other areas don't understand just how sick." (field note)*

First and foremost, the nature and structure of nurses' work was shaped by the fragile condition of the children for whom they cared. All possible resources, both technological and human, were employed to stabilize and monitor the children. As a result of this, nurses' work was located at the patient's bedside, it was highly routinized, and it was bound up with technology.

Location of work. Nurses were expected to stay at the patient's bedside at all times, leaving only to get supplies or when they were relieved or cross-covered during

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breaks. The comfortable, wheeled office chairs, known as 'the nurse's chairs,' placed at each bedside were 'evidence' of the location of nurses at the bedside.

The location of the nurses' work was a small source of certainty; clear expectations about the location of work helped the nurses cope with the rest of the uncertainty surrounding them. The requirement to remain at the patient's bedside, however, had substantial implications for using research in that it hindered the nurses' ability to access and assess research or to confer with colleagues. Electronic databases are a primary portal to research findings but, in this setting, nurses had limited access to computers. Two computers were at the nursing station, but with nurse expected to be at her patient's bedside at all times, the location of the computers conveyed the message that nurses were not expected to use the computers. The inaccessibility of these sources of important knowledge sent a clear message to nurses that using research in their practice was not expected.

Technology-driven routinized work. Because of the intensive use of technology in monitoring and managing these fragile patients, nurses' work was largely structured by routine. One nurse offered that the technology drives most behaviors:

> *[Using technology] becomes a mind set, you know. The technology oftentimes overrides the baby in the bed and the family at the bedside... All of our nurses are very good ... many of the nurses do try to interact with families, but they struggle with some of those interactions. (interview data)*

Critical care monitor readings (e.g., mean arterial pressures, intracranial pressures) and intravenous fluid levels were documented every hour; patients were assessed every four hours and turned every two. Unanticipated events (e.g., a patient 'crashing') occurred frequently in this setting (highlighting the unpredictability in their

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work and the precarious condition of gravely ill children), and the nurses stressed that routine activities provided structure to their shift. One nurse put it this way:

> *I think you kind of get lost in the monotony of a daily, the general routine of a day; you kind of get used to it – critical care nursing is a very structured nursing. Numbers every hour, you know, every four hours is everything else, such as your assessments and everything else. ...I think you just kind of get caught up in the daily routine of things. (interview data)*

Since routines were necessary to patient care and were also perceived to reduce uncertainty, nurses were reluctant to disturb these routines. Thus, they might resist trying new ideas or ways of working, such as using research.

Inconsistency in management. Inconsistent responses from the five unit managers and inconsistent treatment approaches among the various attending physicians contributed to the reluctance of nurses make decisions or to do anything other than what they were told. While nurses stressed that there was a 'game to be played' and rules to be followed, the rules shifted depending on who was 'in charge' and who was 'on.'

> *A colleague of mine puts it the best way; she says she comes on Monday morning and it is this physician on, so she inserts this chip in her brain and away she goes, and so on. When this physician is on, these are the drugs he'll want at the bedside and you just adapt. It's more for survival; it's for your own sanity. And unfortunately, your own learning needs and your own motivation to be involved and make decisions ...gets trampled on so many times that you just get to the point where you [stop]. (interview data)*

Staff members received inconsistent messages from both nurse managers and physicians. Physicians did not agree on treatment regimens, often changing their colleagues' orders, resulting in nurses feeling unsure – "*the staff men themselves, although they appear as a team, they contradict each other all the time.*" Staff members discussed the inconsistent messages sent by the five unit-level managers and the attending physicians, and the challenges of understanding the different expectations and fluctuating demands placed on

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them. Nurses sought to reduce the uncertainty by resorting to doing only what they were told:

> *There is not a consistent approach in the medical team. And so you know, while one medical practitioner might be supportive... another would not be. So, you could do it your way one day and then the next day you'd have huge opposition to that and that's again very off-putting. It keeps people on an uneven ground all the time and what do you do under those circumstances? You seek equilibrium...I can't stand the fact that one day it's yes and the next day it's no, so for me it's like I don't care. You just tell me what to do and I'll do it. (interview data)*

To cope with the uncertainty, nurses often decided to forgo decision-making altogether. Nurses asked others to make nursing decisions, such as asking physicians for 'orders' for tasks clearly within their own scope of practice. By so doing, the nurses avoided unpredictable censure from superiors.

In turn, the nurses' perceived lack of decision-making power maintained or perpetuated this context of uncertainty. Because nurses perceived that they had limited decision-making power, they believed that they had little control over their work and work environment, which resulted in uncertainty about how to proceed. Nurses spoke about their perceived and experienced span of control. Nurses interpreted their role as one of subservience and compliance.

> *Interviewer: What are the expectations [for nurses]?*
> *Respondent: [pause] Oh, I hate to say it. Just "do as you're told. I think inherent in their [physicians'] actions and in what they say, there is still that kind of "nurses are our handmaidens. And my expectation is that you're going to shut up and do what I tell you to do. And not question it." (interview data)*

During interviews, nurses frequently told the 'bed bath story.' Nurses reported that they needed a physician's order prior to giving a sponge bath post-operatively. This story underscored the uncertainty in the unit, as the bed bath is a quintessential nursing responsibility and well within the scope of nursing practice. This story, made more

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powerful because of the number of times it was told and retold, demonstrated the degree to which the uncertainty in the unit shaped the behavior of physicians and nurses. Specifically, the uncertainty ran so deep that tasks that are clearly within a nurse's scope of practice needed to be legitimated with a physician order. The implications of this lack of control are significant for research use. If nurses believe that they cannot act within their *own clear scope of practice* without a physician's order, they will be reluctant to consider consulting research a part of their role. The overwhelming sense of uncertainty in this setting resulted in nurses choosing to take the safe route, one where someone else made the decisions. If the main approach to coping or adapting to inconsistent management is to abdicate decision-making to others, nurses will not see research use as a viable means to decrease uncertainty or to enhance their ability to contribute to decision-making. In the atmosphere of uncertainty nurses retreated to the safe zone of certainty provided by the other characteristics of the nature and structure of work – the location of their work, and technology-driven, routinized work.

Complexity of team environment.

I have told the unit managers this – it can't be "blame the nurses" because you know with the central line infections, there are at least six people who have touched the line by the time they are back on the ward. At first we weren't told that the OR didn't have antibiotic tipped central lines in stock during this period of time when there were all of these infections. They had to use up the other ones (non-antibiotic tipped ones).... You know, some people weren't told about the problem in the OR. (interview data)

Interviewer: What about VAP (ventilator associated pneumonia) and increasing the elevation of the head of the beds – what is your perspective on why some staff don't do it?
Respondent: You know, I don't know why people don't do it; it is a simple thing. But you know this morning, I had the head of the bed up and when the RT (respiratory therapist) came around to do suctioning, he put the head of the bed down and said, "He slides down when the head of the bed is up." (interview data)

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These interview excerpts illustrate the complexity of the teamwork environment. Uncertainty resulted from the sheer number of people with whom they had to work and the diverse professional skill sets and disciplinary backgrounds they brought. Because of shared responsibility, and multiple communication vectors, it was often difficult for nurses to control their patients' care. Yet they often felt that they were held responsible when anything went wrong.

The uncertainty in the setting influenced nurses to rely on the structure and routine of their work to gain some certainty. The routinized nature of aspects of their work gave nurses some predictability and consequently decreased uncertainty. However, in this context of uncertainty, the sense of predictability and sureness acquired through the routine aspects of their work made new ideas or ways to provide patient care unwelcome. Using research, using new ideas, requires taking risks and being comfortable with an element of uncertainty; in this environment, this was not possible.

The nature of valued knowledge

Nurses discussed three main types of knowledge: 1) clinical experience or experiential knowledge, 2) advanced practice knowledge, and 3) research. Because of the fragile condition of their patients and the unpredictability of their work, however, nurses tended to rely on the immediately available knowledge gained from clinical experience rather than on research. Clinical experience provides timely, context-specific answers to specific patient-focused questions (the "tried and true") whereas research, often both unknown and less accessible to them, can only offer broad principles. Thus, research may increase uncertainty rather than decrease it. The complexity of the teamwork environment

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with its various specialized professionals made nurses rely on their particular body of expertise – their clinical experience.

Clinical experience.

> *I think probably experience [matters more]. I think that matters more than book stuff. We can all memorize that book stuff. But it's to observe and recognize certain things. Like the ability to look at a child and say, "Ohh, that kid is not very good. Oh, something is going on." That's not something that just somebody off the street can pick up or whatever. It takes time to develop those skills. So I would say observation skills are really important initially. Plus experience is not something you can gain from books. Knowledge is – knowledge is good. Like what kind of knowledge? But again, any of us can pick out of a book. Anybody has access to that. But the experience, I think, really makes a difference. I think it's because they've only seen it a few times; you probably have no idea. You have to have the experience...given how ill the patients are – clinical experience 'fits' better. (interview data)*

It was not surprising that nurses valued knowledge gained from their own clinical experience above other forms of knowledge. It is immediately accessible to them and does not require technology for retrieval as research knowledge does, thereby fitting with the nature and structure of nurses' work. Furthermore, clinical experience is owned by the nurse. Conversely, research knowledge was perceived by study participants to have little direct application to the context-specific, time-dependent questions with which nurses had to cope. Because research findings pertain more broadly to clinical practice, the use of research would not decrease uncertainty in this environment.

The value nurses placed on possessing a wide body of clinical knowledge was evident in nurses' desire to care for the sickest patients. In the short term, providing nursing care to medically-fragile children introduces high levels of uncertainty and fear; however, in the long term this experience was useful to build a repertoire of diverse clinical experience and knowledge, and was seen as a valued strategy to decrease

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uncertainty. Nurses sought the most technologically-dependent patients, changing their patient assignments and negotiating with the unit managers to do so:

> *I used to love the sickest one [patient] in the unit with the most pumps – that's the one I wanted. That was the best assignment... it depends on where you are in your career. Most nurses are going to want the sickest kids. (interview data)*

To others on the unit, nurses with no clinical experience were viewed as a source of great uncertainty. Colleagues could not anticipate how inexperienced nurses would respond to a critical incident, or if they would ask for assistance, or notice slight changes in a child's medical condition. Given the precarious condition of the children on this unit, relevant clinical experience was highly valued as a mean to decrease uncertainty.

Advanced practice knowledge. Working in a complex team environment led nurses to be wary of trespassing on another's field of expertise. All nursing in this setting demanded specialized knowledge of pediatric intensive care nursing, that is, knowledge related to technology and specific procedures or interventions. Beyond this, nurses on specialty teams had advanced practice knowledge consisting of sophisticated assessment and pathophysiology knowledge specific to pediatric critical care. Nurses reported that this advanced practice knowledge was not shared openly with all staff. Despite its obvious relevance to all staff members, such knowledge was restricted to members of specialty teams, such as the transport team or the EMCO team.[15] One staff member discussed her frustration with the lack of access to the advanced practice knowledge, "*I've asked to sit in on the [specialty] courses on my own time; I was told no – you can't do that" (interview data).* Another nurse reported, "*The problem I see, though, is that*

[15] In this environment, membership on specialty teams such as the ECMO (Extracorporeal membrane oxygenation) team or the transport team was by an application and interview process; an advanced degree was not a requirement.

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these specialties who have this information – no one else is allowed access to it.... They have been apparently told by whomever that they can't watch the videotape of the lectures" (interview data). Responses such as these to nurses' requests for access to advanced training sent the message that on-going learning was not important or valued for the regular staff member. The refusal was interpreted as preserving advanced practice knowledge for selected staff only. Not surprisingly, nurses responded to being excluded from access to this knowledge by becoming cynical about research knowledge in general.

> *You know, that's what we say around here – you know, when you are off shift for a few days and you come back and everything has changed with your patient. That is what... we say, "They [physicians] must have been reading!" Well, I just go along with – I do what I am told to do, I am a nobody around here; this is just my job. (field note data)*

In terms of research utilization, the uneven distribution of knowledge has significant implications. If advanced practice knowledge is regarded as exclusively for select members, then research knowledge will also be regarded as reserved for others and not for the general nurse at the bedside.

Because of the uncertainty surrounding the distribution of expertise in the team environment, nurses learned not to question anything. In the following example, a junior nurse questioned why her patient had undergone another cardiac procedure. (Typically the surgical treatment for left hypoplastic heart involves 3 surgical procedures completed in the following order: Norwood completed in the first week of life, the Glenn procedure typically done at 3 to 6 months of age, and the Fontan operation, typically done in children older than 2 or 3 years.) The senior nurse did not point out the sequence to the junior nurse but simply advised her that it was none of their business.

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> *"Can you help me?" a young nurse asks her more senior colleague. "Why is this little one having the Fontan procedure if he has already had the Glenn procedure? I don't understand."*
> *"Well, I have learned not to question anything in medicine. Nothing is black and white in medicine." The younger nurse nods, smiles, and rolls her eyes. (field note data)*

Another aspect of the complex teamwork environment was the limited extent to which clinicians had access to membership in these specialty teams. These groups served as an important means of formal education, of exposure to the new practice guidelines, and of facilitating learning through the sharing of experience. One nurse, who wanted access to this knowledge, discussed her unsuccessful attempt to join a specialty team:

> *And you're interviewed and selected [to be part of these teams]... I've asked twice to join the team and was then turned down. I was told that, 'No, we don't think that you have enough of a knowledge base.' I just wanted the knowledge but you know, that knowledge was denied. 'No, you can't be part of that.' ...it's annoying and it's angering. (interview data)*

The practice of selecting team members for specialty teams reinforced the notion of knowledge being restricted.

Research. Another way in which the complexity of the team environment affected nurses' willingness to use research can be seen in their expectation that it was "*someone else's job to give it [research] to them.*" They were sensitive to the boundaries of their own and others' practices and fearful of breaching those boundaries. Gaining research knowledge themselves was not valued by nursing staff; instead, they expected other team members who possessed this knowledge to tell them what they needed to know. In fact, nurses expressed a distrust of research, *"You can find evidence on anything if you make the decision because there's research out there that'll show you anything you want it to*" (interview data). In this unit, nurses could not see how research could decrease their uncertainty; rather they found experiential or clinical knowledge more suitable.

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Nurses did not perceive that managers expected them to use research, nor did they see managers using research to make decisions. They thought that if managers did not use research, neither should they. However, they *did* expect that the policies that guided their practices should be based on research. Some noted the contradiction in policy-making, saying things such as: "*your timing [of the research project] is really perfect.... to be looking at research use at a time when many of our policies are not based on the latest evidence*" (interview data), and "*Well, the dress code [policy] for one and running heparin in the lines – that isn't evidence based....These are recent changes that are not supported by research*" (interview data). Their criticism that several of the recent changes on the unit were not supported by research evidence shows that they believed research was important, even if they did not believe that accessing and assessing research was part of *their* role.

Discussion

The purpose of this article is to describe the role of organizational context in shaping the nurses' research utilization behaviors in this particular nursing unit. Although organizational context has often been cited as a significant factor in facilitating the use of research (Kitson, Harvey, & McCormack, 1998; McCormack et al., 2002), this study is the first to provide details as to how it influences research use. Major findings of this ethnographic study include the description of this setting as a context of uncertainty and the identification of the sources of uncertainty. In response to the context of uncertainty on this unit, these nurses chose to retreat to a zone of safety, doing what they were told, focusing on routine, and deferring to the authority of others. These efforts to decrease uncertainty had unanticipated consequences for research use. Nurses were reluctant to

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take the initiative in asking questions or making suggestions for change, and unwilling to try anything new unless directed to do so by someone in authority. They were unwilling to use research – they thought it was someone else's job to access and assess the research and tell them what to do based on that assessment. Our research suggests that in a context of uncertainty, nurses will be reluctant to take the risks associated with using research to make decisions. Though the characteristics of this nursing unit are specific to it, the implications for research use may be generalized (Firestone, 1993).

Uncertainty research

In nursing, uncertainty has been studied from two broad perspectives – individual and environmental. Research exploring uncertainty from the individual patient's perspective in the areas of adaptation to acute and chronic illness (Cohen, 1993; McCormick, 2002; Mishel, 1988, 1997, 1999) has had little *direct* influence in interpreting and providing a context for our findings, yet it informed our initial conceptualization of uncertainty and facilitated the development of some ideas regarding potential strategies for managing uncertainty. Specifically, Cohen (1993) studied the sustained uncertainty that families with a child with life-threatening illness endure. In her work, she discusses how the 'assumptive world', that is a relatively stable set of values, beliefs and expectations as well as predictable events and behaviors, reduces perceived uncertainty. But what happens to individuals embedded in environments where the 'assumptive world' or context is one where uncertainty is paramount? Cohen's work does not address this, but the findings from our work suggest that in this environment characterized by sustained uncertainty, individuals responded by abdicating decision-

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making responsibility to others in an attempt to manage and potentially to decrease the uncertainty.

Uncertainty has also been studied in individual-level clinical decision-making by Baumann and colleagues (Baumann, Deber, & Thompson, 1991) and by Thompson and Dowding (2001). In both cases, health care professionals were studied to understand how they coped with clinical uncertainty. Specifically, Thompson and Dowding explored different *forms* of uncertainty (e.g., incomplete or imperfect knowledge, limitations in empirical knowledge) and the different approaches (e.g., using intuition, bounded rationality) used by clinicians in making clinical decisions in uncertain conditions. While this previous work has not explored uncertainty in relation to research utilization, it adds credence to our findings that uncertainty shapes behavior and can reasonably influence how and if research evidence is considered in making decisions.

More important for our findings, studies of *environmental* uncertainty provide insights into our findings. Originating in the organizational sciences, environmental uncertainty is understood as the degree of dynamism and unpredictability in an environment (Duncan, 1972). It is a pivotal concept in organizational behavior theory (Achrol & Stern, 1998) suggesting that the more dynamic the environment, the greater the uncertainty. Outside of nursing, the current understanding of uncertainty tends to be discipline specific (Weber, 1998) and relatively limited in scope, reflecting each discipline's (e.g., psychology, policy/public administration, medical sciences, decision-making) epistemological basis and specific challenges. Several nursing studies have examined environmental uncertainty and suggest insights into our study's findings. Previous work has shown that nurses experience increasing levels of uncertainty as the

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complexity, changeability and unpredictability of their respective nursing units increases (Allred et al., 1994). Specific sources of uncertainty for nurses include fluctuations in patient census and care requirements, personal limitations (e.g., lack of knowledge), a lack of control over professional practice, and external pressures on the organization (Issel, 1992). These sources of uncertainty are similar to those we identified; however, the extant literature does not identify *inconsistent management* and the *complexity of teamwork* as sources of uncertainty as our study does. Previously identified strategies to decrease or deal with the uncertainty include fostering open communication, 'living with it,' and being proactive. In the unit studied, nurses generally chose to live with uncertainty. While investigators have yet to explore uncertainty in relation to research utilization behaviors, our work points to the importance of reducing uncertainty because it creates an environment more conducive to increasing research utilization. If nurses felt safer in their work environments, they might be more willing to try new ideas. Strategies suggested in the literature to reduce uncertainty that may be fruitful include encouraging more open communication among clinicians, and ensuring that job performance expectations are clear. Managing uncertainty in health care settings is fundamental to improving research utilization. A lack of certainty keeps nurses on 'shifting sand', unable to satisfactorily anticipate events in their work environment. Without a sense of sureness, nurses are less willing to consider new ideas and new ways of working – to use research. Nurse leaders, in particular, are in a position to develop and implement strategies both to decrease uncertainty in nursing units (e.g., clear job expectations) and to increase capacity to deal with uncertainty. Such strategies might include increasing social support and modeling behavioral expectations for staff.

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The mechanisms through which context shapes research utilization

Although the context of uncertainty affected all aspects of the unit, it had particular impact in the area of the nature and structure of nurses' work. Because nurses perceived the behaviors expected of them were determined arbitrarily by physicians and managers in charge, they had little confidence in their own judgement. What might be considered appropriate one day, might earn a stern rebuke the next. The **mechanism** by which this affected their willingness to use research in their practice was reluctance to step outside of routine, physician-ordered nursing care. They could not be confident in their own decision-making, so they elected to not make decisions; their practice was not based on research but on routine and they saw little scope for decision-making in their practice. To this end, they kept their heads down, attending to monitors and recording numbers, not asking questions, not trying to understand the rationale for procedures. As far as they were concerned, it was all arbitrary.

The essential role of organizational context in shaping research utilization behavior is confirmed by the work of Dopson and Fitzgerald (2005); they suggest that organizational context is important because it determines access to group membership, professional relationships and boundaries, and the influence of hierarchy. They highlight how one aspect of organizational context, group membership, is an essential arena for facilitating learning and sharing experience, as well as being an important access point for new information. In our findings, nurses were aware of the limited access to groups that had specialty knowledge – specialty teams – and of the boundaries between the professional competencies of team members. They were careful not to trespass on the expertise of other health care professionals. The work of Dopson and colleagues

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emphasizes that the receptivity to new evidence depends more on the organizational context where the evidence is negotiated than the quality and strength of the evidence itself.

On this unit, nurses regarded clinical knowledge as being the most appropriate source of knowledge for them, and research knowledge as the purview of others – advanced practice nurses, nurse educators, and physicians. This idea is not new and echoes claims by others such as Anspach (1993), Baessler and colleagues (1994), Estabrooks (1999), Estabrooks and colleagues (2005), and Reeves and Lewin (2004). These researchers suggest that practitioners tend to draw upon sources such as clinical experience and interactions with colleagues. Through our study we were able to begin to understand **why** clinical knowledge is the preferred source of knowledge. Clinical experience is regarded as the most effective and efficient way to get answers to the context-specific questions that nurses asked on a daily basis. In the context of uncertainty in which the nurses worked, nurses were unwilling to cope with the more general information that research knowledge provides.

Discussion of the different forms of knowledge used by nurses (clinical, specialized, and research) inevitably stirs up debate on the nature of knowledge needed to practice nursing (e.g., Carper, 1978; Johnson & Ratner, 1997). There is rich deliberation in the literature on different types of knowledge and different ways of knowing; each draws upon different epistemological and ontological perspectives. A thorough treatment of this literature is beyond the scope of this paper. However, generally speaking, knowledge can be classified generally as either: 1) explicit versus tacit (Audi, 1999; Wyatt, 2001), or 2) propositional versus non-propositional (Titchen, 2000). Explicit

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knowledge consists of facts, relationships, and rules that can be reliably codified on paper or through electronic media. Research is one form of codified knowledge – it is written and therefore explicit. By contrast, tacit knowledge (Polanyi, 1966) is more difficult to articulate or write down. Significant controversy exists in the nursing literature with respect to how to describe non-propositional or tacit knowledge. Several terms are used interchangeably in the literature, such as personal knowledge (Carper, 1978), intuitive knowledge (Benner, 1984), practical knowledge (Benner, 1984), and knowing-in-practice (MacLeod, 1990). Nuances aside, the non-propositional or experiential knowledge upon which nurses in this study relied heavily was highly specific and situated, contextual, taken-for-granted, invisible, embedded in clinical practice and difficult to articulate, thus bearing many commonalities with professional craft knowledge (Titchen, 2000). This knowledge is learned through extended periods of experiencing and doing a task, during which an individual develops the capacity to make and a 'feel for' making intuitive judgements that result in successful outcomes of an activity. The particularities of the different forms of knowledge aside, what remains is a significant challenge both for nursing leaders and administrators who want research findings to shape clinical practice and for researchers studying research utilization. The challenge is that in many cases the evidence that influences clinical practice is not good quality research but rather experiential knowledge, the least reliable form of evidence. As Thompson (2003) suggests, the question then becomes, how can good quality decisions be (consistently) made when nurses tend to draw on experiential knowledge? For researchers in the field, his question becomes compelling.

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Organizational context does not act in isolation in shaping nurses' research utilization behaviors. The profession of nursing is characterized by particular power struggles and class and gender divisions. It is built upon notions of femininity and the reality that much of the work is domestic, nurturing and undervalued by society still shapes the nature of nurses' work and, therefore, their research utilization behaviors (Armstrong & Armstrong, 1990; C. Davies, 1995, 1996; K. Davies, 2003). Furthermore, the struggle to achieve professional recognition that nursing has experienced also continues to shape behaviors at work. While beyond the scope of this paper, more investigation into the roles of class, gender, and power will further an understanding of their impact on research utilization behaviors.

Contribution to nursing knowledge

Our findings make new contributions to the nursing research utilization literature. At a minimum, the findings add a new dimension to *context* in the PARIHS framework, one of the most influential theoretical frameworks for research implementation (Kitson, Harvey, & McCormack, 1998; Rycroft-Malone, Harvey, Kitson, McCormack, Seers, & Titchen, 2002). The PARIHS developers have suggested that successful implementation is a function of evidence, context, and facilitation with each element made up of sub-elements. For instance, the sub-elements of context are culture, leadership, and evaluation. In the PARIHS framework, context is seen to be the environment or setting in which practice takes place including [1] clearly defined boundaries, [2] clarity about decision-making processes, [3] clarity about patterns of power and authority, [4] resources, [5] information, and [6] feedback systems (McCormack et al., 2002). Uncertainty and its effects in an organizational context are not captured in the PARIHS

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framework. Consequently a main contribution of this study is the critical attention drawn to the significant role of uncertainty on research utilization. We suggest that, at minimum, future theoretical iterations of the PARIHS framework need to consider uncertainty as part of the framework.

The PARIHS framework is not the only research utilization model in nursing. In fact, over the more than 30 year history of research utilization investigations in nursing, more than 20 distinct models and frameworks have been developed. Only a fraction of the models have an organizational component to them (e.g., Dobbins, Ciliska, Cockerill, Barnsley & DiCenso, 2002; Goode & Titler, 1996; Horsley, Crane & Bingle, 1978; Logan & Graham, 1998; Stetler, 2003). None of these models include uncertainty as a factor that influences research utilization. Before this, a frequent criticism of research utilization models was that they could not capture the complexity of the health care context – the inclusion of uncertainty may enable a more dynamic and complex appreciation of the context. Our findings also add empirical support to the argument offered by Dopson and Fitzgerald (2005) that context may indeed trump evidence and that a context with a high level of uncertainty may limit the potential for research utilization.

Rigor

Qualitative research projects are often challenged on grounds of rigor or lack thereof. While the challenge may be in direct response to the quality of the study, it can also be a response to the lack of familiarity with qualitative research measures for rigor or the lack of transparency for these measures by the researcher (Morse & Field, 1995). A key issue for qualitative research is developing a shared understanding of appropriate

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procedures for assessing the credibility or trustworthiness of the research. I attended to four criteria and will describe each in detail: (a) credibility, (b) transferability, (c) dependability and (d) confirmability.

Credibility refers to whether or not the study results 'ring true.' I addressed this in four ways. First, I broadly sampled interview participants to ensure I did not have an over-concentration on certain (i.e., elite) respondents due to their articulacy or role or position within the unit. Sampling was based on several criteria including professional role (e.g., general duty nurse, nurse manager, member of a specialty team, physician) and length of time employed in the unit; this strategy allowed for multiple and diverse perspectives in the data and ensured that data did not reflect an 'elite bias'. [16] Second, I had prolonged engagement in the field (7 months) to limit the potential for research bias as well as compensating for the effects of unusual events. Third, I had regular 'peer debriefings' with my doctoral supervisor. My doctoral supervisor had a solid understanding of my study and consistently questioned my findings by challenging my working hypotheses and offering rival perspectives. Fourth, I reported the multiple perspectives as clearly as possible in the final write up of my findings.

Confirmability is the degree to which the research findings are the product of the focus of the study and not the biases of the researcher. I attended to confirmability of my research findings through four specific steps. First, I documented my personal biases and expectations for the study prior to entering the field. Second, through the duration of the study, I completed a comprehensive audit trail that documents all conclusions, interpretations, and recommendations arising from my data. Third, I kept detailed

[16] While I did interview nurse managers and others in more senior roles, the majority of my data was acquired from general duty nurses.

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accounts of all of my 'raw' data, specifically field note jottings, individualized interview schedules and interview tapes. Fourth, I have a complete inventory of all analysis products that includes written up detailed field notes, and theoretical and analytical memos that document my developing thoughts about my data. Furthermore, a valid concern in ethnographic research related to confirmability is 'going native,' that is losing one's perspective or one's bracketing ability. Ensuring neutrality was particularly important given that I am a health care professional. Balancing two competing forces, that is, 'going native' with 'getting on the inside' was challenging. In order to get to the 'inside' of the unit to capture the emic or insiders' perspectives I had to spend enough time in the setting (1 month dedicated to entry into the field and 7 months of data collection) to build relationships and trust. On the other hand, I needed to simultaneously limit my observation periods to a maximum of three hours (per day) although I systematically did observation during all hours and days of the week. Limiting my daily observation time was important to ensure that I did not 'go native' and that unit events did not become assumed.

Dependability or consistency refers to whether the findings would be consistent if the study was replicated in the same setting with the same participants. In order to enhance the dependability of my study findings, I kept a detailed audit trail that documents all of the decisions that I made throughout the research process. This naturally links to the transferability or generalizability of my findings.

Transferability or applicability is the extent to which the findings can be applied in other contexts or with other respondents. I attended to transferability in two ways. First, I provided thick description of the nursing unit studied. Because transferability in

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an interpretive study depends on the similarities between the sending and receiving contexts, I collected detailed descriptions of the nursing unit and reported them with sufficient detail and precision to allow the reader to make judgements about transferability (Firestone, 1993). Researchers cannot know the situations in which readers are likely to consider applying their findings; therefore, I described a broad range of background features about the nursing unit studied so that readers have enough information to assess the match between the nursing unit that I studied and their own. This point is especially important considering that in Paper Four, I propose small strategies for nursing leaders to decrease uncertainty. While these strategies arise from my qualitative findings in Paper Three, readers of my strategies must access the match between the nursing unit that I studied and their nursing unit, prior to determining if these strategies are transferable to their context. The second strategy that I used to enhance transferability was that I purposively sampled events to observe and unit members to interview in order to maximize the range of specific information that could be obtained from and about the nursing unit studied.

Conclusion

Organizational context has been repeatedly cited as an important influence in promoting research utilization but until this study, the scope of its influence has not been explored. To begin to understand its influence, we conducted an ethnographic study of a pediatric intensive care unit. We found that the primary characteristic of this context was uncertainty. Our findings pointed to four sources of uncertainty: 1) the precarious condition of seriously ill patients, 2) the inherent unpredictability of nurses' work, 3) the complexity of teamwork, and 4) inconsistency in management. We discussed each of

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these sources of uncertainty in relation to the nature and structure of nurses' work and the nature of valued knowledge. We found that the context of uncertainty shaped the research utilization behaviors of nurses. Our findings suggested that the uncertainty in the context ultimately prevented nurses from going outside of the safe zone. Thus, we argued that uncertainty must be controlled or reduced prior to and during more traditional research utilization interventions. Our findings begin to reveal the influence of organizational context on research utilization behaviors by suggesting that particular organizational qualities or features (e.g., certainty) must be present in order to create and sustain clinical environments that are ideal for research utilization.

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Table 3.1

Attentional Framework to guide fieldwork

Theoretically proposed ways of nursing unit context shaping research use	**How would I *see* this?**
Assumption of "doing" – in the value set of busyness – creates a tension with the values needed to use research	• How time is spent? • Response of others when someone reads or uses research? • How supernumerary staff are utilized (e.g., focus of CNS, etc.) • How rounds are conducted? (e.g., what is the focus of rounds, resident, nurse learning? Or is getting the work done the priority?) • What do staff do when there are extra staff? Or when the unit is slower? (e.g., staff sent home? Staff encouraged to read or get up-to-date on policies, etc.)
Orientations towards doing results in the valuing of particular forms of knowledge over research knowledge	• What forms of knowledge are used to support decisions (I would see this in rounds… if not, follow up with nurses, residents and doctors after the fact). Also, I would "see" this when observing nurses doing their work by asking them how did they come to make that decision? • What provides the structure/foundation to the orientation of the new staff member to the PICU (is this information research-based, based on unit experience, etc.)
The "busyness" value set emphasizes task-based behaviour – thereby the contexts for interaction are minimized. (Contexts for interaction are essential for research use, research use demands settings to reflect, share and discuss	• How time is spent on the unit? • What are the contexts for interaction -- who is involved, what is said in these interactions, etc.) • Where are the contexts for interactions? (e.g., are they situated moments, or not formal moments, for interactions). • Is the work of nurses and physicians structured in such a way to emphasize tasks? • Are there forums or spaces on the unit for using research? (e.g., journal club, continuing

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information).	education, ground rounds, etc. – who is involved? How is it decided who gets to attend, what is the response of others when someone else attends these activities?)

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Table 3.2

Data excerpts supporting each source of uncertainty

Source of uncertainty	**Data excerpts**
Precarious status of patients	"I haven't had one of these types of patients for a long time. I am excited about it. How about you [referring to colleague]? How long has it been for you? I am finding it hard though because I haven't had one [of these complex patients] since my leave."
Inconsistency in management	"Now [that] we have five unit managers, there is no one captain or one in charge. Sometimes if I ask each one of them separately, I'll get a different answer. There isn't consistency."
Inconsistency in management	"The other thing is the management structure. There is not one boss. For instance at ADT Canada – there is one boss, not here. It is a problem... you have to work differently based on who is in charge."
Inconsistency in management	"It is the lack of consistency amongst the physicians is ... the problem – with the [particular patient] it was that they were saying different things."
Inherent unpredictability of nurses' work	"I am not sure [how my day is going to be]. My patient, because he is doing so well, is going to be transferred to the unit today. So then, I am sure that I will get another admission. But you know, at this point, I don't know, because rounds have got delayed. The physicians had a meeting, and now...you know, it would help if they discharged or transferred patients first, then did rounds."
Inherent unpredictability of nurses' work	"Let me tell you, it has been so busy, so much moving around of patients. This wasn't my patient at the start of the shift. I was assigned the first post-op, so what that means is that I have all morning to get set up for my admission – I can have everything ready and I also help cover breaks until my admission arrives. But then amongst everything else a nurse had to go home sick. She was really sick; she can't even give me report – so what ended up happening was that she gave report to the charge nurse and then the charge nurse gave me report. So really – I got report third hand. So I don't know what is happening with the cardiac – who is going to take it. I know that two patients were discharged to the ward. They had to be – this morning we had 17 patients – they were doubled up in rooms one and two. That isn't

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	good when there is no emergency bed... so I don't know who is going to take it."
Complexity of teamwork	"It is how the message is delivered. I have told the unit managers this – you can't always just blame the nurses because you know with the central line infections there are at least six people who have touched the line by the time they are back on the ward...we do not always know what is behind the practice changes – it is more than just nurses involved, yet the memos get addressed just to nurses though.
Complexity of teamwork	"Can you help me?" a nurse asks her colleague. "Why is this little one having the FONTAN procedure if he has already had the Glenn procedure? I don't understand." "Well, I have learned not to question anything in medicine. Nothing is black and white in medicine." The younger nurse nods, smiles and rolls her eyes.

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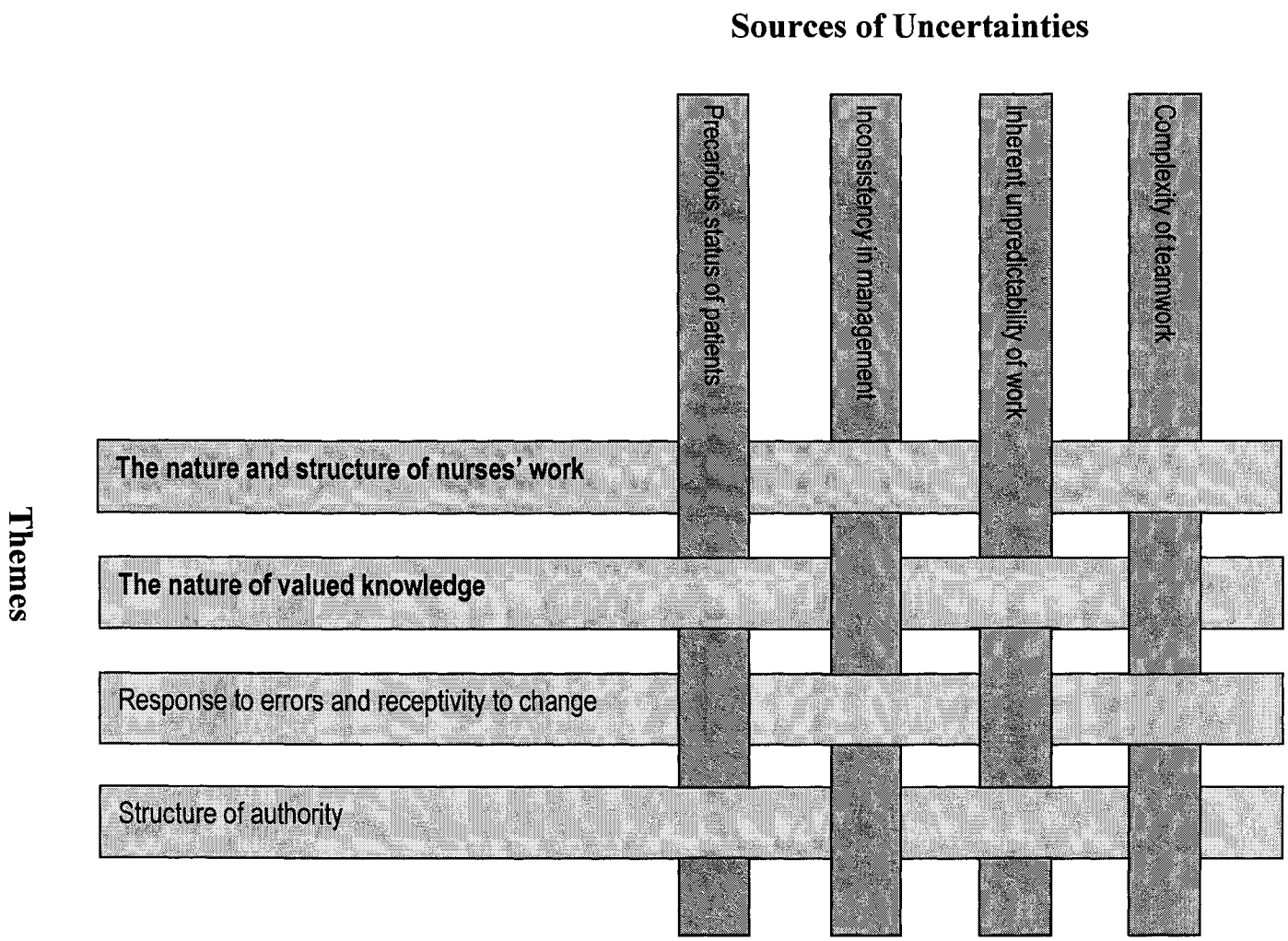
Figure 3.1

Contextual factors shaping research utilization



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Paper 4

Dealing with uncertainty: Optimizing environments for knowledge translation

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Target Journal: Canadian Journal of Nursing Leadership

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Introduction

Although most practitioners agree that nursing practice should reflect the latest research, it has not been easy to put research into practice. Putting research into practice demands simultaneous shifts in behavior at several levels: at the individual practitioner level, at the local clinical environment level and at the level of the larger health organization. Much of the investigation in the research utilization and knowledge translation fields has been unable to grasp the complexity of these shifts. To begin with, consistent with the era of personal and professional responsibility, the reluctance to use research has been attributed largely to individual determinants such as the practitioners' inability to understand research (a lack of research skills and inadequate educational preparation), age and attitude toward research. However, recent research evidence (e.g., Estabrooks, 2003; Estabrooks, Floyd, Scott-Findlay, O'Leary and Gustha, 2003; Wensing, Wollersheim & Grol, 2006) suggests that a more fruitful approach would be to consider elements of the local context or work environment given that the majority of health care professionals work within very complex organizational structures.

Previous research

In this paper, I report briefly on findings from a study that explored the influence of context on research utilization and in greater depth on small-scale strategies that nursing leaders and managers may be able to implement based on the findings. These findings augment existing research on the role of context in influencing moving knowledge into action (e.g., Dopson & Fitzgerald, 2005) by suggesting that

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environmental uncertainty is a significant dimension of the context not previously identified. I argue that decreasing uncertainty to a particular level or threshold may be a necessary precursor to increasing knowledge translation.

Previously, I argued that the context of uncertainty shaped research utilization behaviors of nurses. Although the context of uncertainty affected all aspects of the unit, it had particular impact in the area of the nature and structure of nurses' work. Nurses perceived the behaviour expected of them was determined *arbitrarily* by physicians and managers in charge, and consequently, they had little confidence in their own judgement. What might be considered appropriate one day, might be punished the next. The mechanism by which this affected their willingness to use research in their practice was the tendency of nurses to stay inside of a safe zone in which they resorted to doing what they were told, focussed on routine and deferred to the authority of others. The uncertainty caused nurses to lack confidence in their own decision making; thus, they abdicated decision making to others. My findings, although they were specific to the characteristics of the nursing unit studied, have potentially important implications for nursing leaders and managers in similar 'types' of nursing units who wish to optimize clinical environments to foster knowledge translation.

In this study, I identified four sources of uncertainty: 1) the precarious condition of seriously ill patients, 2) the inherent unpredictability of nurses' work, 3) the complexity of teamwork, and 4) inconsistency in management. The first two of these sources of uncertainty were inherent to the patient population and setting and were not

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amenable to change. However, the other two sources of uncertainty (inconsistency in management and the complexity of teamwork) do represent modifiable conditions and open up the possibility of innovative strategies that centre on decreasing and managing uncertainty. In this paper, I propose small-scale strategies that nursing leaders and managers can adopt to optimize clinical environments for knowledge translation.

Strategies to decrease uncertainty

In the clinical environment I studied, two significant sources of uncertainty were inconsistency in management and the complexity of teamwork.

Inconsistency in management

In this setting, much uncertainty was created by the incongruent behavioural expectations for nurses from the management group and physicians. The inability of nurses to anticipate the outcome of a situation because of the variance in management and physician decisions caused significant uncertainty. In Table 4.1, I propose some small steps that nursing leaders could explore to decrease uncertainty resulting from inconsistencies in management. These strategies include: 1) the nursing management group working to improve consistency in decision making and behavioural expectations amongst themselves and 2) increasing communication between local nursing management and the nurses.

First, regular meetings of the unit nursing management, that is, unit managers and charge nurses providing 24 hour coverage, would offer the potential for increased consistency within the management group. In these regular meetings, the nursing leader

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or patient care manager would work with the charge nurses and unit managers to examine the consistencies and inconsistencies in their decision-making. Through ongoing discussions and critical examination of individual differences, the inconsistencies would become more apparent and these could become the areas in which the nursing managers work together to develop more uniformity as a group.

Second, regular information sharing of management decisions with nursing staff would assist in alleviating some uncertainty related to inconsistencies in management. For instance, a one page weekly newsletter reporting on unit issues and local unit nursing management decisions would facilitate enhanced consistency. As well as informing the nurses at the bedside about management decisions, these weekly newsletters would serve as a guide for management in enhancing consistency. Clear, consistent information about unit changes and expectations for all staff would be well-received. Staff nurses currently report that expectations change depending on which manager is in charge and the particular shift they are working (e.g., day or night shift).

Complexity of teamwork

In the unit that I studied, nurses worked on a daily basis with a significant number of health care professionals from diverse disciplinary backgrounds. Due to shared responsibility, and multiple communication vectors, it was often challenging for nurses to control as well as contribute to their patients' care, yet they were often held responsible when things went wrong. Because of the demands of working in such a high velocity environment with much uncertainty generated from multiple sources, including the

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complexity of teamwork in this setting, nurses tended to rely on the structure and routine of their work to gain some certainty. However, nursing managers and leaders could implement three strategies to decrease some of the uncertainty caused by complex teamwork.

First, teamwork demands interdependence among professionals but it can result in the blurring of professional boundaries. Previous research shows that nurses perceive a clear relationship between mandated teamwork and deteriorating work conditions (Rafferty & Aiken, 2001). In such conditions, as in the unit I studied, teamwork may increase uncertainty. One particularly important area related to nurses' scope of practice. In this unit, the uncertainty caused by the complexity of teamwork resulted in physician orders for activities that were clearly within nursing's scope of practice (e.g., bathing, turning and positioning, skin care). The practice of obtaining physician orders for nursing activities further compounded this complexity with nurses feeling an overwhelming sense of uncertainty as to what they could or could not do autonomously. This resultant ambiguity could be overcome by the nursing management group working together to intermittently change nurses' expectations for physician orders for activities clearly within the scope of nurses' practice. Over a period of time, the unit management group needs to come to consensus on which areas require physician orders and which areas do not. Working together as a group, unit managers and charge nurses can follow up with nurses when physician orders were requested for activities within their scope of practice. With constant reminding, a clearer sense of scope of practice should be acquired.

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Complex teamwork environments can often lead to team members becoming sensitive to boundaries. In the unit that I studied, an over-sensitivity to boundaries was manifested in knowledge being hoarded. In particular, specialized knowledge was shared only with select members of the nursing staff, despite the obvious relevance of the knowledge to all nurses' professional responsibilities. Increasing access to and sharing of specialized knowledge could contribute to decreasing uncertainty in the clinical environment. Knowledge sharing among nurses needs to be a core goal for nurse leaders; however, as health care has become increasingly sophisticated and specialized, the tendency for knowledge to be compartmentalized has grown (Gunderman & Chan, 2003). As Gunderman & Chan (2003) suggest, moving to models that resemble communities where knowledge is freely shared rather than silos where knowledge is stored and not made accessible to all yields advantages. A short-term strategy to enhance teamwork would be to democratize access to specialized knowledge through the nursing journal clubs. The importance of special forums, such as discipline specific journal clubs, for accessing and sharing knowledge amongst health care professionals has been emphasized in preious work by Golden-Biddle and colleagues (2003) and Dopson and Fitzgerald (2005). Nursing managers and leaders can be instrumental in the development of journal clubs. In order for discipline specific journal clubs to be effective, nursing leaders and managers need to create the 'space' for these forums through the establishment of regular times and ensuring that additional human resources are in place to ensure that nurses can attend. In journal clubs, specialized knowledge can be freely shared and can ultimately

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lead to increased certainty about patient care treatments, patient responses to illness and new developments in the field. Although the free sharing of knowledge may appear to undermine authority in highly chaotic and controlled environments, in fact, the opposite is more likely. A lack of knowledge sharing may lead to decreased commitment to the work environment (Gunderman et al.) and increased uncertainty.

Another strategy to increase the sharing of knowledge is to enhance access. Computer terminals are often the chosen medium for getting information to heath care professionals; however, in many cases the computers are located in areas that are inaccessible to nurses who are working. Specifically, for nurses working in acute care and critical care environments, computer access must be at the bedside, as well as being user-friendly and optimally touch screen operated. Quick, easy access to credible information is necessary as is giving nurses the skills they need to access the information. In many health care environments, rapid change has made all information accessible through electronic means, yet ensuring that nurses have access to the equipment and the skills needed to obtain this information has been slower to come. In some cases, it may be feasible to offer different distribution channels for the sharing of relevant information for practice. Given the current barriers to nurses in offering information electronically (e.g. lack of access, inadequate computer skills), perhaps a short term option is to offer information in hard copy format until optimal access is achieved and all nurses have the opportunity to enhance their computer skills.

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Conclusion

Building upon earlier empirical work that explored how local level context shapes the knowledge translation behaviors of acute care nurses, I proposed strategies for nurse managers to control or reduce uncertainty. I proposed that a precondition for knowledge translation was ensuring that uncertainty was decreased or kept in check as it significantly shaped nurses' knowledge translation behaviors. Before this, contextual uncertainty has not been mentioned in the broad literature affecting knowledge translation. Decreasing uncertainty in the context may be in fact a necessary precursor to any traditional knowledge translation interventions. Nurse leaders and managers are responsible for fostering effective clinical practice environments. The strategies proposed here may prove useful in this regard. Proposed strategies ranged from the creation of nursing management forums to reduce inconsistencies within the management group to enhancing access to research-based information. The important point is that small, incremental steps can be made by nursing leaders to realize substantive changes in their clinical environments. These small changes can optimize nursing work environments for knowledge translation.

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Table 4.1

Strategies to decrease uncertainty in clinical environments

Source of uncertainty	**Aim**	**Potential small steps**
Precarious status of seriously ill patients	Not amenable to change	n/a
Inherent unpredictability of nurses' work	Not amenable to change	n/a
Inconsistency in management	Increase consistency in the management group (e.g., manager/charge nurses providing 24 hour coverage)	• Regular meetings of unit nursing management team to explore individual consistencies and inconsistencies regarding decision-making. • Increased communication with staff, e.g., weekly bulletins about unit decisions can be posted in the staff room. Increased information about management decisions will translate into clearer expectations for nurses

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Complexity of teamwork	Decrease the complexity in team work through: 1) creation of specific forums to increase consistency and decrease ambiguity; 2) highlighting the benefits of teamwork and interventions to foster collaboration among staff; 3) increased access to and sharing of knowledge	• Nursing management can work to change nurses' expectations for physician orders for activities that are clearly within nurses' scope of practice. • Trial nursing journal club • Increase access to information through different distribution channels.

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Appendices

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Appendix A
Screening Criteria – Critical Review of the Organizational Culture Research

1. Assessment of article focus

• organizational culture	YES	NO
• organizational environment	YES	NO
• work environment	YES	NO
• practice environment	YES	NO
• work culture	YES	NO

Definition of organizational culture guiding this review:

Organizational culture provides a context for meaning making and interpretation within the organization. It conveys a sense of what is valued and how things should be done within the organization. For the purposes of this study, I have conceptualized organizational culture as a sense-making and control mechanism that guides and shapes the behavior and attitudes of organization members.

2. Indicators of organizational culture (definitions and/or instruments will be assessed), study must do at least one of the following to be included:

• conveys a sense of values in the setting	YES	NO
• conveys a sense of how things should be done	YES	NO
• facilitates making "sense" of setting activities	YES	NO

3. Must be a research article (e.g., qualitative/quantitative methods, no review articles)

YES NO

4. Research must be done by NURSES and/or on NURSES

YES NO

Notes:

Authors: _____

Year: _____ Journal: _____

***completed <u>AFTER</u> article retrieval**

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Appendix B
Data extraction – Critical Review of the Organizational Culture Research

Basic information

1. Author: _____
2 Article Title: _____
3. Journal: _____
4. Year: _____
5. Country of first author: _____

Information specific to organizational culture

6. Organizational culture defined: Yes No
7. Theoretical underpinnings of study: _____
8. Organizational culture definition: _____
9. Organizational culture conceptualization (based on Hatch's categorization; e.g., modern, symbolic-interpretative)
   _____
10. Organizational culture measured: Yes No
11. Organizational culture tool used: _____

12. Primary focus of the study (e.g., organizational culture, job satisfaction):
    _____

13. Secondary focus of the study (e.g., job satisfaction):
    _____

Information specific to research design

14. Sample size: _____
15. Type of sample (e.g., random, convenience): _____
16. Setting : _____
17. Participants studied (e.g., nurses, unit staff, etc.): _____
18. Type of research study (e.g., quantitative, qualitative): _____
19. Unit of Analysis: _____
20. Analysis (e.g., bivariate, multivariate, qualitative): _____
21. Relationship between OC and research use examined: Yes No

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Appendix C
Information Sheet for Families

Study Title: **Understanding the influence of unit culture on pediatric health care professionals' research use behaviours**

Principal Investigator: **Shannon Scott-Findlay, RN, PhD (c)**

What is the study about? This study is about understanding how the work environment influences health care professionals' research use behaviours. Patients and their families are not a focus of the study; the study is focused on health care professionals and hospital staff in the PICU. This study consists of the researcher (a pediatric nurse) observing routine activities in the Pediatric Intensive Care Unit (PICU). The researcher will wear a nametag that clearly identifies her as a researcher. She will introduce herself and tell you that she is observing activities in the PICU. For instance, she will observe routine activities such as patient rounds to see how health care professionals in the PICU communicate and interact with each other. She will ask health care professionals and hospital staff questions about their work (e.g., what are the values that guide their behaviour). The observations that she will carry out will not interfere with patient care. The researcher will make notes about what she sees. She will also review unit memos and communications (not including patient charts) and may interview some unit staff. This study is being conducted as part of a doctoral dissertation.

Your privacy: All information will be held confidential (or private), except when professional codes of ethics or legislation (or the law) require reporting. The information that she collects will be kept for at least five years after the study is done. The information will be kept in a secure area (i.e. locked filing cabinet). Your name or any other identifying information will not be attached to the information. Your name will also never be used in any presentations or publications of the study results. The information gathered for this study may be looked at again in the future to help us answer other study questions. If so, the ethics board will first review the study to ensure the information is used ethically.

While you may not benefit directly from the study, the information gained may assist health care professionals with research use.

Agreeing to be observed or not: You may tell the researcher or any staff member that you do not want the researcher to observe care being provided to your family member, and the researcher will follow your request. Your decision will not affect the care of your family member.

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Participation in this study is voluntary

Your agreement to these observations is assumed unless you indicate otherwise. If you have questions or concerns about this study at any time, you may contact:

- Researcher, Shannon Scott-Findlay, Doctoral candidate, Faculty of Nursing at 492.8473 or
- Doctoral supervisor, Dr. Carole Estabrooks, Faculty of Nursing, University of Alberta, 492.3451 or
- Director, Research, Faculty of Nursing, Dr. Kathy Kovacs Burns at 492.3769 (third party neutral person)

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Appendix D
Information Sheet for Health Care Professionals

Study Title: **Understanding the influence of unit culture on pediatric health care professionals' research use behaviours**

Principal Investigator: **Shannon Scott-Findlay, RN, PhD (c)**

What is the study about? This study is about understanding how the work environment influences health care professionals' research use behaviours. One part of this study consists of the researcher (a pediatric nurse) observing routine activities in the Pediatric Intensive Care Unit (PICU). The researcher will wear a name tag that clearly identifies her as a researcher. She will introduce herself and tell you that she is observing activities in the PICU. For instance, patient rounds are routine activities that she will observe to gain an understanding of the communication patterns and interactions amongst the health care professionals in the PICU. She will ask health care professionals and hospital staff questions about their work (e.g., what are the values that guide their behaviour). The observations that she will carry out will not interfere with patient care. The researcher will make notes about what she sees. She will also review unit communications and may interview some unit staff. Patients and their families are not a focus of the study; the study is focused on health care professionals and hospital staff in the PICU. This study is being conducted as part of a doctoral dissertation.

Your privacy: All information will be held confidential (or private), except when professional codes of ethics or legislation (or the law) require reporting. The information that you provide will be kept for at least five years after the study is done. The information will be kept in a secure area (i.e. locked filing cabinet). Your name or any other identifying information will not be attached to the information you gave. Your name will also never be used in any presentations or publications of the study results. The information gathered for this study may be looked at again in the future to help us answer other study questions. If so, the ethics board will first review the study to ensure the information is used ethically. While you may not benefit directly from the study, the information gained may assist health care professionals with research use.

Agreeing to be observed or not: When the researcher wishes to talk to individuals (staff), she will ask for verbal consent. If the researcher wishes to interview you in greater depth and tape the interview, she will ask you to sign a written consent. You may tell the researcher or any staff member that you do not want to be observed, and the researcher will follow your request. Your decision will not affect your care. If you are a staff member, your decision will not affect your employment.

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Participation in this study is voluntary.

YOUR AGREEMENT TO THESE OBSERVATIONS IS ASSUMED UNLESS YOU INDICATE OTHERWISE

If you have questions or concerns about this study at any time, you may contact:

- Researcher, Shannon Scott-Findlay, Doctoral candidate, Faculty of Nursing at 492.8473 or
- Doctoral supervisor, Dr. Carole Estabrooks, Faculty of Nursing, University of Alberta, 492.3451 or
- Director, Research, Faculty of Nursing, Dr. Kathy Kovacs Burns at 492.3769 (third party neutral person)

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Appendix E
Interview Information Sheet for Health Care Professionals

Study Title: **Understanding the influence of unit culture on pediatric health care professionals' research use behaviours**

Principal Investigator: **Shannon Scott-Findlay, RN, PhD (c)**

What is the study about? This study is about understanding how the work environment influences health care professionals' research use behaviours. There are two components to this study, 1) an observational component and 2) interviews of health care professionals. Through the course of the study, the researcher will identify individuals that are good informants of the PICU setting. Participation in the study involves one or two interviews with a researcher that will be tape recorded and subsequently transcribed. The interview questions will be about some or all of the following:

- my experiences working in the PICU
- my experiences using research
- my perceptions on the values within the PICU that guide how work is completed
- facilitators and barriers to using research in the PICU
- my ideas about how management and administrative practices and decisions influence research use by PICU clinicians

Interviews will take about 45 to 60 minutes and occur at a convenient time and place. Health care professionals that are being interviewed may refuse to answer any questions, stop the interview at any time or withdraw from the study. Interviewees can decline to discuss any topic in the interview if they wish.
This study is being conducted as part of a doctoral dissertation.

Your privacy: All information will be held confidential (or private), except when professional codes of ethics or legislation (or the law) require reporting. The information that you provide will be kept for at least five years after the study is done. The information will be kept in a secure area (i.e. locked filing cabinet). Your name or any other identifying information will not be attached to the information you gave. Your name will also never be used in any presentations or publications of the study results. The data gathered from this study will be aggregated so as not to identify anyone. Direct quotations may be used in study reports and publications; however, the quotations will be presented in a manner that removes any identifiable information. The information gathered for this study may be looked at again in the future to help us answer other study questions. If so, the ethics board will first review the study to ensure the information is used ethically.

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While you may not benefit directly from the study, the information gained may assist health care professionals with research use.

If you have questions or concerns about this study at any time, you may contact:

- Researcher, Shannon Scott-Findlay, Doctoral candidate, Faculty of Nursing at 492.8473 or
- Doctoral supervisor, Dr. Carole Estabrooks, Faculty of Nursing, University of Alberta, 492.3451 or
- Director, Research, Faculty of Nursing, Dr. Kathy Kovacs Burns at 492.3769 (third party neutral person)

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Appendix F
Health Professionals' Consent for Interviews

STUDY TITLE: **Understanding the influence of unit culture on pediatric health care professionals' research use behaviours**

(to be completed by participant)

Do you understand that you have been asked to be a participant in this research study?	Yes	No
Have you received and read a copy of the attached information sheet?		
Do you understand the benefits and the risks or participating in this study?		
Have you had an opportunity to ask questions and to discuss this study?		
Do you understand that you are free to refuse to participate or withdraw from the study at any time? You do not have to give a reason and it will not affect your job.		
Has the issue of confidentiality been explained to you?		
Do you understand who will have access to the information?		
Do you understand that the data collected is for the data analysis?		

This study was explained to me by:_____.

I agree to take part in this study.

_____ _____ _____

Signature of Research Participant Date Witness

_____ _____

Printed Name Printed Name

The above research procedures have been explained to me. Any questions have been answered to my satisfaction. I have been given a copy of this form to keep.

_____ _____

(Signature of Participant and Date) (Signature of Witness and Date)

If you have any questions about this study please contact:

Researcher: Shannon Scott-Findlay, RN, Ph.D. (c) **PhD Supervisor**: Dr C. Estabrooks, RN, Ph.D.

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	Faculty of Nursing University of Alberta 492.8473	Faculty of Nursing University of Alberta 492.3451
Director:	Dr. Katharine Kovacs Burns (third party neutral person)	
(Research)	Faculty of Nursing University of Alberta 492.3769	

The information sheet must be attached to this consent form and a copy given to the participant.

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Appendix G
Menu of potential interview questions (Ethnographic Study)

Opening question:

Tell me what it is like to work in the PICU.
(explore values from various perspectives, e.g., nursing, medical, etc.)

Supplementary questions:

Supplemental questions are organized by the attentional framework. The attentional framework developed for the participant observation component of this study explores the nature, structure and pace of work for health care professionals in the PICU. An important element has been added to the interviews, that is, transitions. Transitions are shifts that happen in different degrees at different times. These transitions illuminate the uniqueness or the defining features of the context. For instance, working a night shift when normally working day shifts can illuminate the differences or uniqueness of day shifts. Discussion of the transitions or critical junctures will facilitate members to talk about the nursing unit context.

The content of the interviews (e.g., process and choice of interview questions) is dependent on when the interview happens in the course of the whole study, as well as my observations to date. The following questions serve as a potential pool of questions, which may or may not be used, rather, their inclusion in the list serves to highlight the themes that I plan to cover in the interviews.

<u>Transitions:</u>

1. How long have you worked on the unit? Describe how the unit has changed over time?
2. Is it different to work on the unit on different shifts? I mean, do you structure your work differently on days, rather than nights and on weekdays compared to weekends? Are there staff differences too (e.g., less staff on nights? Weekends?)
3. How would you describe this nursing unit to someone considering transferring to it?
4. How would you describe this nursing unit to your best friend?
5. Have you ever worked anywhere else? On a different unit, in a different hospital? Tell me about the differences between that place and here. What you do like about working here? What don't you like about working on this unit (e.g., what drives you crazy?)

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6. When you first started to work on this unit did you feel as though your values and ways of working had to change to fit with the unit? How so?

Nature and Structure of Work:

7. How is work organized on the unit? Is it organized via speciality, type of patient, but nurse, etc.? Who organizes the work on the unit?
8. How is the space organized on the unit? Who decided how the space was going to be organized? What are the perceptions about how the space is organized? Is the space suitable for the work?
9. What are some of the rituals on the unit? What are some of the stories on the unit?
10. What is valued on the unit? Getting one's work done on time? Keeping the patients comfortable? Having time to socialize with colleagues?
11. Do you ever reflect on your clinical practice? Is this encouraged? If yes, by whom?

Pace of Work:

12. How is time spent on the unit? What are the various perceptions of time on the unit? Who decides how time is spent on the nursing unit? Do health care professionals feel as though they have control over how they spent their time?
13. What do you do when the unit is not busy?

Additional questions:

14. How is new information accessed? By whom? For whom? How is this information critiqued? What happens with this information? Do some individuals and/or groups of people use more research than others? Why?
15. How are decisions made on the unit? Who is involved? What happens if there is conflict? Who are the leaders on the unit? The informal ones? How do they exert their control?
16. Tell me about the authority that you have to make your own decisions. How much freedom do you have to nurse your patients? What drives your clinical practice decisions? What role does the policy and procedure manual have over your clinical practice? Who updates the clinical practice manual? Is it easy to change a clinical policy?
17. What is the foundation of your clinical decision-making? What do you use as rationale for your decisions (e.g., previous experience, etc.)
18. If you have a new idea for patient care how would you go about implementing it on this unit? Has this happened in your unit before (implementation of

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nurses' ideas). What types of resistance might you experience? Who would be supportive? Who wouldn't be?

19. What is your assessment about the staff's perceptions about changes (patient care practices) on the unit? Are people receptive to change? Do they change because they have to?
20. Who are the leaders on this unit? Who are the informal leaders? If a practice needed to change, who would have to be "on-side" for it to work?
21. What would you think of someone who decided to read rather than help out a fellow colleague?
22. How are people socialized to the unit? How are new members hired? Who is involved in the process?
23. How are problems handled on the unit? How are clinical decisions made on the unit? What information impacts on these decisions (e.g. research, patient information, clinical circumstances, experience, expert opinion, etc.)

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