THE ROLE OF SOCIAL NETWORKS IN MEDICATION INFORMATION SEEKING BEHAVIOR

A DISSERTATION

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I am forever grateful for the loving support of my parents, Jerrold and Mary Wharton. Thank you for believing in me and helping me dream while making sure I always have two feet on the ground. I am also extremely grateful to my Minnesota family, particularly, Garry and Gail Kjos. You have opened your hearts to me as if I was your own daughter and for that, I am more thankful than you could ever know.

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For bringing me joy and fulfillment as well as humbling me at the fantastic wonder and miracle of God's creation, I dedicate this dissertation to my children. They have served to remind me daily that there is so much more to life than professional success. They are by far, my greatest achievement.

Dedicated with love to my children

ABSTRACT

The study purpose was to determine the role of social networks in medication

information seeking behavior by describing the structure of social networks that provide

information, the content provided, and the function of information in addition to

individual characteristics of people who use various types of social networks to obtain

medication information. This was an exploratory qualitative research study, which used

volunteering participants who were at least eighteen years old. Forty subjects completed

a personal interview that measured aspects of one's social network as a modality to seek

medication information. Data were audio recorded and transcribed using theory and prior

research driven themes as a basis for ethnographic content analysis. Phase I analysis

found that social network structures used for obtaining medication information were

made up of health professionals and lay social contacts. Content themes included factual

information, personal experiences, and beliefs and attitudes. Function themes were

identified as decision making, diagnosis, monitoring, prescriptive or recommendations,

social support, staying informed, or validation. Phase II analysis used clustering of social

network types and themes to create coding intersections within the data to explore co-

occurring thematic concepts. Social network contacts displayed different roles for what

content was provided and the subsequent function of the information. For health

professionals, the strongest content related role was to provide factual information

functioning to support patient decision making, monitoring, recommendations, staying

informed, and validation of information. In contrast, the role of content provision from

lay contacts was to provide factual information, personal experiences and beliefs and

attitudes functioning to support decision making, monitoring, recommendations, social support, staying informed, or validation of information. Findings from this study described the role of social networks in medication information seeking behavior of patients as complex, dynamic, and important to the medication use experience. The study concluded that patients use social network contacts from both inside and outside of health care to satisfy all types of information needs. Finally, by coming to a more complete understanding of the social nature of the information environment, health professionals can better understand information needs from a patient's perspective.

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CHAPTER 1: Introduction

1.1 Introduction

Patients see the pharmacist as just one of many possible sources of medication information (Dutta-Bergman, 2004a; Morris, Grossman, Barkdoll, Gordon, & Soviero, 1984; Pennbridge, Moya, & Rodrigues, 1999; Sleath, Roter, Chewning, & Svarstad, 2003). Patients also seek sources outside of the health care system (Carlsson, 2000). Some research has focused on these sources, particularly with an interest on how the role of the Internet and mass media communications, such as direct-to-consumer advertising, are used as sources of "lay" information by patients (Gray, Klein, Noyce, Sesselberg & Cantrill, 2005). However, people often use their social networks for information about health. Social networks can be described as conceptual structures that characterize a set of relationships. Social networks have been shown to be a rich source of health-related communication (Levy & Pescosolido, 2002). Further, research in the area of pharmacy, related to medication information, also showed that social networks (personal contacts) act as a source of medication-related information (Schommer, Worley, Kjos, & Schondelmeyer, 2008). However, there is a lack of research on the dynamics regarding patients' use of interpersonal communications among their social networks as sources of medication information.

Preliminary focus group research in this area showed that patients make use of, and rely on, social networks as sources of medication information (Schommer et al.,, 2008). It remains unknown how this may positively or negatively impact medication use decisions or outcomes. Gaining a better understanding of how patients tap into their social networks will provide pharmaceutical care practitioners a window into the aspects

that make information attended to and used by patients for making medication use decisions. This research will impact the way that practitioners inquire about patients' social networks and incorporate this information into patients' decisions about their medications and have the potential to impact patient outcomes in a positive way. Pharmaceutical care practitioners need to know not only what kinds of information, but also from whom patients are receiving their information from in order to help serve as a decision-making facilitator within the medication use experience. The term medication use experience was used in this study to describe both subjective and objective details surrounding one's use of medication. These details included, but were not limited to such things as feelings or attitudes, choices or decisions, circumstances or context as well as treatment outcomes related to taking one or more medications. Understanding the entire information environment and information seeking behaviors of patients will further develop what we know about the medication use experience.

This study was guided by literature in the area of health information seeking behavior. This topic domain is described as a participatory action taken by individuals to obtain information relevant to their health care (Stavri, 2001). Health information seeking behavior is an activity performed at the individual level and has been studied in a variety of contexts including library and information science, psychology, sociology, anthropology, nursing, medicine and pharmacy (Stavri, 2001). Possible reasons for increased research interest in health information seeking behavior in varied contexts are a result of the increased availability of the Internet, development of participative and consumer-oriented health care models, decreased provider time with patients or the growing emphasis on self-care and prevention (Cline & Haynes, 2001). Health

information seeking behavior in the context of pharmacy practice will be a fundamental

domain for this study. In addition to health information seeking behavior, sociological

literature in the area of social networks was used to guide the study's conceptual

framework (Baker & Pettigrew, 1999; Pescosolido, 1986; Pettigrew, 1999; Wellman,

1995). More specifically, the Network-Episode Model as presented by Pescosolido

served as the dominant theoretical framework (Pescosolido, 2006). In summary, this

study used literature from the health information seeking behavior and social network

domains to form the literature base and theoretical framework.

1.2 Specific Objectives

This study contributes to expanding the understanding of health communication

by describing how interactions with others contribute to perceptions and experiences of

health and illness, specifically related to medication information seeking behavior within

the medication use experience. This study used a qualitative strategy to study the role of

social networks in health information seeking behavior.

The research question for this study was:

What is the role of social networks in medication information seeking behavior

of patients?

Past research showed that network structure, content, and function should be

considered for determining the role of social networks on individual behaviors

(Pescosolido & Levy, 2002, p. 18). For this study structure was considered by describing

the "who" among individuals' social networks provide medication information. The

content of interest was predetermined as medication information. Content is what

"flows" between members of a social network. The content may be factual information, attitudes or beliefs about medications. Function was considered by describing the purpose, use, and decision-making applications to the medication use experience. The idea of structure, content and function is similar to Donabedian's model that describes the relationships between the structure, processes, and outcomes that are used to assess health care quality (Donabedian, 1966).

In addition to structure, content and function, a person's social network characteristics are often tied to individual characteristics (Pescosolido, 2006; Wellman, 1995). Therefore, this study also examined demographics, past medication use, attitudes toward medication, and health status in order to give further context to understanding the role of social networks in obtaining information related to the medication use experience. Given the past literature's use of structure, content, function, and individual characteristics when investigating social networks, this study used the following objectives to answer the research question.

Objective 1: Describe the structure of social networks that supplies medication information.

Objective 2: Describe the content that is provided through individuals' social networks related to medication information.

Objective 3: Describe the function of the information that is supplied through individuals' social networks.

Objective 4: Describe individual characteristics of people who use various types of social networks to obtain medication information.

To elaborate the key terms mentioned previously, the structure of the social network was described in terms of "who" among a social network are described as the relationships that act as information sources. Structure also described aspects related to "who" in terms of the type of relationships held within. <u>Medication information</u> was the term used to describe what patients obtain to learn, make decisions, and engage in management of their medication therapy. It could include things such as adverse effects, cost, or effectiveness. Content typically describes what "flows" between people in the network. The content related to information about medications could range from information to anecdotal narratives as well as new information or information to validate what is already known. This study focused on medication information as the content of interest. Content also may refer to beliefs and attitudes (Pescosolido, 2006). As mentioned previously, function was described by capturing the use of and decision-making applications to the medication use experience. This could include assisting with a decision as well as validation of a previous choice. Another function could be to "monitor" a situation that may require a future change. Finally, individual characteristics included such things as age, gender, occupation, residence, health status, medication use, attitudes towards medications and medication use experiences. These variables were chosen to reflect those that have been of noted importance and are comparable to similar research applications (Pescosolido & Levy, 2002; Wellman, 1995).

CHAPTER 2: Literature Review

2.1 Information Seeking Behavior

2.1.1 Psychological Underpinnings of Information Behavior

In today's world of expanding electronic and communicative technologies, nearly any type of information is readily accessible to the common person. The concept of 'information' and 'information need' is not new, and contains a wide range of research spanning decades in the domain of information and library science. Parallel to the technological advances of our time, 'information' research has now permeated into many disciplines, beyond that of library and information science. In order to understand the research contributions to date, a look into the broader perspectives and origins of human information behavior is needed.

Human information behavior, in its widest sense, encompasses the very foundations of the human condition. Information and information acquisition find its origins in evolutionary psychology (Spink & Cole, 2004). These origins lay the framework for understanding the ways in which information behavior enables humans to adapt and survive within the realm of their physical and social environments. Case (2007) uses a broad meaning for the term 'information' to imply "any difference that makes a difference to a conscious human mind" (Bateson, 1972, p. 453). Various typologies and definitions for the term 'information' have been readily discussed (Case, 2007). Disagreements in defining the term lie in how truth, physicality, intentionality, uncertainty, or utility are involved in the concept (Case, 2007). It appears that the most appropriate definition will depend on how the term will be used and within what context

it will be described. A more specific definition and application of the term 'information'

will be defined later, as it related to the context of this study. Further, Wilson (2000)

defines human 'information behavior' as "the totality of human behavior in relation to

sources and channels of information, including both active and passive information

seeking behavior. Thus, it includes face-to-face communication with others, as well as

the passive reception of information as in, for example, watching television

advertisements, without any intention to act on the information given." 'Information

seeking behavior' has been described as a subset of human information behavior that has

been defined as "the purposive seeking of information in relation to a goal," (Spink &

Cole, 2006) or "the purposive acquisition of information from selected carriers,"

(Johnson, 1997). These two definitions specifically mention purposive activity, however,

the role of passive or non-purposive information seeking behavior has been described in

other definitions (Wilson, 1999a). A definition for information seeking behavior similar

to that which is offered by Spink and Johnson, highlighting the aspect of purposive

seeking, has the most relevance for the current study and will be used herein to

understand what is meant by 'information seeking behavior.'

Some approaches that have been born out of the evolutionary psychology

framework relate to information-seeking in the form of problem solving, seeking

answers, sense-making and uncertainty-reduction (Case, 2007; Spink & Cole, 2004;

2006). Of the four approaches mentioned, the most traditionally used approach to

studying information seeking behavior has been the 'problem-solving' framework. This

approach has been considered most applicable in academic contexts and formalized

settings, such as library user or researcher studies (Spink& Cole, 2006). It describes

information seeking behavior as a process with four discrete stages of (1) identification (2) definition (3) resolution and (4) presentation (Wilson, 1999b). Another approach developed by Taylor (1968) focused specifically on why people ask questions of reference librarians. This research produced a 'seeking answers' framework that includes four stages: (1) a visceral need which describes a sort of "unexpressed" need for information, (2) a conscious need in which a person recognizes a need and may begin to talk to others about it (3) a formalized need where the need can be rationalized and explained and finally, (4) a compromised need, which for Taylor, came in the form of actual questions asked of the librarian. Further, the final stage represents a compromise of what information is needed and what information can be provided by the source.

An information-seeking approach in the framework known as 'sense-making' considers how people fit new information into existing knowledge in order to create a personal frame of reference that ultimately contributes to a new understanding (Dervin, 1992). This 'sense-making' approach can occur through physical actions, feelings experienced (affective) or thoughts processed (cognitive) (Kuhlthau, 1991). The sense-making approach encompasses a broader context with the consideration of the conditions of information seeking behavior within every-day life. Within this framework, communication and question-asking are essential to "bridging the gap" of information directed at making sense of any given situation.

The "uncertainty-reduction" approach which uses the notion that people will seek to reduce the amount of unknowns in a situation. This framework is largely credited through the work of Atkin (1973) who discusses the human desire to react to uncertainty by obtaining information. This process of seeking and obtainment would increase one's

sense of knowledge to the level that they desire. Therefore, seeking and obtaining information occurs with the goal of eliminating uncertainties that exists within various situations (Knobloch & Solomon, 2002). Kuhlthau's (1991) work also acknowledges the power of uncertainty and the accompanying feelings of anxiety. Her approach to information behavior uses uncertainty reduction in phases similar to those used by Taylor, combined with highlighting the importance of affect, similar to Dervin's the sense-making approach.

The previously mentioned approaches are just a few of the many frameworks that have been presented in human information behavior research (Case, 2007; Wilson, 1999b). Despite the many frameworks, Wilson suggests that overall they are more complementary than competing (1999b). The broadest approach presented by Case (2007) describes that the information search will only end when the needs of the seeker have been satisfied, with whatever feelings of closure and information that is deemed "good enough" for that particular individual. Despite the numerous conceptual frameworks, they collectively speak to the complexity of human information behavior as process with multiple contexts, applications, and levels of analysis.

Information behavior research uses evolutionary psychology as its foundation for studying the concept of information need and information seeking behaviors. Definitions, conceptual frameworks and research approaches vary greatly between information contexts. It is important for researchers in this area to define terms and describe conceptual frameworks that both work to build on past research and fit the context of the research question.

2.1.2 Shift of Information Behavior Research

It has not been until recently that human information seeking behavior has expanded to include information sought by interpersonal communication and face-to-face encounters. Wilson's paper (2000) gives a historical overview of the field and shows how information seeking behavior has traditionally focused on information sources and systems rather than on the individual or human aspects of behavior. Wilson (2000) describes that recent research in information behavior studies has seen a shift toward a 'person-centered' approach. Further, information behavior research has expanded beyond library and information science into a multidisciplinary domain. Examples for applications can be found in cognition and personality studies from psychology (DeVito, Bogdanowicz, & Reznikoff, 1982), information need studies within marketing literature (Timko & Loyns, 1989), organizational theory applications of sociology (O'Reilley, 1983), as well as communication studies in the context of health care (Parrott, 2004). This shift of focus to a 'person-centered' one in combination with the perspectives from alternative disciplinary approaches has led to a coordinated shift from quantitative to qualitative research methodologies (Bawden, 2006; Wilson, 2000).

The shift in focus from quantitative to qualitative methods is highlighted in Talja, Keso, & Pietilainen's (1999) discussion of the role of 'context' in information seeking behavior research. This perspective calls for a more interpretive approach to context in order to focus on how people define and give meaning to the process of seeking information and the sources utilized in that process. This view shows how objectified approaches to 'context' have been overly used, and can limit perspectives due to prespecified categories shaping the results. Contrasting the interpretative approach with

the objectified approach, demonstrates how qualitative methodology can expand what we know about the values and meanings people place on information seeking behavior within their social, cultural and historical environments (Talja et al., 1999). The argument for a qualitative approach is highlighted with an increase of applications using the sense-making approach to information seeking behavior. The sense-making approach can be captured through data surrounding physical actions, feelings experienced (affective) or thoughts processed (cognitive) (Kuhlthau, 1991). The investigation of affective feelings and cognitive thoughts will be much more difficult to observe and quantify using traditional quantitative methods. Examples of qualitative methods used in the information seeking behavior literature have been journals writings, search logs, open-ended questionnaires, and interviews (Kuhlthau, 1991). Focus groups have also been used to provide descriptions and thematic definitions of the search process (Malone, Mathes, Dooley, & While, 2005). Specifically, the interview method has been noted to be of particular use with its ease of adaptability to unique information search contexts (Kuhlthau, 1991).

The expansion of qualitative methodology within human information behavior research will likely broaden what we know about affective and cognitive aspects, as well as cultural and social contexts for how people give meaning to the search for information. The use of qualitative methodology can give insights into the cultural and social environments that consist of a complex array of persons and situations that allow for the flow of information in day-to-day communication.

2.1.3 Communication: Vital to Information Exchange

Human communication occurs at various levels. The most basic communication occurs at the interpersonal level where communication occurs between two people in a face-to-face scenario (Kreps & Thornton, 1984). Communication is important to this research because information exchange often times consists of communication channels through interpersonal relationships (e.g. family, friends, acquaintances or professionals). These relationships have been noted to be of particular importance to information behavior and information seeking behavior research (Brashers, Goldsmith, & Hsieh, 2002; Wilson 1999b). It is within these channels of interpersonal communication that valuable information is sought and obtained. Despite the seemingly fundamental role that information exchange plays in communication research there has been a cited lack of research concerning the informal transfer of information between people (Parrott, 2004; Wilson, 1999b).

Figure 1 shows one way of condensing the broad conceptual frameworks of communication and human information behavior. In Figure 1, communication behavior is shown as the most general area of communication research, whereas information behavior is more focused in its scope. Further, its focus is on ways in which people explore and discover information from a variety of resources. Ultimately, communication is tied to this process. Much of the information behavior literature focuses even further, applying the smallest area of the diagram, the information seeking behavior. The smallest area of the diagram has a focus on the purposive seeking of information. This diagram gives a general foundation for understanding how information behavior fit closely with communication models.

Figure 2 outlines how the information behavior literature has theoretically linked itself into a model of communication theory. Figure 2 is unique within the information behavior literature because often the actual processes of communication or the channels of communication are not considered. Information behavior literature has discussed this oversight and the need for the integration of this concept of the "communicator" and "channels of communication" should become applied constructs in information behavior research (Wilson, 199b). Both Figures 1 and 2 help to conceptualize the way in which information behavior can be funneled into models of communication or vice versa. Communication has shown its importance in information research as far back as the research of Shannon (1949) whose study of communication messages later gave rise to the first "Information Theory." Communication of information has been described in mathematical and systematic terms (Shannon, 1949) as well a humanistic, interpretive process.

Figure 1: A Nested Model of Communication and Information behavior

Communication Behavior

Information Behavior

Information Seeking
Behavior
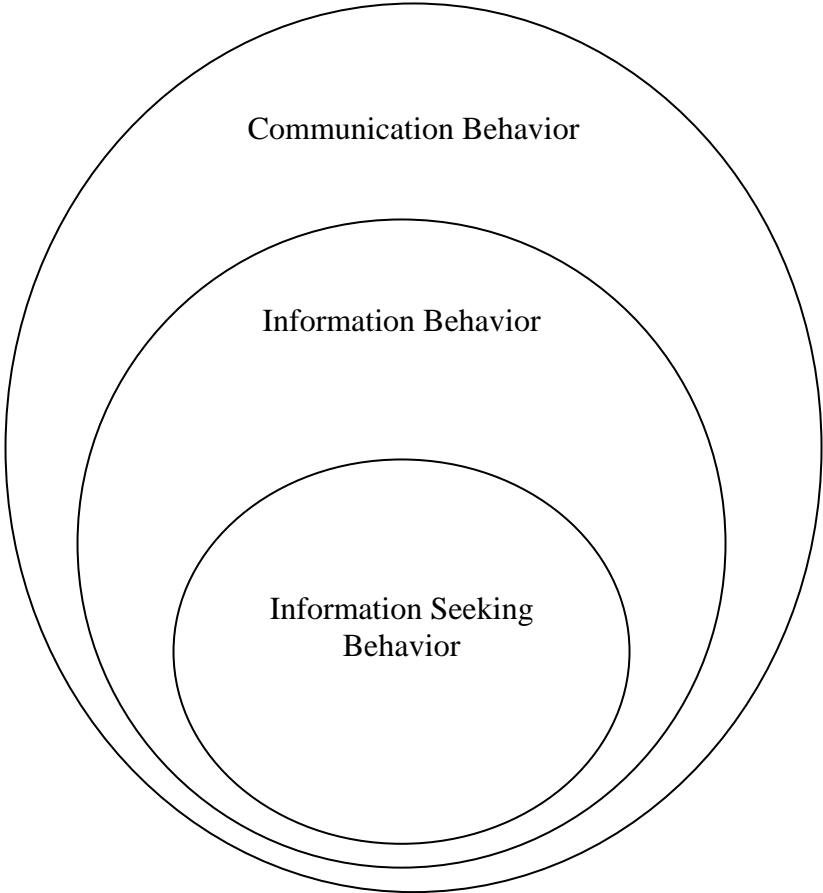
Figure 1 Adapted from Wilson 1999b, Figure 11.

Figure 2: Linking Information Seeking Behavior and Communication
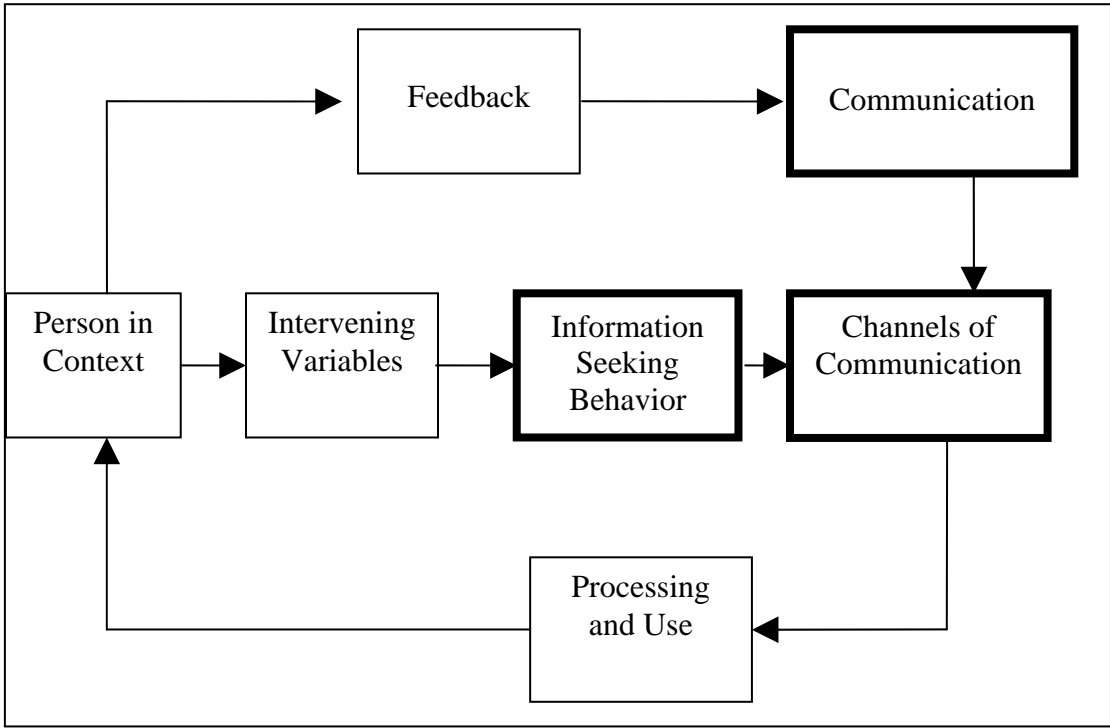
Figure 2 Adapted from Wilson 1999b, Figure 12

Interpersonal communication is vital for information exchange. In health care, for example, people seek and are provided information every day. This information can range from learning about prevention strategies and understanding diagnosis to the consideration of treatment options. This information can come from a variety of sources, however, the most prominent are health care providers, peers (e.g. others with an illness), friends and family, media (television or print magazines), government initiatives, or health organizations (Brashers et al., 2002). Most importantly, these information sources are utilized through communication channels. Therefore, communication channels are an important part of health care. From the face-to-face interactions of patients and providers

to the mediated communication of print information or the Internet, communication is clearly an intricate aspect for the transfer of health information.

2.1.4 Information Seeking Behavior & Health Communication

The previous section introduced how the concept of information behavior fits into the broader concept of communication. Building upon this idea, we see how the concepts of information behavior and communication (Figures 1 and 2), naturally lend themselves to the area of health care. Health communication remains fundamental toward understanding the processes in the prevention and treatment of disease (Roter & Hall, 2006). Health communication has been discussed to be, "*the art and technique of informing, influencing, and motivating individual, institutional, and public audiences about important health issues. The scope of health communication includes disease prevention, health promotion, health care policy, and the business of health care as well as enhancement of the quality of life and health of individuals within the community*," (Parrott, 2004, p. 751). Health communication covers a broad spectrum of types of communication and information channels; from face-to-face encounters, telephone conversations or even e-mail correspondence. Patients today have a variety of ways seek and obtain medical information. Further, health communication research has been cited to occur in both formal and informal contexts (Cline, 2003). Paralleling information behavior research, health communication research is also lacking in the study of the informal health communication that impacts health behavior (Cline, 2003; Tardy & Hale, 1998).

It is important to acknowledge that health communication has been placed at the forefront of U.S. governmental public health initiatives with the release of the *Healthy*

People 2010 objectives. The second edition for Volume I gives 14 objectives for improving health. Objective 11 in this document specifically relates to health communication and outlines the importance and timeliness of health communication research. It emphasizes health communication as one of the major focus areas for improvement of personal and community health during the first years of the 21st century (Office of Disease Prevention and Health Promotion [ODPHP], 2000). It states that health communication research can contribute to disease control and prevention and is relevant in many contexts including, "individuals' exposure to, search for, and use of health information" ([ODPHP], 2000, p. 11-3). This government led initiative recognized that there are challenges to improving health communication. In order to address these challenges researchers should, "identify the optimal contexts, channels, content, and reasons that will motivate people to pay attention to and use health information," ([ODPHP], 2000, p. 11-6). Further, this initiative for improvement in health communication reflects the need for research to understand more completely the complex nature of how people decide to find and use health information. "Health information" is not specifically defined by the ODPHP or in other literature. However, in this context, it is often referred to as 'consumer health information' carrying an implied meaning for any information that the public use to learn about, make decisions of, or apply to scenarios regarding health behavior as well as the prevention or treatment of disease.

The study of information behavior has been an area of increased interest in the field of health communication (Baker & Pettigrew, 1999). Figure 3 combines the ideas of Brashers et al. (2002) and Parrott's (2004) discussions of information sources in a

health communication context. The environment of health care and medical dialogue

produces one of constant information from multiple sources to recipients through various

communication channels. Information and communication between interpersonal

contacts, such as that between patients and providers, has been cited to be the most

frequent resource for health information (Blay & Donoghue, 2006). Even more

specifically, information *seeking* behavior in the context of health care provides a unique

window into the process of how, why and what people need in order to learn more

regarding their medical needs or illnesses. This specific area of research, often called

'health information seeking behavior' can be thought of as a participatory action taken by

individuals to obtain information relevant to their health care (Stavri, 2001).

Figure 3: Communication Channels for Health Information
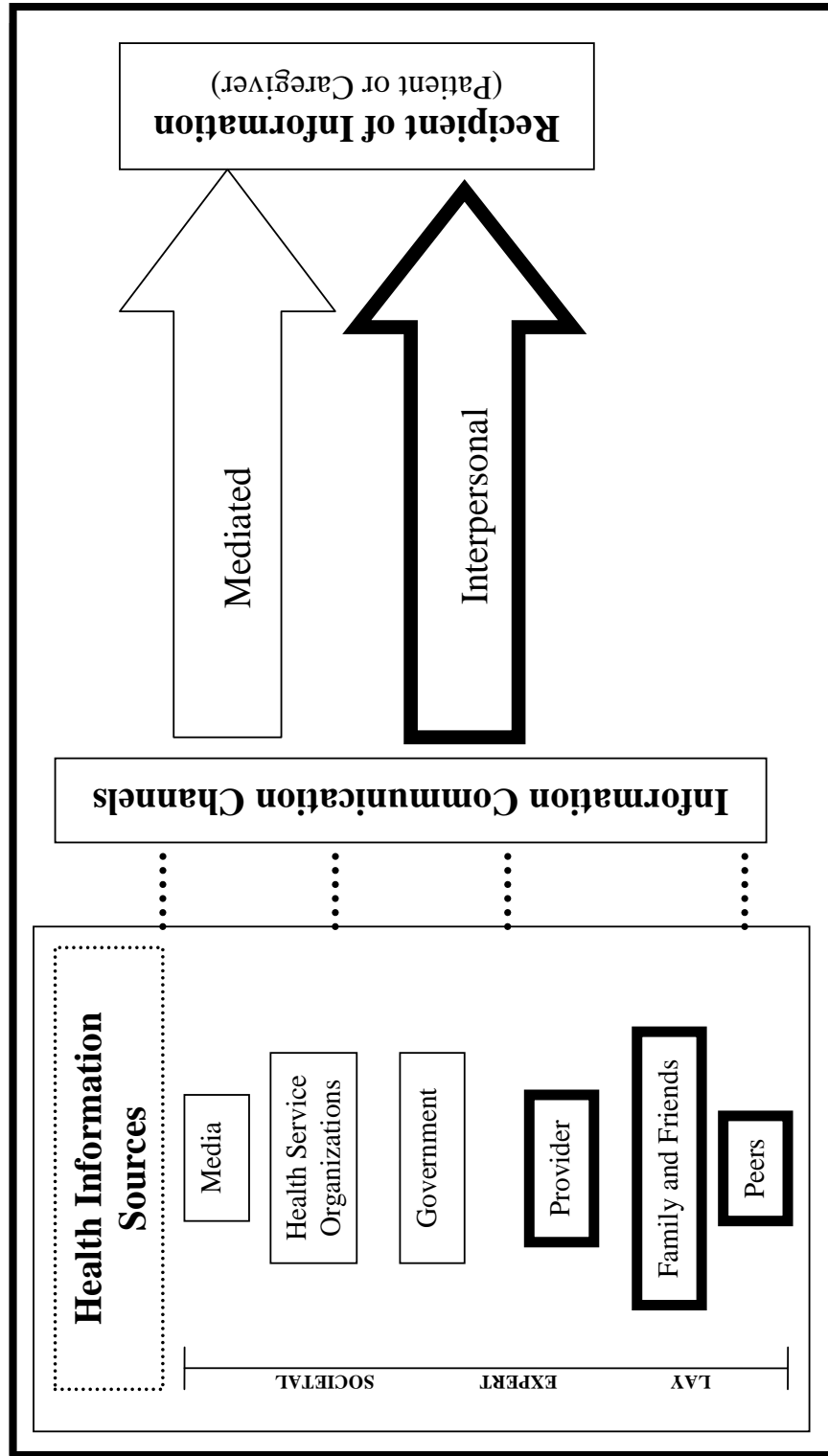
Figure 3 Concept adapted from: Brashers et al. 2002 & Parrott, 2004

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Health information seeking behavior is an activity performed at the individual level and has been researched in a variety of contexts including library and information science, psychology, sociology, anthropology, nursing, medicine and pharmacy (Stavri, 2001). The conceptual frameworks for health information seeking behavior will inevitability consist of many variables, dynamic interactions, and various communication channels, all within multiple dimensions (Tse, Gemoets, & Rosemblat, 2004). One such framework was presented by Longo (2005). Figure 4 shows this "expanded conceptual model of health information seeking behaviors." This model builds on the ideas presented by Brashers et al. (2002) and Parrott (2004) (shown in Figure 3) highlighting the way individual variables account for information flow between source and recipient. Though the developers of such models acknowledge that much testing and research is still needed, they have put forth these frameworks as a way to generate research questions in this area.

Research in the area of health information seeking behavior is still young as most research is recent. There also appears to be an increased interest in the information behaviors of patients in the context of health. It has been discussed that possible reasons for the increased interest in health information seeking behavior may be a result of the increased availability of the internet, development of participative and consumer-oriented health care models, decreased provider time with patients and growing emphasis on self-care and prevention (Cline & Haynes, 2001). These observations could have positive or negative impacts on patient outcomes and present opportunities for many research applications in a multiple contexts and populations.

Figure 4: Expanded Conceptual Model of Health Information Seeking Behaviors

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Variables Influencing Patient/Consumer Phase of Information Seeking Behavior and Information Use

<table>
<tr>
<td>

Contextual

- Health Status
- Health care structure
- Delivery of care
- Information environment factors
- Information seeking for self, family member or friend either at risk or with current medical problem

</td>
<td>

Personal

- Demographic factors
- Socioeconomic factors
- Health history
- Genetics
- Family medical history
- Education
- Culture
- Language
- Attitudes, intentions, behaviors
- Current health Status

</td>
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Phases of Information Use: Active Information Seeking

Source: Traditional media, new media or personal interactions.
  1. Unaware of available information
  2. Awareness of information, but does not attempt to access it.
  3. Attempt to access information from available sources
  3a. Uses information to make personal health care decisions
  OR
  3b. Does <u>not</u> use it.

</td>
<td>

Phases of Information Use: Passive Receipt of Information

Source: Traditional media, new media or personal interactions.
  1. Receives information
  1a. Uses information to make personal health care decisions
  OR
  1b. Does <u>not</u> use it.

</td>
</tr>
</table>

Patient/Consumer Outcomes

Figure 4 adapted from Longo, 2005

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2.1.5 Research in Health Information Seeking Behavior

Research that has investigated health information seeking behavior has been conducted in various contexts and populations as well as examined aspects of the sources and channels used to obtain health information. In addition, research also has examined the connection between individual information seeking behavior tendencies and patient outcomes.

One area in which health information seeking behavior research has focused is among populations where patients are faced with chronic or life-threatening illnesses. It has been thought that seeking information in this context can be attributed to the need to make optimal treatment decisions and to help reduce uncertainty and anxiety associated with these types of illnesses (Mayer, Terrin, Kreps, Menon, McCance, Parsons, & Mooney, 2007). A study of information seeking behavior by cancer patients found that these patients had a more passive information-seeking strategy, rather than an active one when using information sources outside of the health care system (Carlsson, 2000). For example, patients would pay attention to media stories about cancer treatments or other patients' stories, but did not actively seek out information from print sources or the Internet. Other research specific to cancer patients has shown that younger cancer patients and those who prefer a more active role in decision-making express an increased need for information (Ankem, 2006). However, it was also shown that information seeking behavior does not always correspond to involvement. A study by Czaja, Manfredi & Price (2003) showed three distinct groups among cancer patients, the first group had a strong desire for both information and involvement. This group had the highest likelihood to discuss outside information with their health care provider. The

second group sought information but did not prefer to be actively involved in treatment decisions. The third group left information seeking behavior and decision-making completely in the hands of their provider. A qualitative study using ethnographic interviews found that for severely ill cancer patients the most important information need was information to help adjust to every day life and learning how peers (others with the same illness) had coped with their respective diagnosis and treatments (Friis, Elverdam, & Schmidt, 2003). This study also points out the possible discrepancies between providers' and patients' perceptions of information needs, in that providers should to be sensitive to the actual information desired by their patients. Another qualitative study described how male cancer patients who sought more information about complementary and alternative medicine (CAM) treatments use their 'lay referral' networks of 'trusted individual' as their primary source for information (Evans, 2007).

In a topic similar to that of cancer, genomics and genetic testing also focused on information seeking behavior. Some researchers commented that this area would be the "perfect information seeking research problem," (Johnson, Case, Andrews, & Allard, 2005). Genomic information presents patients with an enormously complex and highly advanced area that potentially could impact how they view their individual health and that may constrain family relations. Interventions have been cited to be needed in this area to help people obtain quality information, fulfill interpersonal assistance in the seeking process, and to help with counseling to improve health literacy specific to genetic testing (Johnson et al., 2005; Kelly, Andrews, Case, Allard, & Johnson, 2007).

Health information seeking behavior research also has been conducted on specific populations to form a context for understanding the broader concept of health information

seeking behavior. For example, studies have been conducted in African American

women (Gollop, 1997), Latin Americans (Courtright, 2005), women (Brown, Carroll,

Boon, & Marmoreo, 2002) and women living in rural areas (Wathen, & Harris, 2006a),

middle-aged urban dwelling males (Shi, Nakamura, & Takano, 2004), adolescents (Gray

et al., 2005), mothers of children receiving vaccinations (Baker, Wilson, Nordstrom, &

Legwand, 2007), and those undergoing laparoscopic cholecystectomy (Blay & Donoghue

2006). In addition, specific patient population of those with various disease states such

as motor neuron disease (O'Brien, 2004), multiple sclerosis (Baker, 1995), and

HIV/AIDS (Kalichman, Benotsch, Weinhardt, Austin, Luke, & Cherry, 2003) have been

studied to better understand health information needs and behaviors.

The Internet is a resource that has been given increased attention in the area of

health information seeking behavior. Due to characteristics inherent with the use of the

Internet, such as availability, ease of use, low cost, and quick information retrieval,

researchers have outlined the pros and cons of patients' use when looking for sources of

health information. Studies showing positive results favoring the Internet as an

information source have found that its use is related to coping abilities and health

outcomes (Kalichman et al., 2003) as well as a perception that it is a salient information

source for health and medicines (Gray et al., 2005). A study examining reasons why

patients seek health information on the Internet found that patients who searched the

Internet expressed frustration with obtaining information from traditional sources, had a

lack of trust in their provider, maintained the desire to remain anonymous in their

inquiries, or that they were looking on behalf of someone else (Eysenbach & Diepgen,

1999). Although the Internet will not likely replace the role of traditional information

sources such as mass media, print material, or interpersonal sources, it remains a unique source with its ability to combine lay and professional information as well as personal and impersonal sources of health information (Gray et al., 2005).

Despite the increased availability and use of the Internet the most highly cited sources of health information remains that of interpersonal communication of a provider (Baker et al., 2007; Blay et al., 2006; Brown et al., 2002; Cotton & Gupta, 2004; Gollop, 1997; Mayer et al., 2007). This appears the most obvious source for health information, and is often discussed in the context of patient-provider communication during the medical encounter (Roter & Hall, 2006, pp. 127-140). Further, information from health care providers is trusted more than any other source (Pennbridge et al., 1999).

Other channels and sources of health information have been cited to be mass media (Gollop, 1997). Traditional mass media sources include magazines, newspapers, television, radio, and even billboards. In a 2001 survey of U.S. households found that one in four adults (approximately 23 percent) used books or magazines for health information (Tu & Hargraves, 2003). Mass media continues to play a significant role in defining illness, providing information about treatments, as well as outlining availability of products and servers that can be utilized for health care needs (Cotton & Gupta, 2004). One study found that media coverage introduced negative effects in the form of exposure to unsolicited information to patients with a chronic disease (O'Brien, 2004).

Another common source for health information includes interpersonal communications within social networks (Blay & Donoghue, 2006; Brown et al., 2002; Courtright, 2005; Dutta-Bergman, 2004a & 2005; Evans, 2007; Gollop, 1997; Morey, 2007). A study by Carlsson (2000) showed that across gender, age, and education level,

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greater than 50 percent of those studied cited "friends and acquaintances" as important

sources of health information. In a study by Mayer et al., (2007) cancer patients

identified as "non-information seekers" where more likely than the "seekers" to prefer

information from family and friends. In a study of rural women's experiences with

health information seeking behavior found that almost all interviewed cited that family

and friends were a useful source of information (Wathen & Harris, 2006a). More

specifically, sources of family and friends act as information "validators" or become of

particular use when these sources have professional expertise in health care (Wathen &

Harris, 2006a). Further, interpersonal sources such as family and friends may serve as

intermediaries for the information seeking behavior process since they may help provide

context, links to formal sources, validation and social support (Wathen & Harris, 2006a).

Informal sources of information often become relied upon when other information is

lacking (Wathen, 2006b). In another situation, friends and relatives were cited more

frequently as a source of health information than the nurses for patients in a pre-

admission surgical clinic (Blay & Donoghue, 2006). In a study of women, it was found

that participants' mothers who were information sources had particular influence in their

decision-making process (Brown et al., 2002). Meischke and Johnson (1995) found that

cancer in one's social environment was an important predictor for seeking breast cancer

detection information. Another study found that people who learned about health issues

from their social networks were more likely to be health conscious and engage in healthy

activities (Dutta-Bergman, 2004b). A similar study found that social networks serve as a

source for health information which when used, leads to further autonomous information

seeking behavior and positively affected levels of health consciousness (Dutta-Bergan,

2005). It is clear that social networks not only act as sources for health information but also influence the health consciousness and health behavior of individuals.

Some of the previously mentioned research made inferences regarding patient characteristics that affect how much one relies on a particular source or engage in active information seeking behavior. Earlier research on this topic revealed that women and those reporting 'favorable health related practices' were more likely to report health information seeking behavior (Rakowski, Assaf, Lefebvre, Lasater, Niknian, & Carleton, 1990). Similarly, more recent research on this topic has found that self-reported 'healthier' individuals and women were more likely to use the Internet as a source of health information (Cotton & Gupta, 2004). Conversely, individuals who are older, have lower incomes, and are less educated are more likely to use off-line sources of information (Cotton & Gupta, 2004; Schatell, Wise, Klicko, & Becker, 2006). Across all types of information sources, education is one of the most highly correlated characteristics for engaging in any type of information seeking behavior (Tu & Hargraves, 2003). According to the 2001 U.S. household survey mentioned previously, the overall likelihood for actively seeking health information did not vary by race or ethnicity once other characteristics were controlled (Tu & Hargraves, 2003). One study which examined the relation between communication channels and health information seeking behavior reported that health consciousness positively predicted consumer search for health information (Dutta-Bergman, 2005).

Health information seeking behaviors have the potential to affect patient outcomes (Mayer et al., 2007). In order for patients to actively participate in their health care, it is presumed that they will have the needed information. It will be through the

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study of health information seeking behavior that identification of optimal sources and channels can be described and applied to provide patients with the information they need to assist in making decision relating to their health. Health information seeking behavior is an important component for those patients who are proactive about their individual health. Health information seeking behavior has been tied to patient outcomes (Kalichman et al., 2003; Knaus, 2000) and changing health practices in a positive way (Shi et al., 2004). In addition, information seeking behavior has emerged as an important aspect in decision-making processes related to health (Brown et al., 2002).

2.1.6 Information Seeking Behavior in Pharmacy

Information seeking behavior can take place in a variety of contexts both inside and outside of health care. Contextual situations outside of health care that involve information seeking behavior can range from purchasing a product, conducting academic research, to making a voting choice in a political election. Therefore, contextual situations can also vary within health care settings. Patient information seeking behavior in the context of pharmacy practice will also have a certain context. This context will mainly be surrounding medication decisions relating to their use, such as type of medication to purchase or medication adherence after a therapy has been prescribed. Case (2007) has outlined how aspects related to *motivation, sources, time pressure, and extensiveness* help researchers think about information seeking behavior in their respective context. These aspects can help one think about information seeking behavior in the context of pharmacy practice. For example, *motivation* may present in the form of a patient's desire for optimal health and well being as well as cost and life style implications (Schommer, 2008). Next, *sources* of information include interpersonal

contacts such as experts, providers, family or friends, as well as media such as books, television, or the Internet. *Time pressure* for the information search in the context of pharmacy practice may be largely varied depending on the nature of the illness and treatment implications. In addition, *thoroughness/extensiveness* of the search will vary across patients. Some patients may choose to follow the provider recommendations, while others may spend months unearthing every piece of information available before a final decision is made.

Health information seeking behavior can be applied within the context of pharmacy practice. In addition, health information seeking behavior has implications for pharmacy practice and patients involved in medication use. Health information provided by pharmacists may help to increase patient awareness of alternative options, rectify inaccurate information obtained from outside sources, and stimulate additional searching which could more deeply engage the patient in the medication decision-making process. This is similar to what has been discussed for applications in nursing practice (Lenz, 1984). Research has shown that patients not only want information on to how to manage their medications, but also to make therapeutic decisions relative to their disease (Newby, Drew, & Henry, 2001).

Within the context of pharmacy practice, health information can be more commonly called drug information. The term drug information is used in a variety of contexts, and therefore carries a broad meaning. It can be associated with a specialist/practitioner, a center/service, or meant to indicate a certain set of skills (Amerson & Gora-Harper, 2001). For the purpose of this study, drug information of interest was called *medication information.* The term medication information is more

relative to current pharmacy practice, and is used to convey a type of information used in the management of medication therapy (Amerson & Gora-Harper, 2001). For the current study, medication information was used in a consumer context to define the information patients obtain to learn, make decisions, and engage in management of their medication therapy. This type of information included, but was not limited to, such things as adverse effects, costs, or therapeutic effectiveness. For example, medication information is routinely provided when patients pick up a prescription from a pharmacy. Medication information is important for patients to make informed decisions regarding the medications they take.

From a provider standpoint, research that has shown that for all U.S. adults who actively sought health information outside of the health care system, only one in five mentioned this new information to their doctors (Tu & Hargraves, 2003). This finding may be somewhat troublesome to health providers who are able to assist patients in making sense of and appropriately applying newly acquired health information. Another study that may raise alarm in providers found that 43 percent (45/114) of patients who used the Internet to seek health information about their disease reached inappropriate conclusions about their diagnosis (Larner, 2006). Some have discussed the increased need for provider assistance in facilitating patient use of health information (Dutta-Bergman, 2005). Dutta-Bergman (2005) also has discussed that the raised 'health consciousness' of the typical information seeker may imply that providers should pay more attention to the information patients gather from alternative sources. Providers may need to be further trained in how to inquire and handle information brought by patients

from outside sources. Though there are many positive aspects related to the information

seeking behavior of patients there also may be negative ones.

Health information seeking behavior research has increasingly begun to focus on

information related to drugs and medications. Research has found that more than half of

people have sought medication information in the last six months (Newby et al., 2001).

Another research study found that those who reported information seeking behavior for

information about drugs and medications on the Internet held stronger 'health beliefs'

(i.e. acknowledging the importance of diet, exercise, ect) than non-seekers (Dutta-

Bergan, 2004b). Another study examined the extent that consumers sought additional

drug information after exposure to direct-to-consumer advertisements (DTCAs) (Liu,

Doucette, Farris, & Nayakankuppam, 2005). Using health behavior theory to guide this

research (theories of planned behavior and self-efficacy) the study found that there might

be different attributes associated with different types of information sources. More

specifically, the strongest predictor for intention to seek more drug information after

DTCA exposure differed among such sources as a physician, pharmacist and the Internet.

Past research regarding medication information primarily examined patient

receipt of information. The pharmacist has been cited as a popular source for medication

information (Newby et al., 2001) and has been mandated to provide certain information

to patients (Schatz, Belloto, White, & Bachmann, 2003). Research prior to the Omnibus

Budget Reconciliation Act of 1990 or OBRA '90 legislation (Omnibus Budget

Reconciliation Act of 1990, 1992) focused on identifying insufficient provision of drug

information for both written and verbal information provided at pharmacies. For

example, a study by Morris (1982) found that verbal communication with a physician

was the primary source for prescription information, whereas advice given in a pharmacy

was limited to how to use the drug. Even this information was minimal with most (72

percent) saying nothing had been said to them at the pharmacy. Interestingly, this

research identified birth control pills and menopausal medications as most often

discussed with family and friends for a source of information. Even this early research in

provision of and access to drug information was concerned with the way that lay

information sources, such as family and friends, impact medication information behavior.

Further, this study suggested that the nature of the medication or perhaps even gender

could influence the use of social networks as a source for medication information.

Later research conducted by the same author, expanded the scope of study to

examine patient sources of medication information (Morris et al., 1984). This study

identified several trends in relation to information seeking behavior practices of patients.

For example, subjects under age 21 were three times more likely to ask questions about

how to take the medication. Further, subjects reported that they were more likely to ask

questions of someone other than the physician especially when it related to risk

information. About 16 percent of subjects stated that they had looked up their newly

prescribed medication in a traditional reference book. Within this 16 percent, subjects

tended to be younger, more highly educated, and having a likelihood of a higher income.

In addition, 18 percent of the study subjects reported they had discussed their

prescriptions with family, friends or acquaintances.

Another study that examined medication information sources was conducted by

Sleath, Wurst, & Lowery (2003). This study specifically focused on patients taking

antidepressant medications and found that information was most commonly sought from

pharmacists (58.0 percent), physicians (50.6 percent), mental health specialists (40.7 percent), friends and family (32.1 percent) and the Internet (18.5 percent). This study was interested in looking at patient source for medication information and medication adherence. It was found that for patients who utilized more sources of information had a higher likelihood of adherence to the medication.

Information seeking behavior has been further examined in the context of pharmacy practice when Morris, Grossman, Barkdoll, Gordon, & Soviero (1987a) investigated medication information seeking behavior, using factor analysis in a telephone survey of 835 subjects who received a new prescription in the previous four weeks. This study found that subjects divided into distinct categories that were titled, "physician reliant," "pharmacist reliant," "questioners," and "uninformed." "Questioners" sought information outside of the health care system due to barriers of obtaining professional information. These subjects were also more often taking multiple medications. This study identified that patients need appropriately tailored educational counseling to address their information seeking behavior tendencies.

Morris, Grossman, Barkdoll, & Gordon (1987b) examined ways in which information search for medication information differed between elderly and younger patient populations. Overall, elderly subjects reported a lower rate of counseling by both a physician or a pharmacist as compared to younger subjects. In addition, elderly patients were less reliant on family and friends as information sources, and more likely to report passive information receipt from mass media sources such as magazines or television. A continuation of this research examined segmented elderly into different categories based on information seeking behavior motivations (Morris, Tabak, & Olins, 1992). These

categories were labeled "ambivalent learners", "uncertain patients," "risk avoiders," and the "assertively self-reliant." The risk avoider category contained subjects with the highest tendency toward active information seeking behavior, such that information seeking behavior was a sort of coping strategy to gain an "informational control" over their treatment. The results of this study revealed the complex nature of information seeking behavior motives of elderly patients and how patient education should be targeted to specific types of information seekers.

The previous studies conducted by Morris et al. (1984, 1987a, 1987b, & 1992) were reviewed in a comparison study to highlight changes in patient counseling and provision of medication information over a twelve year period of time (Morris, Tabak, & Gondek, 1997). The comparison showed that medication information provided to patients both at the physician's office and at the pharmacy increased over the period from 1982 to 1994. In addition, the proportions of patients who undertook "self-initiated" information seeking behavior and from where they obtained information about their medications were described. Social contacts such as friends, relatives, and acquaintances were the most frequently cited "outside" source of information (18-19 percent). The second most cited sources were reference books (14-16 percent). A description of patient reactions to these "outside" sources of medication information showed the majority of the respondents (61 percent) reported outside information led them to feel better about taking the medication. Fewer respondents reported that the outside information caused them to ask a health professional about what they read or heard (24 percent). Fifteen percent of respondents also reported that the outside information they discovered caused them to consider not taking the medication.

Other applications of medication information behavior examined the amount of patient question asking. A study conducted by Sleath et al. (1999) found that nearly half (47 percent) of patients taking at least one medication did not ask questions about their medication. Further, this study found that older patients were more likely to ask about their medications. This finding appears to contradict the finding by Morris et al. (1984) that found that younger patients tended to be the predominant question askers of how to take their medications. Patients were twice as likely to ask questions if they were starting on a new medication. The reason for this contradiction is not apparent. However, these studies used differing methodologies; a convenience sample in the Sleath et al. (1999) study as compared to a random sample in the Morris et al. (1984) study.

Research applications in pharmacy practice of patient information behavior have primarily focused on the provision of patient counseling (Morris et al., 1997), patient receipt of information (Morris et al., 1982, 1984, 1987 & 1992) and patient question asking (Al-Saffar, Abdulkareem, Salah, & Heba, 2008; Miller, Abrams, McClintock, Cantrell, Dossett, McCleeary, McGee, O'Keefe, & Sager, 2008; Sleath et al., 1999). Overall, studies conducted on the medication information seeking behavior have lacked a focused examination of the interpersonal communications among social networks that may serve as a prominent source for medication information. However, the research reviewed previously acknowledged the role that social contacts play in the information seeking behavior process. This background research serves as a foundation to show that social networks are utilized by patients as sources of medication information. Future research is needed to describe the influence and determine the potential impact that social networks have on the information seeking behavior and the medication use experience.

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Although pharmacists are just one possible source for medication information, they have a vital role to play in the medication information seeking behavior experience due to their ease of access in community settings, expertise, and exposure to patients undergoing the information search.

2.1.7 Information Seeking Behavior Literature Review Summary

Information behavior research uses evolutionary psychology as its foundation for studying the concept of information need and information seeking behaviors. Definitions, conceptual frameworks, and research approaches vary greatly between information contexts. It is important for researchers to define terms and describe conceptual frameworks that both work to build on past research and fit the context of the research question.

The expansion of qualitative methodology within information seeking behavior research will likely broaden what we know about affective and cognitive aspects, as well as cultural and social contexts for how people give meaning to the search for information. The use of qualitative methodology can give particular insights into the cultural and social environments that consist of a complex array of persons and situations that allow for the flow of information in day-to-day communication. Communication channels are an important part of health care. The study of information behavior has been an area of increased interest in the field of health communication (Baker & Pettigrew, 1999). The environment of health care and medical dialogue produces one of constant information from multiple sources to recipients through various communication channels.

Information and communication between interpersonal contacts, such as between patients and providers, has been cited to be the most frequent resource for health

information (Blay & Donoghue, 2006). Research that has investigated health information seeking behavior has been conducted in various contexts and populations as well as examined aspects of the sources and channels used to obtain health information. In addition, research also has examined the connection between individual information seeking behavior tendencies and patient outcomes.

Health information seeking behavior research has increasingly begun to focus on information related to drugs and medications. Research applications in pharmacy practice of patient information behavior have primarily focused on the provision of patient counseling (Morris et al., 1997), patient receipt of information (Morris et al., 1982, 1984, 1987 & 1992) and patient question asking (Sleath et al., 1999). Overall, studies conducted on the medication information seeking behavior have lacked a focused examination of the interpersonal communications among social networks that may serve as a prominent source for medication information. However, the research discussed previously has often accounted and acknowledged the role that social contacts play in the information seeking behavior process.

2.2 Social Networks

2.2.1 Personal Sources of Information

According to library and information science researchers, interpersonal or social contacts act to supply information needs more than any other source. Discussions of the reasons for this occurrence are derived from descriptions of the social nature of humans and the inherent nature of our communication needs (Lu, 2007). One reason explaining why people use social contacts as a source for information is because of the ease of

accessibility for communication with others. Another reason is that social contacts may

exhibit credibility that is built on trust between social relationships. Third, interpersonal

communication allows for application to individual circumstances that adds value in a

way that other sources of information can not. Finally, interpersonal communications for

information may help reduce the sense of "information over-load" that is often

commented as a negative aspect to the information age in which we live (Lu, 2007).   The

interpersonal communications among structured relationships or "ties" within a group are

often referred to as social networks. Section 2.2 will describe the concept of social

networks as well as past research. Past research involving its application to health will

also be discussed.

2.2.2 Introduction to Social Networks

The study of social networks finds its roots in sociometry, an area that later came

to be known as network analysis (Granovetter, 1973). _Social networks_ can be defined as

conceptual structures that characterize a set of relationships (Faber & Wasserman, 2002).

Social networks and interpersonal relationships are traditionally studied in the realm of

the social sciences, more specifically, sociology and anthropology (Knoke & Kuklinski,

1982). Their importance is highlighted by the demonstration that an individual's

behavior can often times be categorized by their relations with others. Social network

research can range from small-scale studies (micro-level) of a persons' intimate social

network to system studies (macro-level) focusing on larger societal and community

organizational structure.

There are important underlying premises in the analysis of social networks. First,

"the structure of relations among actors and the location of individual actors in the

network have important behavioral, perceptual, and attitudinal consequences both for the individual units and for the system as a whole," (Knoke & Kuklinski, 1982). In other words, by understanding the relationships within social networks we are better able to understand individual behavior and larger societal phenomenon. Second, social networks are built by social interaction – regardless of its occurrence (i.e. regular or spontaneous). Third, social networks can contribute both positively (e.g. emotional support) and negatively (e.g. domination/control) to individual behavior. Finally, social networks hold important content such as information, beliefs, and "action scripts" (Pescosolido, 2006).

It is largely accepted by researchers that one's social network is not consistent across all situations. Social networks vary depending on context and issue. In order to evaluate these inconsistencies, social networks have been categorized in different ways. One way to categorize them is as formal or informal social networks. Where _formal social networks_ describes personal contacts that act as organized circuits of information and where interaction usually occurs in a planned or structured setting (e.g. health systems, government, teachers, employers). In contrast _informal social networks_ are typically those personal contacts that comprise casual or spontaneous sources of information and interaction usually occurring in an unplanned or unstructured setting (e.g. family, friends, or acquaintances) (Agadjanian, 2002). Another way of categorizing social networks is to consider "strong" social ties and "weak" social ties that characterize the relations within a network. This particular dichotomy will be discussed in the next section.

2.2.3 Social Networks and Health

Social scientists in health care have often focused on how patients make medical decisions. There are two perspectives in this area, the first being that individuals make decisions in isolation. The second perspective is that patients consult with others and it is this interaction that ultimately influence decisions (Pescosolido, 1992). In the second perspective, sociological research examining the impact of personal interaction and health has a rich history spanning more than fifty years. The research surrounding the idea that social networks impact health and illness has been cited to have begun with Emile Durkheim's writings on social integration and suicide around the year 1951 (Pescosolido & Levy, 2002). Another early social network researcher, George Simmel in 1955, was the first to describe and hypothesize that it is the social network "tie" that effects behavior, rather than the group or individual themselves (Pescosolido & Levy, 2002). This idea of the social tie or relationship between people is a fundamental concept in social network research. Much research has been done on showing the importance of ties on individual behavior, however, scientists have also urged consideration that having more social ties are not necessarily better. Social networks may be detrimental when too much outside input leaves people without choice, inappropriately raises expectations, or imparts misplaced obligation (Pescosolido & Levy, 2002).

One prominent theory that further evolved the area of social networks and the idea of the social tie was Granovetter's (1973), "Strength of Weak Ties," (SWT) theory. This theory is based on broad level definitions used in network analysis such that _strong ties_ include relations with family or friends and _weak ties_ consist of mere acquaintances or distant contacts. The SWT theory was developed following research describing how

individuals use social networks to obtain information about job opportunities (Granovetter, 1973). SWT theory proposes that weak ties are more important for the flow of new information within a social network. This theory discusses how weak ties allow for a broader range of information in contrast to the narrow range of information between strong ties who tend to know each other well and maintain a similar level of information. Granovetter's (1973) research found that the most important and useful information obtained by individuals when making a decision about a new job came from others that they described as having occasional or rare contact with. [The SWT theory was later confirmed by the research of Gabriel Weimann (1983)]. Granovetter (1973) comments on his original study saying that, "it is remarkable that people receive crucial information from individuals whose very existence they have forgotten" (p.1372). However, in later works Grandovetter (1982) discussed the importance of strong ties. Strong ties have been described to act as information validators, such that close acquaintances will be able to offer opinions on the importance and utility of the new information received from the weak ties (Grandovetter, 1982). Overall, Grandovetter (1982) posits that weak ties are utilized to obtain new information and strong ties are used to apply or act on the new information.

SWT has been used in studies of communication and health. Pescosolido discussed how SWT theory was useful in describing how migrant workers sought modern medical care (Pescosolido, 1986). Pettigrew examined SWT to investigate how foot care clinic nurses and senior citizens undergo the information giving, seeking, and use experience (Pettigrew, 1999). Another study used SWT to understand patients' choice of health practitioner for lower back pain (Wellman, 1995). Overall, discussions in the

library and information science literature have encouraged practitioners to consider the

application of SWT as a strategy to understand consumer health communication and

information seeking behavior (Baker and Pettigrew, 1999).

Social network research in health care has accepted the importance of social

contacts outside of the health care system that influence patients' health decisions and

outcomes. It has been recognized that a great deal of health communication occurs

outside the formal institutions of physician offices or at the pharmacy counter (Tardy &

Hale, 1998). Therefore, when examining social networks in health care settings,

researchers have used the formal/informal categorization (previously defined) of social

networks to describe social ties (Agadjanian, 2002). However, other research has

described this categorization differently. For example, another way of describing the

contrast between formal and informal social networks in health care is to distinguish

them as either "outside" or "inside" social networks in health care (Pescosolido, 2006).

This dichotomy describes lay social contacts within one's social network as "outside"

whereas, patient-provider relationships or other professional relationships within the

health care system are termed "inside" social networks. For this study, the term _lay ties_

was used to describe the interpersonal relations and social contacts with those persons

outside of the healthcare system (e.g. family, friends, and acquaintances). The term

professional ties referred to the "formal" or social contacts "inside" the healthcare system

(e.g. physician, pharmacist, or nurse). These terms have a similar distinction to the terms

"informal" and "formal" social networks (previously described), however, are more

appropriate for this study because they relate more specifically to social ties and their

relations within the health care system and have also been used in health information

seeking behavior literature (Gore & Madhaven, 1993).

A social network perspective can show how personal interaction influences

responses to health and health problems. Given this interpretation, most behavioral

researchers in this area subscribe to several basic tenants of social network theory in

health related contexts. One concept is that social interaction shapes one's life through,

"consultation, resource sharing, suggestion, support and nagging" (Pescosolido and Levy,

2002, p. 4). Another concept is that there are many levels of social networks which may

include the abstract influences of society, community, or a system (e.g. the health care

system or a national government) as well as specifically identified personal interactions.

Each level of a social network shapes the medical encounter and social reactions to it.

Lastly, is the idea that social network theory uses a social context to map individual

relationships within larger groups (Pescosolido, 2006). Social networks have been shown

to influence and have relevance to health topics such as infectious disease prevalence,

chronic health problems, recognition and seeking help for both physical and mental

health problems, care giving, as well as adherence and patient outcomes (Pescosolido and

Levy, 2002). In addition, health interventions using a social network approach for the

diffusion of health information has shown to be effective (Kincaid, 2000). It also has

been discussed that social networks have both positive and negative effects on health and

illness (Agadjanian, 2002; Cohen & Lemay, 2007; Gallant, Spitze, & Prohaska, 2007).

The positive effects of social networks exist in the potential for these networks to be

utilized as a source of preventative information or for social support. However, negative

effects of social networks are that they may slow attitudinal and behavior change that is often needed in health interventions.

2.2.4 Social Network or Social Support?

Social support has been defined in various ways (Williams, Barclay, & Schmied, 2004), however, in general, most definitions highlight that it is a type of 'resource' that a person will have available or perceive to have available from their family, friends, and acquaintances (Faber & Wasserman, 2002). Social support researchers have begun to look to social network analyses as a more formalized way to understand the concept of social support. Often in the literature, social networks and social support are used interchangeably. However, caution should be taken as to what aspects of social interaction are of interest. Social network research tends to focus on specific people, for example, having participants list peoples' names. This application has been called a structure-centered approach. In contrast, social support research typically focuses on the contribution of 'generic' categorizations of people. This has been described as a content-focused approach (Pescosolido and Levy, 2002).

Another distinction between social networks and social support is how they build on each other. That is, social support can occur through relationships within a social network. It is clear that social support and social networks are intimately linked. Support is given and received through structured relationships described in networks. Social network and social support approaches have a similar underlying concept that the power of "others" will influence individual behavior. It should be acknowledged, however, that these different approaches lead to different findings.

2.2.5 Social Networks as a Source for Information

Conceptual frameworks and applications of social network theory have been applied in the context of information seeking behavior. These studies have examined the types of information sought, characteristics of people's social networks and the quality of the information received (Courtright, 2005). Social network characteristics that have been attributed to having better access to new information are (1) larger social networks (2) decreased network density (3) a more diverse social network and (4) and increased number of weak ties (Lu, 2007). Other research has characterized people that have a lower information need also have a social network that is denser (Flynn, 2005) or have a higher frequency of contact with family members (Birkel & Reppucci, 1983).

The interactions within social networks have shown a relevance to the information search because they often affect future information seeking behavior and decision-making (Cross, Rice, & Parker, 2001). Chia & Foo (2006) described how social ties played a larger role in information seeking behavior. This study showed how social ties supply social support as well as other forms of assistance. Overall, studies have discussed that people tend to place trust in, as well as derive confidence and assurance from social ties when seeking information (Chia & Foo, 2006; Cross et al., 2001).

Given this research, there is evidence that one's social network may influence the frequency of information seeking behavior. The interpersonal communications within one's social network allows information to be placed in a social context. The social context of information allows for adoptive as well as affective applications (Cross et al., 2001). For example, people are able to apply information from interpersonal sources differently than that of impersonal sources. Research also has suggested that

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relationships within social networks influence decision-making as the roles of the social contacts move from information source to that of an information validator (Cross et al., 2001).

2.2.6 Social Network Research Applications

Research with a focus on social networks is often call *social network analysis*. Social network analysis (SNA) describes a type of methodology to help understand the behavioral phenomena of resource exchange or content between personal or organizational relationships (Haythornthwaite, 1996). This resource exchange can vary from tangible items such as goods and services, to less tangible items such as information or social support (Haythornthwaite, 1996).

Traditionally, the persons, organizations, or communities described by SNA are called "nodes" or "actors" and the relationships among them are described as "connectors." SNA often uses graphical representation of social networks. Graphical representations of social networks are comparable to road maps. Road maps provide a visual structure for how resources flow between cities, relationships or "connectors" in a social network can show how resources flow between people (Haythornthwaite, 1996). In social network analysis, these visual graphs are called sociograms. Figure 5 provides an example of a sociogram.

Figure 5: Example of a Sociogram Used in Social Network Analysis
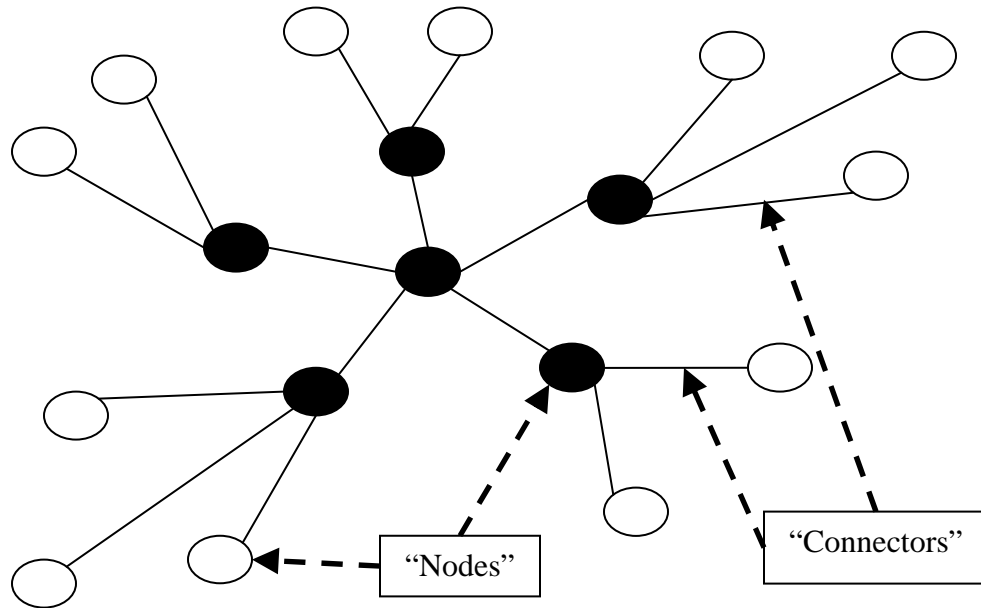
Figure 5 Adapted From Haythornthwaite, 1996, Figure 3

Sociograms are useful for describing small networks. Larger networks are described using data matrices using computer analysis. In either case, network analysis often uses measurement techniques and principles of graph theory in order to interpret patterns of lines (Haythornthwaite, 1996). These principles are highly mathematical and use a "whole network" view of data. A whole network approach means that the analysis can provide a view of all the actors or nodes in the environment of question (Haythornthwaite, 1996). In contrast to the whole network approach is the egocentric approach. Egocentric network approach is used in situations when the population is large or the whole network view of the data can not be obtained.

Faber and Wasserman (2002) have discussed four major concepts of social

network analysis: 1) individuals are viewed as interdependent 2) relationships are "ties"

that act as channels for the transfer of resources 3) network models describe the structural

qualities of networks to allow for both opportunity and constraint and 4) network models

are seen as long-term relationships among individuals.

Research claiming the use of social network applications takes two different

perspectives on the measurement. The first is the graphical and mathematical approach

used in the study of whole networks as described by Haythornthwaite (1996) and

Grandovetter (1973). The second is the sociological approach of behavioral researchers

(Hawkins & Abrams, 2007; Pescosolido, 2006; Tardy & Hale, 1998). There are vastly

different methodological strategies in these research applications for the investigation of

social networks. Social network analysis is typically what encompasses the graphical and

mathematical approaches, whereas, a "social network framework" or "social network

approach" use qualitative approaches.

Research conducted using a social network framework use different types of

contexts. For example, research conducted using a social network framework have taken

geographical (Cravey, Washburn, Gesler, Arcury, & Skelly, 2001), organizational (Chia

& Foo, 2006), community (Chiu & West, 2007), and personal (Cohen & Lemay, 2007;

Hawkins & Abrams, 2007) contexts. Research using a geographical context has

highlighted how health interventions can be strategically placed within communities to

help prevent chronic disease. Organizational and community contexts have helped

describe the information flow within larger groups. In addition, research using personal

contexts has examined how social networks are activated and used. The approach using

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personal contexts distinguishes between latent and activated social ties. _Latent ties_ can be described as general social contacts that a person identifies with whom they choose to discuss important matters. Determining _activated ties_ usually asks about those people who a person contacted in the case of a specific scenario. The distinction between latent and activated is used to help make the distinction between sources of usual social support and when a new tie might become activated (Pescosolido & Levy, 2002). Overall, past research in social network applications have shown inconsistency for how ties are identified and defined. Latent and activated ties are defined somewhat different compared to the strong/weak, formal/informal, or lay/professional ties that were previously discussed. Therefore, it may be concluded that tie categorization will depend on the particular context and research questions of the study.

There are three important features in the measurement of social networks: structure, content, and function (Pescosolido & Levy, 2002). The structure of the social network is often described in terms of "who" among a social network are described as the important ties/relationships that act as information sources. Structure also describes aspects related to the "who" in terms of the size of the social network and the type of relationships held within. In addition, structure can also refer to the connectivity (whether a person has more than one basis to know another) or density (how well persons are known within the network) of a person's social network when applicable. Content typically describes what "flows" between people in the network. The content related to information about medications may range from factual information to anecdotal narratives as well as new information or information to validate what is already known. This study focused on medication information as the content of interest, however, social

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support within a network is one type of resource that can describe social network content. Content also may refer to beliefs and attitudes (Pescosolido, 2006). As mentioned previously, function will be described by capturing the use of and decision-making applications to the medication use experience. This may include assisting with a decision as well as validation of a previous choice. Another function could be to monitor a situation that requires a future change (Case, 2007).

Interviewing is one method for conducting research of information behavior and social networks that has been explored in the literature (Bates, 2004). This research has acknowledged the difficulty that study subjects have with remembering persons with whom they have relations or have contact with on a casual basis (Brewer, 2000). One study specifically sought to address this issue by testing interview techniques to enhance recall of participants of a HIV/AIDS study (Brewer, Garrett, & Rinaldi, 2002). These finding suggest that there are four strategies for questioning that helped subjects to recall their social interactions. These strategies included directly asking about social proximity, role relationships, locations of interactions, and chronological order. Social proximately is one way of describing network density, which means how likely the persons in a social network are likely to interact with each other. When asking study subjects about role relationships, you are asking for a categorization for the relationship. For example, role relationships may be categorized as a friend, employer, spouse, ect. Location of interaction simply means where the social interaction actually took place if it was in person, or the modality of communication if something other than face-to-face (i.e. e-mail, telephone). Chronological order would imply asking subjects to recall social contacts from either the earliest or last known contact.

Social network research also has discussed potential for problems in the measuring of social networks. One issue is that of recall bias, or problems with individuals remembering their social contacts over time. Research by Wright and Pescosolido (2002) used longitudinal methodology to determine how reliable a person's recall of one's social networks were over time. This research found that although the members of a person's social network changed over time, less than 5 percent of the change was due to "forgetfulness" or recall bias. This research suggests that even long-term accounts and descriptions of social networks over time can be considered reliable (Wright & Pescosolido, 2002). Another complexity has been cited to be determining the degree to which people rely on their social network. For example, two people may descriptively have similar network characteristics, but one person's network may have a larger degree of influence on the person's behavior. This difference in reliance on one's social network may be accounted for by differences in social physiological characteristics of individuals (e.g. self-reliance or self-efficacy) (Pescosolido & Levy, 2002). Other problems of measurement include the debate of what approaches, quantitative or qualitative, are best when measuring the characteristics and influences of social networks.

The various methodologies of network analysis were discussed in a literature review by Jinnett, Coulter, and Koegel (2002). These authors concluded that using a combined approach is optimal, but very difficult to implement from a practical standpoint (Jinnett et al., 2002). Further, the review noted that quantitative methods are the best for measuring the effects of social networks while qualitative methods will function for determining and describing structure, content and function.

2.2.7 A Social Network Approach in Pharmacy Practice

Pharmacy is a service oriented health profession where pharmaceutical care practitioners serve as the "medication expert" to the larger medical community. Often times pharmaceutical care practitioners serve as an information source for their patients. Because these practitioners are focused on providing individual patient information and because taking medication is largely thought be a highly individualized behavior, the broader social context is not often considered in pharmacy practice research. As discussed previously, little research has focused on the medication information search of patients. However, even less research has examined the information seeking behavior in a social context. Exhaustive literature searches have revealed a lack of research conducted on the role of social networks specific to medication information. Because the social environment and social contacts have been readily acknowledged as influencing patient behavior, more research examining its particular impact is needed. For example, it has been identified that anecdotes may have an impact patient health outcomes. Mazor, Baril, Dugan, Spencer, Burgwinkle, & Gurwitz (2007) notes that narrative anecdotes were more effective than statistical evidence for influencing some patient anticoagulant medication outcomes. In this study, patients were randomly assigned to educational videos using narrative anecdotal, statistical or both types of information related to the use of oral anticoagulant medication. Some patients showed an increase in knowledge and beliefs related to anticoagulant testing. This is one example that points to the need for a better understanding of the information people receive through social networks and the fact that it may have a direct impact on medication outcomes. With the SWT framework in mind, it could be that patients who take prescription medications will follow similar

communication patterns within their social networks. Information seeking behaviors could easily be applied in this context and further explored. To understand how patients use social networks to seek and obtain medication information, clear definitions of tie strength, information origin, content and direction must be specified (Haythornthwaite, 1996).

The conceptual framework underlying this study was derived from the "social organization strategy" (SOS) as proposed by the medical sociologist Bernice Pescosolido (Pescosolido, 1992). Its main idea focuses on the social nature of people, including the important relationships with others. It is thought that these relationships form the foundation for *all* individual actions. This perspective is in contrast to the usual thinking, in that all human behavior is a calculated individual mental event that occurs in isolation (Pescosolido, 1992). Pescosolido offered a model which integrated the network perspective of the SOS and individual response to health and illness. This model was called the "Network-Episode Model." This model is comprehensive and recognizes the importance of the "life course" experiences, ethnographic nuances of the illness career, and the use of care and advice both inside and outside of the usual health care system (Pescosolido, 2006). The comprehensive nature of this model fits well to the application of this study in the context of pharmacy practice and patients' medication use experience. See Figure 6 for an illustration of the Network-Episode Model. This study focused on the social context of information seeking behavior. It considered non-social sources of information such as print resources, online, or mass media outlets but not as a primary objective. This research could contribute to a more complete understanding of the social context involved in the information seeking behavior of patients and will in turn allow

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pharmaceutical care practitioners to more competently facilitate and coordinate the delivery of care to patients.

Figure 6:
The Network-Episode Model

Social Support System
(Typically Outside of the Healthcare System)

Network Structure	Network Content	Network Functions
• Size • Density • Duration • Reciprocity • Strength of Tie • Multiplexity	• Beliefs and Attitudes toward Health Professionals & Medical Care	• Information • Advice • Regulation • Expressive or Emotional Support • Material or Practical Support

Social Content Or Episode Base For the Individual

Social and Geographical Local
- Gender
- Age
- Education
- Work Status
- Marital Status
- Income
- Occupation

Personal Health Background
- Prior History of Illness
- Coping Style
- Medical Insurance

Nature of Event Illness Characteristics
- Severity
- Visibility
- Duration
- Acute/Chronic

Organizational Constraints
- Organization of Care
- Accessibility of Care
- Financing of Care

The Illness Career

Key Entrances	Key Exits	Key Timing and Sequencing
• Sick Role • Patient Role • Chronic Role • Disabled Role • Dying Career	• From Sick Role • Termination of Care • Recovery • Death	• Combination of Health Advisors • Ordering of Consultations • Delay and Pacing of Consultations • Degree and Length of Compliance

The Treatment System
(Typically Inside of the Healthcare System)

Network Structure	Network Content	Network Functions
• Size • Density • Duration • Reciprocity • Strength of Tie • Multiplexity	• Treatment Efficacy • Diagnostic Capability & Technology • Modalities • Staff Attitudes toward Health, Clients, Community and Organizations	• Information • Advice • Regulation • Expressive or Emotional Support • Material or Practical Support

Figure 6 source Pescosolido, 2006

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2.2.8 Social Network Literature Review Summary

The study of social networks finds its roots in sociometry, an area that later came to be known as network analysis (Granovetter, 1973). Social networks and interpersonal relationships are traditionally studied in the realm of the social sciences, more specifically, sociology and anthropology (Knoke & Kuklinski, 1982). Their importance is highlighted by the demonstration that an individual's behavior can often times be categorized by their relations with others. Social network research can range from small scale, micro-level studies of a person's intimate social network to macro-level, studies focusing on larger societal and community organizational structure.

Conceptual frameworks and applications of social network theory have been applied in the context of information seeking behavior. These studies have examined the types of information sought, characteristics of people's social networks and the quality of the information received (Courtright, 2005). A review of network analysis methods discussed various methodologies (Jinnett et al., 2002) and found that quantitative methods are the best for measuring the effects of social networks while qualitative methods will function for determining and describing structure, content and function.

Social network research in health care has accepted the importance of social contacts outside of the health care system that influence patients' health decisions and outcomes (Pescosolido, 2006). It has been recognized that a great deal of health communication occurs outside the formal institutions of physician offices or at the pharmacy counter (Tardy & Hale, 1998). Using a social network perspective will contribute to a more complete understanding of the social context involved in the

information seeking behavior of patients and will in turn allow pharmacists to more

competently facilitate and coordinate the delivery of care to patients.

2.3 Integrating Domains

2.3.1 Social Networks and Health Information Seeking Behavior

In the previous sections, the background literature separately addressed the topics

of information seeking behavior and social networks. This section will discuss the ways

that past research has linked these subject domains. Few studies have specifically

focused on the role of social networks and health information seeking behavior

simultaneously within the same study. However, these studies will be reviewed in depth,

as they form the basis for the application and methods chosen for this research.

A study conducted by Wellman (1995) focused on back-pain suffers' use of

conventional medicine and alterative therapy providers. This author discussed how social

network analysis is an important tool for understanding the impact of "lay" others on the

process of seeking medical care. This study's methodology used in-depth, open-ended

interviews of 36 persons. Each interview lasted approximately one and three-quarter

hours. This study used a multi-dimensional approach, asking questions related to both

individual and social characteristics. Within these characteristics there were six key

aspects participants were asked about during the interviews which included: need

(perceived medical need for the assistance of a health care provider), experiences (with

medical care), network relations (aspects related to tie content such as information,

guidance, access and support), attitudes about health (faith in medical treatments), socio-

demographic information (age, gender, ect), and narrative accounts (for determining who

were the people participants talked to when they realized they noticed they had a problem). This study found that all participants used information and advice from their "lay referral networks" to make decisions related to choice of a provider. Lay referral networks were defined by the study as "family, friends and coworkers." Further, the study found that differences in provider choice were related to differences of participants' social networks. The data from this study suggests that socioeconomic characteristics are related to social network characteristics which in turn are related to health care tendencies. One finding of particular interest lends support to Grandovetter's SWT theory because people with more education also had larger social networks, which appears to be associated with an increased likelihood for the use of non-traditional providers. This finding suggests that those with a higher number of "weak" ties (acquaintances) had access to a wider knowledge base, including that of alterative medical care.

Another study which has examined health information seeking behavior and social networks demonstrated that there are various ways to investigate an informal, interpersonal network (Tardy & Hale, 1998). This study used a multi-method approach to investigate health information seeking behavior among social networks of "stay-at-home moms." This study involved 24 participants within an organized weekly "play-group" for their children. The participant group was selected because the authors wanted to investigate a *defined network* and a network that would have frequent contact for reasons other than to discuss health information. The authors wanted to capture health communication among lay people that occurred in an informal manner. The two research questions for this study were: 1) Within a defined informal network, what are the

emerging network patterns and roles with respect to health-related conversations? 2)

Within a defined informal network, what are the characteristics of individuals who are

identified as sources of health information? The study was ethnographic in nature and

was conducted over three phases which including observations, interviews, and surveys.

Observations were used to obtain data related to how the participants gathered and who

was involved, as well as content and tone during conversations. Interviews obtained

narratives answering questions such as, "1) What health-related issues do you talk about

with only a few people? 2) Where do these conversations take place? 3) Can you tell me

about a time when what someone said made you seek medical care? 4) What purpose do

these conversations serve for you?" Transcribed interviews underwent inductive

analysis. The survey tool was used to derive sociograms and additional open-ended

questions. Additional open-ended questions included, "1) Think about people with

whom you frequently discuss health issues and explain why you talk to these persons. 2)

What are the characteristics of these persons? 3) In light of your health-oriented

discussions, what is it that you want most? 4) What are inappropriate or difficult health

topics to discuss?" All field notes, interview transcripts, and survey responses were

coded and analyzed. The findings revealed that subjects who shared their personal

experiences with others in their social network helped establish credibility with other

social network contacts.

A study conducted by Morey (2007) used Grandovetter's SWT as a conceptual

framework to describe health information seeking behavior of African-Americans. This

study used 216 telephone interviews as the method for data collection. This methodology

was chosen because the authors felt that the 'information seeking behavior' and 'social

network' questions require further clarification than can be done with a self-administered survey. They also discussed that the telephone modality allowed for a higher participant comfort than would in-person interviews. The questions that comprised the telephone interviews were drawn from previous research conducted in the area of online and Internet information seeking behavior. The questions asked were designed to answer research questions related to: 1) Which member of their social networks do participants interact with the most when seeking consumer health information? 1a) How do participants define the 'closeness' if this relationship? 2) Where do participants seek and obtain consumer health information? 3) Which age group is more likely to seek and obtain consumer health information? 4) Which sex is more likely to seek and obtain consumer health information? and 5) Did participants look for consumer health information for himself or herself or someone else? Data analysis within this study used bivariate and multivariate analysis, descriptive statistics, and chi-squared test to examine associations between information source and tie strength. The study found that people sought health information from many sources. However, about 62 percent of the sources listed were interpersonal contacts with 45.5 percent being a health care professional and 16.8 percent being other social contacts such as family, friends, co-workers, neighbors, or librarians. The highest type of social contact within this group of 'other' social contacts was listed as being "family not living with" with 8 percent of participants citing these contacts as their first source of information. The researchers found no difference of information source between genders. However, older participants were more likely to have sought health information. Participants who sought information from a member of their social network were asked to describe tie closeness as "very close, somewhat close,

or not close." Tie closeness was used as a measure for relationship strength for application of SWT theory. The majority of participants identified their relationships with health professionals as "somewhat close" and with family as "very close." Analysis indicated that there was a statistically significant difference between the closeness of the relationship and the source of the information. This finding was consistent with SWT theory that a 'weaker' tie has an importance in information seeking behavior. Finally, results showed 76.2 percent of participants were looking for information on behalf of themselves. Women were more often cited to search for health information on behalf of someone else. Overall, this study showed that people use close or strong ties (such as family and friends) and weak ties (such as health professionals) as sources of health information. The author discussed that more research is needed to examine the role and impact social relationships, particularly strong ties, on health information behavior.

A study by Agadjanian (2002) was conducted in a third-world, African city to understand how this population obtained information related to cholera and HIV/AIDS. This fieldwork study used focus groups, individual in-depth interviews as well as ethnographic observations in local communities. Through the study discussions and interviews that authors found that social networking was "not a process of even intensity." Meaning that although social interaction is constant, using social networks for information only occurs when it is most needed. The main finding of the study showed that informal social networks functioned to compensate for a lack of information within formal channels of health communications (i.e. governmental education programs) surrounding cholera and HIV/AIDS. Further, they found that the participants actively

engaged their informal social networks when there was a need for more information, sympathy or social support (Agadjanian, 2002).

Researchers investigating information behavior and social networks have discussed the need for further research. More specifically, researchers have called for more investigations of strong ties, such as close family and friends as a source of health information (Morey, 2007). The broader health information seeking behavior literature has often investigated patients' sources for information (e.g. Internet, provider, media, etc). The past research, discussed previously, often acknowledged the use of interpersonal contacts as sources of health information. However, with the exception of a few studies, information-seeking research has not investigated social networks in a specific way. Research has clearly shown that social networks or interpersonal contacts not only act as sources for health information but also influence the health consciousness and health behavior of individuals. Overall, the research conducted on the role of social networks on health information seeking behaviors have used some form of qualitative methodology.

For the current research application, it was felt that qualitative methods were best suited to answer the main reason question. The choice to use qualitative methodology was further supported. First, interviewing is commonly used for obtaining data related to individuals' social networks. Reasons for the common occurrence of this methodology in the literature is likely due to the shift of information research to a 'person-centered' approach combined with the sociological nature of health communication. In addition, because social network research has been cited to be 'issue' and 'situation' specific, many researchers are applying new information behavior and social network conceptual

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frameworks for the first time to specific populations or situations. Often, when a new context is applied to an area of research, or a population is researched for the first time, qualitative approaches are appropriate to guide future research directions. Therefore, because health information seeking behavior in the context of pharmacy practice has not been researched with a specific focus of social networks, a qualitative method will serve as a foundation for further research. Finally, because in-depth interview method has been successful for previous researchers with similar areas of investigation (Agadjanian, 2002; Tardy & Hale, 1998; Wellman, 1995) and because of the newness of this topic being investigated in the context of pharmacy practice, this study also used a qualitative methodology in the form of personal interviews. In summary, qualitative methodology was chosen because it was best suited to answer the research question with further support found from previous literature and the potential to build upon potential findings with more specific research questions.

2.3.2 Conceptual Framework

The conceptual framework for this study will combine frameworks from the topic domains of information seeking behavior and social networks that formed the research question and coordinating literature review. In the information behavior literature Brashers et al. (2002) and Parrott (2004) have highlighted differing sources of information within the health care environment as well as the types of communication channels through which information flows. Using these ideas, the current research study specifically focused on the bolded areas of Figure 3 which are the information sources of 'lay' family, friends, peers and the 'expert' sources of providers. The current research study focused only on the interpersonal communication channel, connecting information

source to recipient. Figure 4 serves to build further the framework for this study with its emphasis on the different variables (contextual and personal) that influence the health information behavior of patients. Finally, Figure 6 ties in the social nature of information within the context of health care. Similar to Figure 4, Figure 6 also acknowledges the role of individual or situation variables that affect the outcome of the "illness career." However, Figure 6 is of particular use for the current study because of its conceptualization of the role that social contacts play on health and illness. Further, Figure 6 splits social influence into the "Social Support" of interpersonal contacts 'outside' of the health care systems and the network of the "The Treatment System" which includes those social contacts that are from 'inside' the health care system. Overall, the conceptual framework for this study combines literature and various frameworks from two prominent literature domains. Figure 7 shows the overall conceptual framework for this study which ties together the four main objectives for this study including individual characteristics, structure, content and function.

Figure 7: Conceptual Framework for the Role of Social Networks in Medication Information Seeking Behavior

Individual Characteristics Influencing Medication Information Seeking

Health Status
Demographics
Geographic Locale
Health History
Education
Occupation
Attitudes/Beliefs

(Active Information Seeking)

Health Information Source: Social Network Structure for Medication Information

Inside the Healthcare System:

Health Professionals/
Providers

Outside the Healthcare System:

Family
Friends
Acquaintances

Content of Information Provided by Social Networks

Beliefs or Attitudes
Personal Experience
Factual Information

Function of Information Provided by Social Networks

Social Support
Decision Making
Monitoring
Validation

CHAPTER 3: Methodology

3.1 Research Design Overview

This was an exploratory qualitative research study which used self-selected, volunteering participants who were at least 18 years old. All subjects were asked to complete a personal interview that measured various aspects related to the use of social networks as a modality to seek medication information. Subjects completed semi-structured undisguised interviews that included a protocol script with main questions, probes, and follow-up questions in order to describe the structure, content and function of the subject's social network with respect to medication information seeking behavior. This type of methodology has been used by similar research in the area of health information seeking behavior and social networks (Agadjanian, 2002; Baker & Pettigrew, 1999; Carlsson, 2000; Friis et al., 2003; Tardy & Hale, 1998; Wellman, 1995). This type of methodology could serve as a foundation for future research on the same topic. Individual characteristics of participants were also obtained to make associations to social network characteristics. Collected data were analyzed using theory driven and prior research driven ethnographic content analysis.

3.2 Study Sites

3.2.1 Characteristics of Recruitment & Interview Sites

The research project was conducted over a period of five months in various locations throughout the State of Minnesota. There were three setting types used in the study for interviews. These included a primary care clinic located on the University of

Minnesota (UMN) Twin Cities campus, community pharmacy locations outside the Minneapolis Metro area, and a senior center located in Saint Paul, Minnesota. The recruitment for the study also occurred at each respective site with the exception of the primary care clinic. Due to the clinic management protocols, potential volunteer subjects could not be directly recruited at the primary care clinic. However, a nearby outpatient pharmacy also located on the UMN Twin Cities campus, posted recruitment flyers for the study. The subjects recruited from this location had interviews conducted at the primary care clinic, and were often patients at both the outpatient pharmacy and the primary care clinic.

The first setting located in the primary care clinic, in conjunction with the nearby outpatient campus pharmacy, was chosen as a study location because of its location in a large urban medical center. Because of its location, it serves patients with a large range of demographic variables and patients who need highly specialized care provided by a university medical center such as cancer or transplant patients. This setting was located in Minneapolis, Minnesota.

The second setting was community pharmacies outside the Minneapolis Metro area. These sites were chosen based on geographic location. These community pharmacies were used to obtain patients who live in less urbanized areas of the State as well as a strategy to target different demographics than those recruited at the outpatient campus pharmacy. Two pharmacies served as recruitment and interview sites which included locations in Park Rapids and Cold Spring, Minnesota.

The third setting was added later in the project when it became clear that older adults were not self-selecting to participate in the study. This site was a senior center

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located in Saint Paul, Minnesota. Because older adults frequented this location for a

variety of activities, recruitment at this location was seen as a strategy to expand the

study to include this type of demographic that are often high utilizers of medications.

Despite the fact that this location was not specifically health related, as was the

previously mentioned sites, this location was a headquarters for local older adults to,

among other things, receive information on various health related topics such as

Medicare Part D and prescription drug prices. Table 1 shows a summary of study site

location details and demographic profiles for each city.

In order to further describe the geographic location for each of these sites, the

"Rural-Urban Commuting Area" (RUCA) coding system as described by the Economic

Research Service of the United States Department of Agriculture (ERSUSDA), (2005)

was used. Figure 8 includes a geographic outline of Minnesota highlighting the various

RUCA codes. The sites used in this study were classified as Metropolitan Area Core,

Metropolitan High Commuting and Small Town Core. A 'Metropolitan Area Core' area

is described as having a commuting population with primary flow within an urbanized

area. A 'Metropolitan High Commuting' area is described as having a commuting

population's primary flow 30 percent or more to an urbanized area. Finally, a 'Small

Town Core' area is described as having a commuting population with a primary flow

within an urban cluster of 2,500-9,999 people. This geographical area descriptive coding

system has been used in other literature to describe geographic health care locations

(Doty, Zuckerman, Finlayson, Jenkins, Rieb, & Heneghan, 2008).

Table 1
Characteristics of Recruitment & Interview Sites

Site	UMN Campus Outpatient Pharmacy/ Primary Care Clinic	Community Pharmacy #1	Community Pharmacy #2	Senior Center
Minnesota City Location	Minneapolis	Park Rapids	Cold Spring	Saint Paul
RUCA-definition	Metropolitan Area Core	Small Town Core	Metropolitan High Commuting	Metropolitan Area Core
Demographic Highlights*				
Total Population	362, 513	3,276	2,975	271,203
Female	49.6 %	55 %	52.7 %	51.3 %
65 years and over	8.4 %	28.1 %	21.0 %	10.0 %
Bachelor's Degree or Higher	37.4 %	16.0 %	14.2 %	32.0 %
In Labor Force	72.1 %	51.7 %	64.6 %	69.1 %

Source (U.S. Census Bureau, 2000)

**Figure 8: Minnesota Rural-Urban Community Areas and
Designated Study Site Locations**
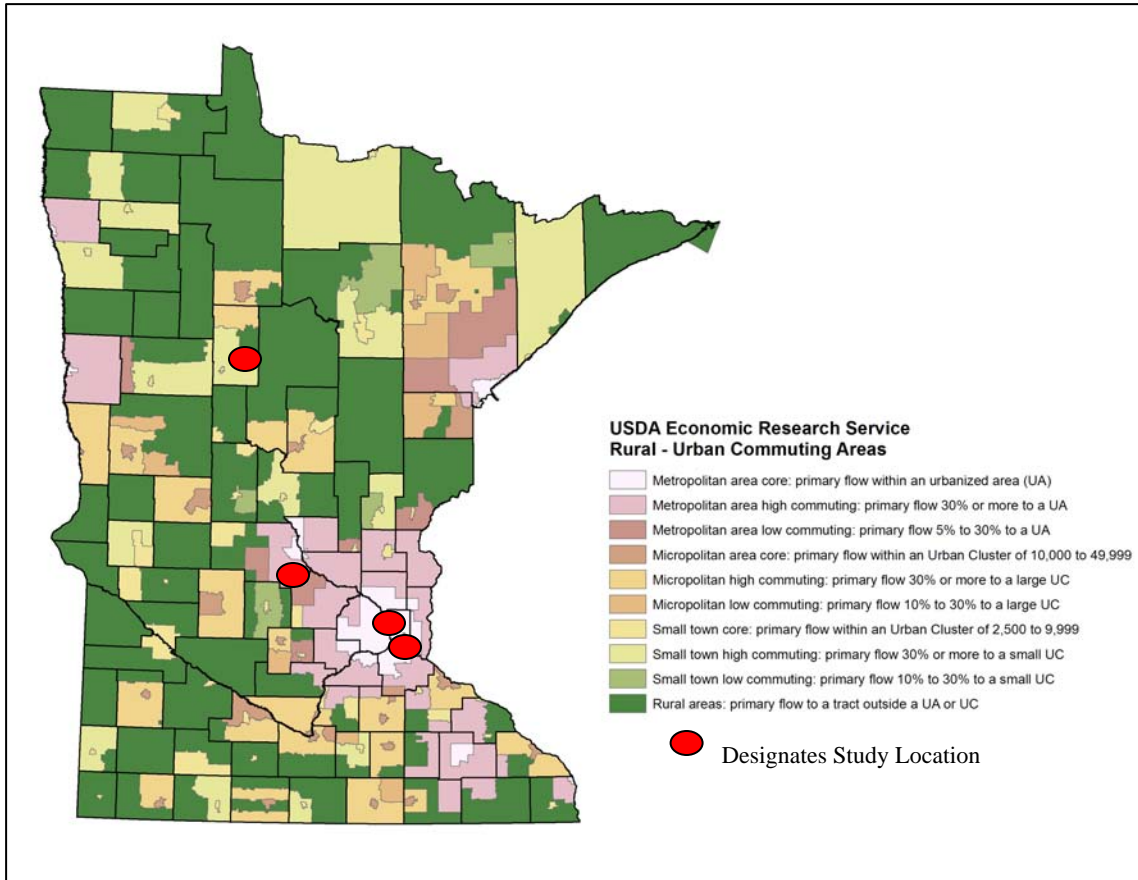
Figure 8 source Stark, 2006

3.2.2 Standardization of Interview Settings

The four study site locations were standardized to the extent that they had several characteristics in common for all interviews. Interviews were conducted in a private room in order to minimize outside distractions and background noise that could interfere with audio recordings. There were always a minimum of two chairs, so both the subject and interviewer could be comfortably seated. All locations had a public waiting area in which subjects could wait until their scheduled interview time. In order to help with interview consistency, all study interviews were conducted by the principal researcher and followed the same interview script outline for each personal interview.

3.3 Subjects

The sample was obtained based on volunteering individuals who responded to recruitment postings at one of the four site locations described in the previous section. A purposeful recruitment strategy was used in an effort to maximize the diversity of the sample of subjects. Consistent with qualitative research methods, the sample for this study was not focused on statistical representativity, but rather on obtaining a wide range of sample subjects. The only inclusion criteria that were maintained for this study was that the subjects were at least 18 years of age. The inclusion of adults of all ages and medication experiences was justified for this study because of the exploratory and qualitative nature of the research design.

Subjects were recruited through strategic advertisement placement within both university and other community locations in order to obtain a purposeful and diverse study sample. The recruitment process used recruitment notices posted primarily through

a university outpatient pharmacy and community pharmacies public posting areas. The only non-pharmacy recruitment included one local senior center. Each recruitment period lasted approximately two to three weeks. An example of the recruitment posting is included in Appendix B.

For subjects recruited at the university setting, a phone number and e-mail was provided on recruitment postings. Self-selecting participants made initial contact with the principal investigator using the provided phone number or e-mail address. Participants were instructed to leave a message including a first name and contact information of either a phone number or an e-mail address where they could be reached for provision of further study information. All participants were contacted directly by the principal investigator and provided a recruitment follow-up letter (Appendix C) and study consent form (Appendix D).

At the other study locations, interview days and times were set a priori and confirmed with coordinating site staff. For the recruitment postings at these locations, interested persons were instructed to contact the respective coordinating site staff, as specified on the recruitment posting, for more information regarding full study details. A sign up sheet was provided to the coordinating site staff so that volunteering participants could select an interview time. At the community pharmacy sites, the coordinating site staff was the *pharmacy manager*. At the senior center, it was the *volunteer program coordinator*. At all three of these sites, coordinating site staff that enrolled volunteering subjects also provided them with further study information including a copy of the consent form and the contact information of the principal investigator.

Participants at all study sites were provided full study details including, study

purpose, objectives, voluntary nature of the study, interview procedures, risks and

benefits of the study, confidentiality, as well as details regarding compensation. These

details were also outlined in consent form which was signed and dated by all participants

at the time of the interview.

Once participants were identified, an interview time was coordinated with site

staff at each of the locations as well as with the subject and principal investigator.

Typically, all interviews took place within two weeks of being scheduled. Participants

were compensated with a gift card valued at $35.00 to a local retail merchandiser or

grocery store. This compensation was seen as small enough not to be coercion and large

enough to provide an adequate 'thank you for your time.'

3.4 Data Collection

3.4.1 Interview Script

The interviews were multi-dimensional, collecting both personal and social

factors, and based on the conceptual frameworks outlined in the background sections.

Interviews were approximately 45 minutes in length, however were allowed to proceed

longer if needed. The interview script had three parts. Part I consisted of individual

characteristics related questions. Part II consisted of an optional ecomap exercise and

main questions related to social networks. Part III asked participants to describe narrative

accounts of information seeking behavior occurrences. Each part also used probes and

follow-up questions if they were needed. This interview structure was based on the

"topical interviewing" approach as presented by Rubin and Rubin (1995). The questions

for the interview were created using a compilation of both previous literature (Courtright, 2005; Tardy & Hale, 1998; Wellman, 1995) and the author's ideas for applicability to the context of pharmacy and medication information. The full interview script is included in Appendix E with an ecomap example provided during the study interview.

Part I of the interview script contained personal background questions, or individual characteristics of the subject being interviewed. The intent of Part I was to capture details to complete study objective (4) describe individual characteristics of people who use various types of social networks to obtain medication information. These questions were placed in the first part of the interview as a warm-up for the interviewee. Similar to a physician asking medical history questions at the beginning of a medical interview, these questions were seen as a way to provide the interviewee with easy and somewhat automatic responses that would help set the tone for the rest of the interview. These questions required minimal recall and were related to a present situation, rather than past or future. Therefore, these types of question were considered to be a way to start the interviews as long as they are kept minimal in number and serve to frame the remainder of the interview (Patton, 1987). More specifically, some of the individual characteristic questions such as current medication use, attitude toward medications, and past medication use experience were also used to give the interviewer a frame of reference for what follow-up questions could be useful later in the interview. The individual descriptors such as age, education level, occupation, work status, personal health status, past medical experiences, and attitudes were all descriptive characteristics used in similar literature in order to capture a multidimensional approach to information seeking behavior activities among social networks (Wellman, 1995). In addition, similar

individual descriptors were also used in one of the dominant theoretical frameworks for

this study (Figure 6). "Past medical experiences" or "prior history of illness" was

adapted from previous literature to apply within the context of pharmacy to elicit the

interviewee's past medication use experiences (Pescosolido, 2006; Wellman, 1995). The

attitude characteristic used in previous literature was also adapted specifically to elicit the

person's attitude toward medications. The individual characteristic that was added

specifically for this study that was not used in previous literature was "current medication

use." See Table 2 for a summary of individual characteristics asked in Part I on the

interview script.

Table 2
Summary of Individual Descriptors in Part I of Interview Script

Individual Characteristic	Interview Script Question #	Individual Characteristic Question
Age	1	What year were you born?
Education Level	2	Where was the last place you attended school?
Work Status	3	Are you currently working?
Occupation	4	What is/was your occupation?
Geographical Residence	5	Do you live in a city, suburb or rural area?
Personal Health Status	6	Describe your health in your own words? **Probe**: On a scale of 1 to 10…how do you rate your health?
Current Medication Use	7	What medications do you take?
Attitude Toward Medications	8	What are your thoughts on the medications you take? **Probe**: Do you have any problems with them? Have they made a positive impact on your life?
Past Medication Use Experience	9	What kinds of experiences have you had with your medication treatments?

Part II of the interview script contained questions regarding social network structure. The intent of Part II was to address study objective (1) describe the structure of social networks that supplies medication information. This identified specifically "who" among a person's social networks are described as the important ties and relationships that act as medication information sources. The "who" of the social network can be categorized in various ways, however, this study focused on the type of relationships within the subject's social network that are used as a source of medication information. The type of relationships mentioned by subjects were categorized as lay or professional. This categorizing strategy has been used in previous health information (Evans, 2007; Gore & Madhavan, 1993; Gray, 2005) and social network literature (Pescosolido, 1986 & 2006; Wellman, 1995). It would be nearly impossible to measure the exact social network structure of every person an interviewee has had contact with, including such detail such as describing connectivity (whether a person has more than one basis to know another) or density (how well persons are known within the network) of a person's social network. Lack of ability to capture more specific network characteristics is because the interviewed subjects are random self-selected volunteers from any number of undefined individual networks. In other words, each interviewee represents an independent social network and can not be analyzed in the same way that a closed or "whole network" approach would in a social network analysis approach. The lay and professional categories may be further described by length of time known or frequency of social encounter, but these types of sub-categories were not set a priori and were driven by actual interview data.

Part II of the interview script used a funneling approach, moving from general to more specific, to help with the issue of recall bias. Social network literature has often discussed the issue of recall bias (Wright & Pescosolido, 2002). This is a concern because talking in every day conversation occurs with such a high frequency that people tend to forget specific individuals with whom they talk. Therefore, this part of the interview began with an optional "ecomap" exercise. This type of exercise has been used in other health care literature to capture interpersonal network structure as well as provide a visual tool to help with the issue of recall bias during interviewing (Ray & Street, 2005; Rempel, Neufeld & Kushner, 2007). This exercise helped subjects visualize the people they talk to in their day to day communications, and allowed flexibility to think about all types of conversations and personal encounters. This exercise was designed to be all encompassing with the intent to funnel down to specific persons of interest within the subject's social network. One example of an ecomap was provided to subjects to help them get started (see Appendix E). The ecomap exercise was used solely as a recall tool, and was not considered for analysis.

After the subject was provided the opportunity to complete the optional ecomap exercise, the interview continued with the main structure related questions which were:

1.) Who are the people you talk to the most frequently?

2.) When you are in a crisis or must make a big decision, whom do you talk to?

3.) Who are the "experts" or "professionals" in your life that you go to for information?

4.) Who are the people you consider acquaintances and see or talk to less often?

5.) With whom do you talk about health matters with?

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6.) With whom do you discuss your medications?

These questions were chosen by the principle investigator and project advisors because it was felt that the questions needed to cover all types of relationships and relationship dynamics.

Part III of the interview script was designed to elicit narrative accounts of medication information seeking behavior experiences. This part's intent was to address study objectives (2) describe the content that is provided through individuals' social networks related to medication information and (3) describe the function of the information that is supplied through individuals' social networks.

The most relevant content of interest for this study was medication information. In general, the content described what flows between people in a social network. The content related to information about medications could range from factual information to anecdotal narratives as well as new information or information to validate what is already known. This study focused on medication information as the content of interest; however, social support within a network is one type of resource that can describe social network content (Tardy & Hale, 1998; Wathen, 2006b). Content also may refer to beliefs and attitudes (Pescosolido, 2006).

Function will be described by capturing the use of and decision-making applications to the medication use experience (Brown et al., 2002; Mayer et al., 2007). This may include assisting with a decision as well as validation of a previous choice (Wathen & Harris, 2006a). In order to fully describe the function of the information supplied by the network source the study also considered situational context (Talja et al., 1999) such as to reduce uncertainty (Atkin, 1973) or to make sense of the situation

(Dervin, 1992). See Appendix E containing the interview script with a full listing of all questions in Part III.

The interview script for this study contained three main parts. Each part had a particular purpose to elicit responses to address the study objectives directly. Each question was specifically chosen based on theoretical frameworks surrounding social networks and information seeking behavior, with particular attention to Pescosolido's (2006) Network-Episode Model. However, previous literature within the two topic domains also contributed to question selection. In addition, the principle investigator also added questions in order to retain applicability within the context of pharmacy practice and the medication use experience.

3.4.2 The Interview Process

All study encounters consisted of a one-on-one private interview with the primary investigator, who is also a licensed pharmacist in the State of Minnesota. Although medication and medication use were discussed, no consultation or medical advice was provided to participants. Interviews were planned to last approximately one hour, and all participants completed verbal questions in a prespecified sequenced format. All interviews were audio recorded using a digital recording device and used audio playback programming borrowed from College of Pharmacy Department of Pharmaceutical Care and Health Systems faculty (Olympus SD-2300) using DSS Player Software Version 6.3.1 ©2006 Olympus Imaging Corporation.

Each interview began with an initial introduction which consisted of a short briefing (Kvale, 1996). This briefing allowed the interviewer to discuss the purpose of the interview, show the use of the digital audio device, obtain the consent form if not

already obtained, and allow participants to ask questions. The briefing portion of the interview followed the "general introduction" as it reads in the interview script (Appendix E).

Interviews were allowed to continue until the subject could not think of anything more to add or when the interviewer felt that the main questions had been answered in depth enough to capture the essence of the subject's medication information seeking behavior experience. The interviews were concluded with a debriefing, in which participants were openly permitted to ask additional questions. Most often participants were interested in the plan for use of the study data, the primary investigator's future career plans, or if their answers had "helped" the research project. For a few others, general comments made about pharmacists or prescription use in society were made. Both the briefing and the debriefing portions of the interviews were not audio recorded.

Participants were provided one $35.00 gift card at the completion of the interview, as a "thank you" for their time. The participants were not contacted after the completion of the one-time interview.

3.4.3 Pilot Interviews

Four preliminary pilot interviews were conducted. During this trial period, the proposed interview script was used. The interview script was tested prior to recruiting main subjects in order to access the answerability of the questions, the eco-map diagram exercise, and determine if additional follow-up questions were needed to elicit the content of interest. Based on these pilot interviews, a few minor changes were made. One change was an additional question to Part III of the interview script and other

changes were made to the ecomap diagram process written exercise portion of the interview.

It was determined that the developed interview script was satisfactory in eliciting the required data from study subjects. However, one question was added to Part III of the interview script which read, "*Describe a time when someone else has sought medication information from you*." This question was added because it was mentioned by pilot study subjects when asked to describe a time they talked with others about their medications. In several instances, subjects would reply with a response insinuating that more often, certain people came to them for medication information for various reasons.

The second change that came from the pilot interview was the turning off the audio recording device during the written ecomap exercise. The first four interviews allowed for recording to continue during the recall tool exercise. This greatly lengthened the interview audio and transcripts by containing periods of silence as well as unrelated follow-up questions surrounding the creation of their own ecomap. Because the ecomap was strictly used as a recall tool and was not considered for analysis, the silent time and follow-up questions directly relating to the ecomap were not recorded during main study interviews. In addition, during the pilot interviews the participants were asked to color-code certain persons described on their ecomap (e.g. red for family and friends, yellow for professionals, blue for casual acquaintances). This process of color-coding was originally thought to be as an additional visual aide to help participants distinguish between the many people they consider to be within their social network. However, this visual aide did not seem to add any additional recall or distinguishing features of persons

within their social network, so the color-coding portion of the ecomap diagram was not continued in all main interview participants.

3.4.4 Main Interviews

The total number of interviews planned to be conducted was between 35 and 50. This number was selected because a wide variety of subjects were desired in order to capture many different aspects related to individual experiences of different subject individual characteristics. Past research was used to guide the sample range selected (Birkel & Reppucci, 1983; Hawkins & Abrams, 2007; Pettigrew, 1999; Tardy & Hale, 1998; and Wellman, 1995). There was an expectation for a large variation in experiences, however, time and cost considerations placed a maximum limit on the number of participants. There were 36 main study interviews conducted and when including the data provided by the four pilot interviews, a total of 40 interviews was conducted over a period of five months.

3.4.5 Interview Timeline

Recruitment and interviewing were ongoing simultaneously throughout data collection. Figure 9 outlines the timeline for study recruitment and data collection.

Figure 9
Timeline for Recruitment and Interviews by Study Site

```
┌─────────────────────────────────────────────────────────────────────┐
│  August                          November                           │
│  2008                            2008                                │
│         └──────────────────────────┘                                │
│              UMN Campus/Clinic                                      │
│                                                                     │
│        September          October                                   │
│        2008               2008                                      │
│           └─────────────────┘                                      │
│              Community Pharmacies                                   │
│                                                                     │
│                        November              December               │
│                        2008                  2008                   │
│                           └───────────────────┘                    │
│                                 Senior Center                       │
└─────────────────────────────────────────────────────────────────────┘
```
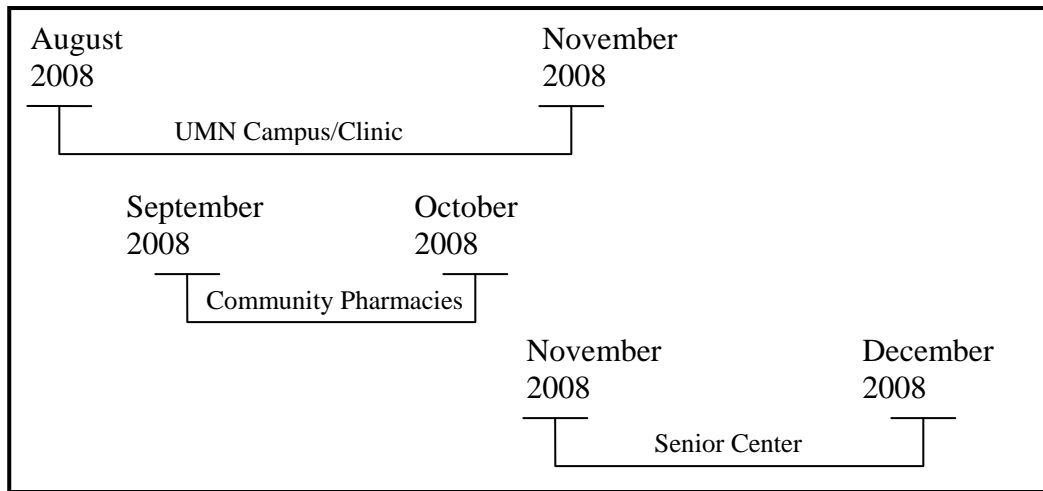
3.5 Data Analysis

3.5.1 Overview of Analysis

The chosen analysis for this study was qualitative interpretation which used ethnographic content analysis and meaning categorization of interview transcript content, drawing on the principles of constant and theoretical comparisons (Strauss & Corbin, 1998). A qualitative approach was taken because previous literature on human information behavior, as previously discussed in the respective literature review section, noted that qualitative research could best uncover the complexities of the social contexts that can arise in the flow of information in everyday communication. Further, social

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network literature has suggested that qualitative methods are best for describing the structure, content and function of social networks (Jinnett et al., 2002). The two literature domains of information behavior and social networks provided the main support for the current choice of analysis. In addition to the primary justification was a secondary one that the research topic was a new application within the context of pharmacy practice and therefore lent itself to a qualitative approach for exploration and description. When this topic was chosen, many different research approaches were explored and discussed. In-depth, exploratory, descriptive, qualitative approach was chosen for answering the research question and study objectives. In addition, this research would lay a rich groundwork for future, more specific, mixed method or quantitative research with hypothesis testing on the same topic.

For this study the qualitative data used in analysis manifested in the form of audio-recorded subject interviews. These data were prepared for analysis through the process of transcription. The interviews were transcribed by two professional transcriptionists. In addition, no names or personal identifiers were recorded during the interview therefore, each interview was assigned a sequential study identification number.

3.5.2 Reliability and Validity in Qualitative Research

Research from different disciplines uses various terminologies to capture the degree of rigor associated with methodology applications. There have been discussions regarding the different ways to apply such terminology to quantitative or qualitative methods (Golafshani, 2003). Traditionally, quantitative research uses experimental measures to test hypotheses. Reliability in this context means that results will be

replicable over time. Validity in this context tries to capture the degree of objectivity, trust, actuality, or fact that serves to make the results 'valid' (Winter, 2000). The positivist traditions of reliability and validity are in contrast to the naturalistic approaches of qualitative methods. According to Golafshani (2003), reliability and validity in qualitative research are conceptualized as credibility, transferability and trustworthiness. Overall, the rigor of this research was shown by the credibility, transferability and trustworthiness of the methods and consensus of the analysis process with expert content reviewers.

Credibility

Credibility for qualitative research relies on the confidence of the reader in the researcher's content expertise, decision-making, and sensitivity to the data (Hoepfl, 1997). Credibility in qualitative research is similar to that of internal validity of quantitative research. Instead of accurately describing realty, as defined by internal validity, the qualitative researcher attempts to represent multiple realities adequately (Hoepfl, 1997).

This study demonstrated the qualities of credible research in that a transparent report was generated based on data findings that included full discloser of strengths, weaknesses, limitations, and biases of the researcher. Another way that showed the current research was credible was demonstration of both consistent and inconstant case examples (Rubin & Rubin, 1995). Finally, the element that the primary researcher for this study was also a licensed pharmacist lent to the credibility of the current research application (Rubin & Rubin, 1995). This research placed the background literature in the context of pharmacy practice as well as used the interviewing skills of a patient oriented

health care practitioner. For this study credibility was further demonstrated by expert verification by faculty advisors of the content of the interview script and definitions for coding themes.

Transferability

Transferability in qualitative research is similar to that of external validity in quantitative research. External validity gives the researcher the ability to generalize across multiple situations. In qualitative research, transferability will depend on the degree to which the original situation can be 'transferred' to a different situation. Further, the extent of transferability can not be quantified, but rather the researcher can provide enough information for the reader to determine whether the researched scenario is applicable to other scenarios (Hoepfl, 1997). The efforts that were made in the current study to address the issue of transferability were: (1) full description of individual characteristics or subjects, research settings, and data collection processes to permit comparisons to alternate research applications and contexts (2) discussion of limitations as threats to generalizability (3) purposeful recruitment and sampling strategy (4) "thick description" of all methods (5) comparison of results to prior literature and (6) discussion of further testing or possibilities for replication in other populations. These elements were similar to those used in evaluation of transferability of qualitative research (Miles & Huberman, 1994).

Trustworthiness or Dependability

Trustworthiness or dependability in qualitative research are similar to discussions of reliability in quantitative research. Instead of focusing on stability and replicablity

over time, qualitative research has instead captured this concept with such things as the

inquiry audit of both the process and the product of the research (Hoepfl, 1997).

The inquiry audit for this study included an 'explanation of procedures,' by fully

and carefully explaining (1) every aspect of data collection and by the researcher

acknowledging a priori biases, expectations, and assumptions (Kvale, 1996), and (2)

documentation of all data including raw audio, transcribed interviews, and various stages

throughout analysis so that recordings, transcripts, and analysis could be easily traced if

any processes or result were called into question (Gorman & Clayton, 2005).

3.5.3 Methodological Approach

Overall, analysis of interviews used "meaning categorization" as broadly outlined

as a method of analysis for qualitative research interviewing (Kvale, 1996). The meaning

categorization approach uses transcription data for the creation of categories or themes

that can be defined to demonstrate occurrence or non-occurrence of a given phenomenon.

This analysis strategy can combine a priori themes with ad hoc themes found during

analysis (Kvale, 1996). This approach was appropriate given that there was a rich

literature on the general topic of interest, and also given that the application within the

context of pharmacy had not yet been explored.

Meaning categorization can be further specified into various types of qualitative

methodology. According to Tesch (1990), if the qualitative researcher is interested in the

discovery of regularities and the identification or categorization of elements and

exploration of their connections, then ethnographic content analysis (ECA) is one type of

qualitative methodology that could be used. Further support for this approach applied to

the current research questions is explained in Altheide's (1987) writings of when ECA is

appropriate. He explains that traditional methods of content analysis are used with an additional component of flexibility to allow for new themes and concepts to emerge (Altheide, 1987). Altheide's (1987) approach also acknowledged the importance of prior research and the influence of theory to contribute in the research analysis. Altheide's (1987) Ethnographic Content Analysis, "is used to document the communication of meaning, as well as to verify theoretical relationships" additionally, the aim of this approach is "systematic and analytic, but not rigid," (p.68). Overall, ECA "refers to an integrated method…for locating, retrieving, and analyzing documents for their relevance, significance, and meaning. The emphasis is on discovery and description, including search for contents, underlying meanings, patterns and processes, rather than mere quantity or numerical relationship between two or more variables" (Altheide, 2003, para. 1).

The ECA approach is in contrast to quantitative content analysis. Quantitative content analysis is focused on verification, statistical analysis and random or stratified sampling where ECA focuses on discovery, textual as well as numerical description, and purposive and theoretical sampling techniques. Techniques for conducting ECA use conceptual coding so that concepts may be relevant for several purposes and are not mutually exclusive (Altheide, 1987). Further, Altheide (2003) outlines the basic steps of ECA to include pursuing a specific topic or problem to be investigated, becoming familiar with the process and context of the information source, drafting basic categories or variables based on prior literature or theory, drafting a data collection protocol, pilot testing the protocol, revising the protocol and collecting data from additional cases, and finally, becoming familiar with all collected data. Prior literature in qualitative health

research has documented use of the ECA methodology (Dixon-Woods, Angell, Ashcroft, & Bryman, 2007; Gassner, Dunn, & Piller, 2002; Issel, 2000; Johnson, & Kittleson, 2003; Oliffe, 2006; Smith, McLeod, & Wakefield, 2005).

3.5.4 Thematic Hierarchy and Information Seeking Behavior Trajectories

Using the approach of meaning categorization as outlined by Kvale (1996) and ECA outlined by Altheide (1987, 1996, & 2003), theme and code development used a combination of theory driven and prior research driven code development as described by Boyatzis (1998, pp. 33-41). These themes or dimensions were further divided into subcategories. Past literature, interview questions and subject responses contributed to themes and subthemes. Relevant sociological literature in the area of social networks was used to guide the study's conceptual framework and initial themes of interest (Baker & Pettigrew, 1999; Pescosolido & Levy, 2002; Pescosolido, 1986 & 2006; Pettigrew, 1999; Wellman, 1995). The three major themes of interest were structure, content and function of the utilized social networks within the process of medication information seeking behavior. A thematic hierarchy for outlining these three was used for initial coding of interviews. The initial thematic hierarchy is outlined in Figure 10. Current subthemes listed in Figure 10 were developed based on the conceptual framework outlined by Pescosolido (2006) in the 'Network Episode Model' in combination with other literature containing concepts to describe social networks (Baker & Pettigrew, 1999; Pescosolido, 1986; Pettigrew, 1999; Wellman, 1995).

This thematic hierarchy (Figure 10) was separated into two trajectories for which the medication seeking incidents could progress when explained by subjects. The first trajectory could involve the interaction of another person, and the second could involve

no person. If a person was involved, it was expected that the type of social contact could be placed into one of two categories: lay or professional. For this study, 'professional' for coding purposes referred to health care providers. In contrast, 'lay' referred to someone outside of health care. Because of the vastness of the information environment, this study also considered those instances when subjects discussed times of seeking information from those sources not involving another person. Subjects that discussed information seeking behavior *not* involving a social contact was not discounted during interviews, rather it was considered using the second trajectory. In either case of social involvement or not (i.e. first or second trajectory), the concepts of content and function were expected to shape the information seeking behavior experience of subjects. The use of two information seeking behavior trajectories is similar to Figure 3 because health information can be thought of as coming from interpersonal sources as well as other mediated sources (Brashers et al., 2002; Parrott, 2004).

A priori subthemes shown in Figure 10 were added and subtracted during actual thematic analysis of interviews dependent upon on actual data and disclosed in the results section. A priori subthemes were solely provided as a conceptual foundation for exploring data and were not seen as fixed parts of analysis. This approach was consistent with theory driven and prior research driven thematic analysis (Boyatzis, 1998) and ethnographic content analysis (Altheide, 1987 & 2003).

Figure 10: Thematic Hierarchy

Medication Information Seeking Behavior: Trajectory 1	Medication Information Seeking Behavior: Trajectory 2
Structure: Person (Social Contact)	**No Person Involved**
Lay	Other Source
Professional	
Content	**Content**
Beliefs/Attitudes	Beliefs/Attitudes
Factual	Factual
Personal Experience	Personal Experience
Function	**Function**
Social Support	Social Support
Decision Making	Decision Making
Validation	Validation
Monitoring	Monitoring

3.5.5 Operationalization of Coding Terminology

This research was undertaken to investigate the role of social networks in medication information seeking behavior. The major components of interest were the structure, content, function of social networks in the medication information seeking behavior process. Also of interest were the individual characteristics of the participants who described the role of their social network.

The structure of social networks can be described by the relationships (Faber & Wasserman, 2002) and the ties (Granovetter, 1973) that form them. For this study the relationships and ties that form the structure of a social network were described as professional or lay (Gore & Madhavan, 1993; Gray et al., 2005; Evans, 2007; Pescosolido, 1986 & 2006; Wellman, 1995). Professional social relationships were described as those in which the characterized ties were seen by the subject as a formal relationship based upon the professional expertise of the individual. Although, health professionals are of most interest to this study (e.g. physicians, nurses, or pharmacists) there is an interest to be all inclusive, so other types of professionals were also considered (e.g. lawyers or social workers). Lay social relationships were described as those in which the social ties were seen by the subject as an informal relationship with a personal contact who they encounter in day-to-day life, such as family, friends or acquaintances.

The content within the social network that was of interest for this study was described as medication information. Medication information was described as the type of information patients obtain to learn, make decisions, and engage in management of their medication therapy. Medication information may include various dimensions such

as factual information, personal experience, or beliefs and attitudes (Schommer et al., 2008; Pescosolido, 2006).

Function of medication information seeking behavior within utilized social networks was described by capturing the use of and decision making applications to the medication use experience (Brown et al., 2002; Mayer et al., 2007). This could include assisting with decision making as well as validation of a previous choice (Wathen & Harris, 2006a). In addition, the function could be to monitor the situation for potential threats (Case, 2007). Finally, function also may be described as a provider of social or emotional support (Pescosolido, 2006).

A priori operationalization of subthemes were created based on background literature and the context needed for the research application to pharmacy practice. Operationalizations of all identified subthemes surrounding structure, content, and function of social networks were finalized at the completion of data analysis in order to direct future research application in this area.

The individual descriptors such as age, education level, occupation, work status, personal health status, past medical experiences, and attitudes were all descriptive characteristics used in similar literature in order to capture a multidimensional approach to information seeking behavior activities among social networks (Wellman, 1995). *Past medical experiences* or *prior history of illness* was adapted from previous literature to apply within the context of pharmacy to elicit the interviewee's *past medication use experiences* (Wellman, 1995; Pescosolido, 2006). The attitude characteristic used in previous literature was adapted specifically to elicit the person's a*ttitude toward medications*. The individual characteristic that was added specifically for this study that

was not used in previous literature was *current medication use*. The questions to obtain

these individual characteristics were based on previous literature (Wellman, 1995;

Pescosolido, 2006) and the pharmacy practice experience of the author.

3.5.6 Software for Data Analysis

Qualitative analysis was chosen for this study because of the exploratory nature of

the topic in a previously undocumented application within pharmacy practice. The two

literature domains of human information behavior and social networks provided the main

support for the current choice of analysis. Thematic analysis coding was conducted using

the qualitative software program, NVivo 8, © QSR, International 2007.

The origins of the NVivo computer software began in the early 1980's using

code-and-retrieve strategies that came out of early computer programming (Richards,

2002). The program's creator first called the program NUD*IST (Richards, 2002). At

the most basic level, this program used a "tree node" concept for the coding of data. The

idea of the "tree-node" works to categorize ideas from the most general of themes or

concepts to the most specific. Thus, the "tree node" naming is derived from the

conceptual pattern of a large tree trunk dividing down into smaller and smaller tree

branches.

Applying the tree node approach to data, this software program allows for the

most basic concepts within qualitative research to take shape. Developing tree nodes

allows the researcher to directly reference text as well as manipulate thematic categories

in order to reorganize them in multiple ways. Though the tree-node concept forms the

basis data organization, later versions of the computer program allowed for further

flexibility. For example, the researcher can create uncategorized nodes such as when a

new node is identified but may not yet have a higher node to that which it belongs. Tree nodes may be a priori or ad hoc created, depending on the nature of the research question and analysis findings. In addition, later versions created attribute nodes in order to hold and link specified demographic data of subjects. The code-and-retrieve fundamental concept allows the researcher to undergo any number of comparative and relational questioning (Richards, 2002). For example, the researcher can inquire as to where nodes overlap such as what 'rural' 'males' reported about their 'attitudes towards medications.'

Besides the most basic organization of textual data, NVivo has the ability to import all other forms of qualitative data, such as audio files or video files of recorded interviews or focus groups, pictures of subject material, field notes, bibliographies or researcher memos. NVivo also has the capabilities to identify and track the findings of multiple coders. Finally, the program can create and output formatted result summary tables, various reports, and conclusions with the supplementation of visual models to further describe and explore processes, relationships, and theories.

In summary, NVivo was chosen for this study because of its flexibility for using multiple types of data, freedom of the tree node organizational structure, coder tracking capability, and the seamless integration for report and visual model generation.

CHAPTER 4: Results

The results of the research project are arranged as follows. First, a description of the sample will be presented. Second, the major findings surrounding the ethnographic content analysis will be discussed, including details of theme operationalization and thematic linkages that have emerged within the data. The final section will provide framing of context to identified thematic linkages in order to present a whole picture for the medication information seeking behavior experience.

4.1 Sample Description

In this section of Chapter 4, individual characteristics of those interviewed subjects are presented. Individual characteristics for the subjects give further context to understanding the role of social networks in obtaining information related to the medication use experience. In addition, individual characteristics of subjects were obtained to identify emerging patterns with other social network characteristics.

A purposeful sampling strategy was used in order to ensure a diversity of participating subjects in this study. Although there was no way to ensure a diverse sample, the inclusion criteria were broad in order to avoid exclusion of interested participants and obtain data from as many types of experiences as possible. All subjects met the criteria of being at least 18 years of age at the time of the interview.

The sample included a wide range of ages (19-89). The average age of the sample was 55.3 years, with a standard deviation of 18.9 years. The majority of the subjects, 70 percent (28/40), were female. When asked the question of where they had last attended

school, the majority of respondents, 70 percent (28/40) answered that they had at least attended some college or other type of higher education after high school.

When subjects were asked where they currently lived, the highest percentage of subjects 45 percent (18/40) answered that they lived in a city or what they would consider an urban area. Some subjects considered themselves either suburban or rural dwellers, 22.5 percent (9/40) and 32.5 percent (13/40), respectively. Further, the highest number of subjects was recruited at the senior center (42.5 percent) followed by the outpatient pharmacy/primary care clinic (37.5 percent) and the community pharmacies (20 percent).

When asked about employment, the highest percentage of subjects, 37.5 percent (15/40) answered that they were currently retired from previous employment. The next most common response to the question of employment subjects answered, 30 percent (12/40) that they were currently unemployed, 25 percent (10/40) were employed and 7.5 percent (3/40) considered themselves a full-time student. When subjects were asked about their occupation, a wide variety of answers were given. Most commonly, subjects answered they had so many different types of jobs that they did not know how to classify their occupation and were thus classified as unspecified. Further, six subjects classified themselves as some type of administrative assistant. Several subjects (3/40) when asked about occupation stated verbatim that they considered themselves a "jack of all trades." Other reoccurring occupation types among subjects included clerical health care worker (2/40), insurance agent (2/40), and licensed practical nurse (LPN) (2/40). Tables 3 and 4 present a summary of the general characteristics and occupations of subjects. Additionally, all subjects were English speaking and no translation services were necessary.

Table 3: General Characteristics of Subjects

Characteristics	(N=40)	(%)
Gender		
Male	12	30.0
Female	28	70.0
Age		
18 - 30	5	12.5
31 - 49	8	20.0
50 - 64	10	25.0
65 +	17	42.5
Range	19-89	
Mean	55.3	
Standard Deviation	18.9	
Median	58.5	
Highest Education		
High School	12	32.5
College	28	67.5
Work Status		
Employed	10	30.0
Unemployed	12	22.5
Student	3	7.5
Retired	15	40.0
Geographic Residence		
Urban	18	45.0
Suburban	9	27.5
Rural	13	27.5
Interview Location		
Primary Care Clinic	15	37.5
Community Pharmacies	8	20.0
Senior Center	17	42.5

Table 4: Occupations of Subjects

Occupation	(N=40)
Administrative Assistant	6
"Jack of all Trades"	3
Sales Marketing	3
Clerical, Health Care	2
Insurance Agent	2
Licensed Practical Nurse (LPN)	2
Architectural Draftsman	1
Attorney	1
Bartender & Cook	1
Business Writer	1
Electrical Engineering	1
Factory Worker	1
Fishery Biologist	1
Homemaker	1
Interpreter	1
Librarian	1
Management, Consulting	1
Pharmacy Technician	1
Research Assistant	1
Special Ed Teacher	1
Unspecified	8

In addition to the general characteristics presented previously, individual questions specifically related to health and medicines were asked of subjects. The four areas of inquiry were related to current medication use, attitudes toward medication, past medication use experience, and personal health status.

For 'current medication use' patients were asked what medication they currently take. Further, patients were encouraged to include any OTCs, vitamins or herbal

products they take on a regular basis. 'Regular basis' was not given a specific parameter for inclusion; rather, it was up to the subject to interpret what they would consider a 'regular basis.' The subjects' average medication use was approximately 6 medications (5.9) with a range from 1 to 23. Overall, a majority of the subjects took few medications. A total of 19 subjects (47.5 percent) took between 1 and 3 medications. However, there were also 10 subjects that took over 10 medications (25 percent).

The characteristic of 'attitudes toward medication' was captured by the question: "What are your thoughts on the medications you take?" The degree to which subjects discussed the overall impact on their lives was coded according to whether the subject answer positively, negatively, both positively and negatively or had neutral thoughts about the medications they take. Most subjects, 47.5 percent (19/40), answered positively when asked about their thoughts on the medications they take. There were 25 percent (10/40) of subjects who had both positive and negative thoughts, 15 percent (6/40) with neutral thoughts, and 12.5 percent (5/40) of subjects who answered negatively when asked about their thoughts on medications taken.

Subjects were asked to describe the types of experiences they have had with their medication treatments by answering, "What kinds of experiences have you had with your medication treatments?" The degree to which subjects described both successful and problematic medication use experiences were summarized into three categories that included successful, problematic, or both. *Successful* medication use experiences were coded for those subjects that cited no major adverse reactions or other problems related to taking medications. *Problematic* medication use experiences were noted when subjects cited any type of drug therapy related problem, such as an allergic reaction, lack of drug

efficacy, or cost related issues. Some subjects mentioned having some problems or issues with medications, which were resolved or in the process of being resolved – these instances were coded as having *both*. Most subjects (50 percent) described their medication use experiences as being successful, followed by 35 percent who described as having both successful and problematic experiences, and 15 percent described only problematic experiences related to the medications that they take. Table 5 provides a summary of health characteristics of subjects.

For personal health status, subjects were asked to describe their health in their own words. Often subjects identified themselves as having a certain medical condition and would elaborate further using the medication condition and as context to describe the rest of their health. Medical conditions mentioned ranged anywhere from a chronic allergy suffer to cancer and HIV patients. In addition, several transplant patients were enrolled in the study. Table 6 provides a summary of the health conditions that were mentioned by subjects as a way to provide a context to describe their health. In addition to self reported medical conditions, subjects were further probed to rate their health on a scale from 1 to 10, with 10 being perfect health and 1 being the worst health. The majority of subjects placed their health in the 7 to 9 range (30/40) and fewer subjects listed themselves in the 5 to 6 range (9/40). Only one subject listed them self as having a health status less than 5 (reported as 3). Table 7 provides a summary of the subjects' self-reported health status.

Table 5: Health Characteristics of Subjects

Health Characteristics	(N=40)	(%)
Current Number of Medications		
1	6	15.0
2	6	15.0
3	7	17.5
4-5	6	15.0
6-9	5	12.5
10+	10	25.0
Range	1 - 23	
Mean	5.9	
Standard Deviation	5.3	
Median	4.5	
Attitude Toward Medications		
Positive Thoughts	19	47.5
Negative Thoughts	5	12.5
Positive and Negative Thoughts	10	25.0
Neutral	6	15.0
Medication Use Experience		
Successful	20	50.0
Problematic	6	15.0
Both Successful & Problematic	14	35.0

Table 6: Specified Medical Conditions of Subjects

Medical Condition	(N=40)
Allergies	1
Cancer	
Breast	1
Uterine	1
Unspecified	1
Common Variable Immune Deficiency	1
Diabetes	
Type I	1
Type II	1
Emphysema	1
Gastric Bypass, Post Surgical	1
HIV	1
Hypothyroidism	1
Liver Transplant	2
Lung Transplant	1
Mental Health Issues	2
Unspecified	24

Table 7: Self Reported Health Status of Subjects

Self Reported Health Status *(Scale 1-10: 10 = best health, 1 = worst health)*	(N=40)
1	0
2	0
3	1
4	0
5	6
6	3
7	11
8	9
9	10
10	0

4.2 Analysis of Interviews: Overview

Transcribed interviews provided the data for this research study. The analytic process followed the concepts for qualitative research of meaning categorization (Kvale, 1996) and ethnographic content analysis (ECA) (Altheide, 2003). Because this study acknowledged the importance of prior research in information seeking behavior and social networks applications in health and a priori thematic hierarchy was developed to frame the initial analysis. Remaining consistent with ECA, a systematic approach was used to read, explore and become familiar with the interview transcripts and allowed new themes and concepts to emerge (Altheide, 1987). All data analysis for this study was conducted by the author. However, content expertise and verification on theme development was provided by faculty advisors.

In order to answer the research question and study objectives, the analysis for this study consisted of two phases. Phase I used the *a priori* themes of interest to identify and describe the structure, content and function of the utilized social networks within the process of medication information seeking behavior. Phase I also allowed for the development of a priori themes as well as new themes to be identified and described. Phase II used the findings from Phase I to go further and uncover patterns and relationships that were identified within the data. Processes in Phase II used the clustering of themes and subthemes to create "coding intersections" within the data in order to explore co-occurring concepts in order to draw linkages from within the data that could serve to develop further research questions. Phase II of the analysis followed what

is described as a cross-case analysis or coding matrix development of qualitative data (Miles & Huberman, 1994).

4.3 Analysis of Interviews: Phase I

Phase I used the a priori themes of interest to identify and describe the structure, content and function of the utilized social networks within the process of medication information seeking behavior. Phase I allowed for these themes, as well as new themes to be identified.

The theory and previous literature based themes were outlined in Figure 10. This thematic hierarchy outlined two possible trajectories for which the medication seeking incidents could progress. The first trajectory could involve the interaction of another person, and the second possibility could involve no person. If a person was involved, it was expected that the type of social contact could be placed into one of two categories: lay or professional. For this study, 'professional' for coding purposes referred to health care providers. In contrast, 'lay' referred to someone outside of health care. Because of the vastness of the information environment, this study also considered those instances when subjects discussed times of seeking information from those sources not involving another person. In either case of social involvement or not, the concepts of content and function were expected to shape the information seeking behavior experience of subjects. It was expected that these concepts would be described by themes, as outlined in Figure 10 based on theory and previous literature. For content, themes related to beliefs and attitudes, facts, and personal experience were expected to emerge. For function, themes related to social support, decision making, validation, and monitoring were expected to

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emerge. As consistent with ethnographic content analysis, themes could be later added, subtracted, or further delineated based on actual data.

Phase I of the analysis explored the study objectives related to structure, content and function. It confirmed the identification of theory and previous literature based themes however, there was also the addition of new themes and subthemes. Social network structure was described by *type*s and *subtypes* of social contacts involved. Content and function of medication information that was utilized by the subjects were categorized into *themes* and *subthemes*.

4.3.1 Structure

The first objective for this study was to describe the structure of social networks that supplies medication information. In order to describe the structure of social network, social contacts were categorized into types. Two types of social network contacts were a priori dichotomized into 'lay' and 'professional.' Within this dichotomy of lay and professional, eight subtypes emerged. Within the type 'lay,' subtypes included family, close friend, or acquaintance. Within the type 'professional,' subtypes of nurse, physician, pharmacist, related or friend professional and other emerged. During data collection and upon data analysis was the identification of a different type of social network contact. This third type was titled 'self.'

<u>Lay</u>

The first type of social network source of medication information that was described by subjects was labeled as 'lay.' This was a broad label that encompassed everyone a person talked to about his or her medication outside of the health care realm. Subtypes of 'lay' were also indicated, so a lay type of social network source was coded

only when specific people were not mentioned, but talked about in general. Below are

quotations from two subjects who spoke about a lay social network source:

> *So basically, I talked to a lot of people about it, and it was interesting that I had already kind of made the decision myself; I just wanted to get their input on it, which was fun.* (28 year old, female)

> *I think that sometimes you find you're talking to someone and they're taking the same thing or having the same problem you are; you've got something in common that you can talk over. They're not an expert but at least you know you're getting the benefit of their experience with that thing or with that problem, and that can be helpful, too, sometimes.* (75 year old, female)

The 'lay' type of social network source was further divided into three subtypes

which included family, close friend and acquaintance. Family was coded when a subject

spoke of someone who was a relative or spouse. The following was one example of a

subject talking about her spouse:

> *I'd only talk to my husband about it on a very non-technical level; he would be kind of like my check. For example, when I was saying I was cold all the time, after three months, he was like, do you think it could be your medication? So he's more of a non-professional, but he's right on the front line, so he would actually see if there was an issue.* (32 year old, female)

The social network subtype 'family' was further divided into two descriptive

themes which included 'shared experiences' and 'genetics.' Shared experiences were

coded when a person referred to speaking with a relative because they have had similar

experiences and to share information related to such. The following was one example of

a subject talking about shared experiences and how that fits into discussions with family

members:

> *As to I think the last people that I mentioned, a certain brother-in-law, certain life-long college friends and my barber, as to those individuals, all of whom are*

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men – and my brother – those are people that are essentially peers of mine, and over time, over the years, we've had some degree of common experiences. So it would be kind of talking shop, a little bit, or certainly if I were experiencing something new, I would talk to those people to see if they knew anything or experienced something of a similar nature that I could gain information from them about. The others, people like my wife – there could be some common experiences there, though the gender is different – there it would be to talk in detail about health issues and personal feelings and so forth. So that would be my wife, my brother, certain other family members; capability to confide in. (59 year old, male)

'Genetic' was coded anytime a subject referred to speaking to a relative because of a belief that a genetic similarity might yield similar experiences and to share information related to such. The following was one example of a subject talking about the role that they felt genetics played in providing justification for talking with family members about medications:

My sister has the same kind of outlook, and the same kind of gathering information process, which we're not discussing yet. Also, she's my biological relative, so we share some conditions and we've made a lot of different decisions on medications. It's really interesting. I think it's the fact that we come from the same stock. (69 year old, female)

The second subtype of social network contact coded under 'lay' was titled 'close friend.' This was when a subject referred to speaking to someone close to them, but not a relative. For subjects it was often a co-worker or a friend they have known a long time or had a close relationship with. The following was one example of a subject talking about instances when talking with close friends about medications:

Yeah, close friends that we've known for many years. Throughout the summer months, we're together three or four days out of the week, because of where we live in the summertime. We go to the summer place where these same people are, so the women and I, and once in a while some of the guys, too, will discuss medications that some of us are taking or not taking, whatever the case might be. (76 year old, female)

The social network type 'close friend' was further divided into two descriptive themes which included 'personal experience' and 'credibility.' Personal experience referred to the subject speaking about why they made the choice to discuss medication or health matter with that close friend, relating to the friend's personal experience. The following was one example of a subject talking about instances of talking with close friends about their personal experiences with medications:

> *What it does. It makes her tired, and mine makes me tired sometimes too, but then we actually compared notes and found out she was actually taking maybe 100mg of Seroquel a day, and I take 800, and she was like, 'Oh my gosh, how can you function?' I just get used to it, I guess. Just things like that.* (42 year old, female)

In addition to personal experiences, subjects often spoke about other reasons why they preferred to talk with close friends about their medication experiences. This theme was called 'credibility.' This theme was never coded in isolation, but simply acted as a core ideal for attributes of close friends that were cited by subjects. The attributes or subthemes for the theme 'credibility' included: trust, length of time known, job, intelligence, and honesty. The following was an example of a subject who spoke about the trust involved with obtaining information from a close friend:

> *I trust that. There are a lot of things that I would take from her that if someone else was saying it to me, it might bother me, so a lot of it, I think, is just the nature of our relationship.* (50 year old, female)

The following was an example of a subject who spoke about the length of time known as a factor when obtaining information from a close friend:

Well, I mean I always talk to the professional, but aside from the professional it's going to be my best friends, my two best girlfriends. They just both get it and they've known me a long time. (50 year old, female)

The following was an example of a subject who spoke about the person's job as a factor for why they would obtain medication information from a close friend:

She also works at NIH and she is a bit of a science geek. (50 year old, female)

The following was an example of a subject who spoke about how intelligence is a factor when obtaining information from a close friend:

Usually, she likes to talk to me about some of the scripts she's run into in getting her medications for her Crohn's disease, because she takes a whole battery of medications to maintain herself and sometimes the doctors prescribe the wrong medications. She's been dealing with it for a couple of decades. She's an extremely intelligent person. She has a masters degree in divinity and she was a Lutheran pastor, and she's also a PhD candidate. (52 year old, male).

The following was an example of a subject who spoke about how honesty is a factor when obtaining information from a close friend:

I would definitely go to the two or three that I knew for a fact were taking them or had taken them, as opposed to going to the other people that hadn't, because the stigma wouldn't necessarily be there and also I feel like they would just be honest, even more so than a doctor. (25 year old, female)

The third subtype of social network contact coded under 'lay' was titled 'acquaintance.' This was when a subject referred to speaking to someone that they only see on a rare or casual basis, have a weak personal relationship with, or do not know that well. The following was one example of a subject talking about instances when talking with acquaintances about medications:

Mmm-hmm, my friends and colleagues; the people I'm standing in line behind at the grocery store. It's one of those things; people talk about their medications a

lot, they really do, especially certain groups of people. A lot of diabetics want to talk about what they're taking for it, whether they're on oral or insulin, or whatever; they just seemed to be more interested in talking about it. (65 year old, female)

In order to add to this study's credibility, inconsistent case examples were documented and considered during analysis. For the type and subtypes of social network source, coded as 'lay' there were several instances when subjects discussed that they do not talk with their lay social network contacts about medication information. Exploring themes in opposite ways helped provide overall theme verification. The following were several examples which provide a contrast to a majority of the coded data that was presented previously in regards to lay social networks sources for medication information:

> *I don't use anything that's given to me from a person. I only use what's given to me by the doctor, because I'm on so many different medications I have no idea whether that would interfere with anything I'm taking and could possibly cause me to overdose and whatever. No, I do not take anything from anybody other than what I get from my doctor.* (66 year old, male)

> *I don't buy anything on just pure testimonials, but how many times has a friend or acquaintance told you about something, or you hear a personality on television?* (58 year old, male)

> *So there's that stuff and maybe because I'm older there's more of a stigma with depression and mental illness and whatever, that you don't want to admit that. So it is difficult to speak to people about that because they're hesitant to let you know that.* (57 year old, female)

> *I don't talk about that with casual friends.* (73 year old, female)

> *There again, I kind of feel that's a touchy subject when you're out among social people. If it's brought up, yes, then I do mention it, but to volunteer it, unless you know the person real well and know their circumstances, no, I don't say it.* (83 year old, female)

In summary, subjects talked about the structure of lay social network sources of medication information in terms of family members, close friends, and acquaintances. Contextual themes and subthemes were identified for types of lay social network sources with respect to shared experiences, genetic similarities, personal experiences, and credibility. A summary of the subtypes of contacts, themes and subthemes identified within the 'lay' social network structure were outlined in Table 8.

Table 8: Summary for 'Lay' Types of Social Network Source

Summary for 'Lay' Types of Social Network Source		
Subtype	*Theme*	*Subtheme*
1. Family	1a. Shared Experience	
	1b. Genetic	
2. Close Friend	2a. Personal Experience	
		2b-i. Trust
		2b-ii. Length of Time Known
	2b. Credibility	2b-iii. Job
		2b-iv. Intelligence
		2b-v. Honesty
3. Acquaintance	*No themes or subthemes*	

Professional

The second type of social network source of medication information that was described by subjects was labeled as 'professional.' This was a broad label that was used to encompass everyone a person talks to about his or her medication inside of the health care realm. Subtypes of 'professional' were also indicated, so a professional type of social network source was coded only when specific people were not mentioned, but talked about in general. Below were quotations from subjects speaking about a professional social network source:

> *Generally, I ask the health professionals. I ask the people who are supposed to know.* (48 year old, female)

> *Well, I consider them to be the experts and I expect them to have the answers to my questions.* (74 year old, female)

The 'professional' type of social network source was further divided into five subtypes which included nurse, physician, pharmacist, related or friend professional and other. Nurse was coded when a subject spoke of someone who is a nursing health care provider. The following was one example of a subject talking to a nurse about a medication related problem:

> *I was starting to have these heart palpitations, and it was really nerve-wracking, because it felt like my heart was coming out of my chest, and I'm 31 years old, I run all the time, I've never had this problem before. And I didn't think it was the steroid until I called up one of the nurse hotlines that we have for our insurance, and I've actually used that a couple of times, and I've found it to be really helpful, only because, when you're worried, you know darn well if you're really sick you'd just go in. So I was actually home alone, and I called up and talked to her for a while – a long time, actually – and went through all the steps. Finally she asked me, have you started any new medications? And I was like, I did, I took this steroid, and she said it's probably the steroid. She said to give it a couple of days, if it's still there, you might want to go in.* (32 year old, female)

The second subtype of social network contact coded under 'professional' was titled 'physician.' This was when a subject referred to speaking with a physician regarding medication information. The following were several examples when subjects recalled a time when talking with a physician about medications:

> *Well, usually I go to my primary care first if I have a particular issue, and he helps recommend medications.* (52 year old, male)

> *I love my doctor but I think she would give me more of a broad overview, like 'symptoms could include...'* (25 year old, female)

> *Cost was always an issue when you don't have insurance. I was fortunate to find a doctor that could find something that was more inexpensive and he was willing to look it up for me.* (57 year old, female)

The third subtype of social network contact coded under 'professional' was titled 'pharmacist.' This was when a subject referred to speaking with a pharmacist regarding medication information. The following were two examples when subjects recalled a time when talking with a pharmacist about medications:

> *The pharmacist, like I mentioned, it's more the mechanics of taking the medication. If I haven't taken it before, I make sure that I ask him questions about the dosage. Sometimes I get information from the primary care pharmacist and I relay it to the pharmacist where I pick up my meds and ask him about medication alternatives or pricing or something like that.* (52 year old, male)

> *And then I went and read up a little more and when I picked it up I really talked to the pharmacist downstairs, 'what do I need to be looking for?' With the Prednisone, too, when I picked it up I asked the pharmacist.* (50 year old, female)

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The fourth subtype of social network contact coded under 'professional' was titled 'related or friend professional.' This was coded when a subject referred to speaking with a professional who also was a relative or friend. Often the connection was once removed, such as a friend's father. The following were examples when subjects recalled a time when talking with a professional who was also a relative or friend, about medications:

> *My mom also works at a clinic, so sometimes I ask her to ask colleagues and then report back to me, and then my uncle's a doctor, so sometimes if I have a medical question... I've asked him two or three times in the past, but a lot of times I ask my mom to ask questions for me.* (25 year old, female)

> *My dad's a physician, so I would definitely talk to him.* (32 year old, female)

> *My son, is a pharmaceutical chemist developing cancer drugs and other things, so if it seems like he might be a resource.* (69 year old, female)

> *Just looking for it out there in the world of drugs and talking to a friend whose son is a doctor. That's who told me that it's not available anymore.* (64 year old, male)

The fifth subtype of social network contact coded under 'professional' was titled 'other.' This was coded when a subject referred to speaking with a professional who did not fit into the previously specified types of professionals. Most often, these professionals included those such as dentists, university faculty in the health and medical professions, technicians or alternative medicine providers. These professionals were only mentioned in specific instances and were not repeated over all subjects. Therefore, a separate subtype was created to help with data organization in the case that the particular instance warranted further exploration. The following were examples when subjects

recalled a time when talking with a professional who has been classified for this study as

'other:'

> *My mental health counselor is the one that has worked on it for a really long time to find out which meds are right for me.* (31 year old, female)

> *I had this cracked tooth. We didn't know it was cracked, but it's been two years where it's been a problem. It got to point where I had a conversation with the dentist, and I don't know what to do, so he decided to put me on a Medrol dose pack.* (32 year old, male)

> *I was talking to one of my professors who was on this schematic here, and he does folic acid research. He said you really should take folic acid if you're even thinking about having kids.* (32 year old, female)

In order to add to this study's credibility, inconsistent case examples were documented and considered during analysis. For the type and subtypes of social network source, coded as 'professional' there were several instances when subjects discussed that they do not talk with or had a lack of information from their professional social network contacts about medication information. As discussed previously with respect to 'lay' social network sources, exploring themes to demonstrate a contrast to the majority findings helped provide overall theme verification. The following were several examples which provide a contrast to a majority of the coded data that was presented previously in regards to professional social networks sources for medication information:

> *When I was first given Seroquel, I was in the psychiatric ward; I don't even remember what year it was, but when they first decided to give that to me, I made sure to get all the information. You get a whole packet of information. If you don't ask for it, they won't give it to you. I needed to know everything.* (42 year old, female)

The big problem is when do you turn your back on a health professional? When do you feel that your understanding of yourself and your situation pre-empts? That's one thing for Christian Scientists; they never do. For me, it's a dilemma. (69 year old, female)

Medicine information, that's very poor from all over. It's just the basics; nobody goes into details. If you don't know about medications like medical professionals do, they leave you with very basic information. They do not go in too deep. It's just take it with food or maybe you'll have an upset stomach. The additional side effects or long-term side effects nobody is telling you. (48 year old, female)

I don't really ask the pharmacist where I pick up my meds that many questions; they're just very specific and short. (52 year old, male)

I can remember getting those two prescriptions filled and coming out of the drug store with a two hundred and something dollar bill, and a hundred and some of this was the Ambien, which could have had a generic for it, and it just seemed like all they were doing was prescribing medications to make money for the pharmacist. [Interviewer: *They were not very good about telling you about them?*] *No, they did not explain at all what any of these were for. It was just you have to make sure that he had them.* (51 year old, female)

In summary, subjects spoke about the structure of professional social network sources of medication information in terms of nurses, physicians, pharmacists or related or friend professionals. A few other types of health care professionals were also mentioned, but these others did not reach saturation across all subjects. The majority of the subjects discussed ways they sought or obtained medication information from their professional social network contacts, however, a few subjects remarked on the lack of information provided by professionals. A summary of the types of professionals indentified are outlined in Table 9.

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Table 9: Summary for 'Professional' Types of Social Network Source

Summary for 'Professional' Types of Social Network Source
Subtype
Nurse
Physician
Pharmacist
Related or Friend Professional
Other

Self

The third and final type of social network source for medication information that was described by subjects was labeled as 'self.' This was coded to indicate when a person referred to an instance or instances when others have come to them for information. Others saw the subject as a contact to obtain medication related information. Below were quotations from several subjects speaking about themselves as a social network source:

> *For my family, if they have questions about medications, they seem to kind of come to me a lot. And my friends, too. I'm just kind of that person that it's like, oh you're on this, or this is going on in your life, I'll get out my book or my Internet and I'll look it up for you and I'll tell you all the facts and the arguments about it. I'm just that kind of person.* (28 year old, female)

> *Well, my kids ask me a lot about medications for their children. Things have changed a lot, and so I always tell them to take what I tell them with a grain of salt. My kids are really good about using the Internet to look up those things for themselves; they just use me as an auxiliary source...I think mostly they're just calling to say am I doing the right thing. They just want me to say yep, that's exactly what I would do, too. My daughter-in-law is just so knowledgeable about medications and stuff like that, so she probably wouldn't even bother to ask me, but my daughter asks about herself and her friends, and then my other daughter asks about her children mostly. I think, for the most part, so much of that stuff is common sense. They're just asking to get reassurance, like that's what I thought, too, but I just wanted to make sure.* (65 year old, female)

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There was one lady that is a diabetic also and was having a great deal of trouble sleeping. I told her about the Ambien, what it did to me, for me, and then she took that up with her doctor and her doctor gave her Ambien to try. As far as I know she's still on it and doing extremely well. (66 year old, male)

She asked me on Clonazepam—do you take that—and I said yes. She said that's something the doctor recommended me to take, and I said well, it works really well, and if you're having a really bad anxiety attack, you can take two, so you have that option. I said if you're having slight anxiety, you can only take one, or you can take two, so you have an option in what you take. (31 year old, female)

Okay, I remember at least once or twice I've told people not to take certain medications that I've had bad experiences with, like one that I can specifically remember is my mom was talking about Paxil and I had a pretty bad experience with Paxil. I told her, 'don't take that. Don't try it. Don't bother.' Her, too, especially, I've also recommended things like over the counter things to maybe replace some of her more hardcore sleeping medications, to try some over the counter stuff that's actually worked for her, that worked for me. (20 year old, female)

In summary, subjects talked about the structure of their social network sources for medication information in terms of themselves or through a 'self' perspective. Subjects often saw themselves as a frequent source for medication information for others within their social network. As described in the example quotations, the support for providing this type of medication information was described in terms of the subject's own personal experience with medication or the medication use process. This concept of personal experience will be further explored in the section that follows.

4.3.2 Content

The second objective for this study was to describe the content that is provided through individuals' social networks related to medication information. In order to

describe the content that is provided through social networks, three a priori themes or categories were anticipated which were: beliefs and attitudes, personal experience and factual information. These three themes were confirmed in the data however, four additional subthemes of 'factual information' emerged and were identified and described. The four subthemes of factual information included: adverse effects or interactions, cost or insurance, effectiveness, and use or dosing.

Beliefs and Attitudes

The first theme of content of medication information that was described by subjects was labeled as 'beliefs and attitudes.' This theme was anything that captured if the subject had obtained or considered the opinions or feelings of others with respect to medication information. Below were quotations from three subjects speaking about the content that was supplied in terms of beliefs and attitudes:

> *And then later on down the road, I was explaining to my mom and stuff, and she'd had issues and she was seeing a psychologist and everything. She was totally against anything like that. She was like, oh, anti-depressants, you're changing your personality, but I didn't care; it made me feel better, so I took it anyway.* (28 year old, female)

> *We don't talk about our particular strategies or tactics about what we have to do. It's more like we just console each other and bitch about it, but we don't really... well, sometimes I'll explain, like I explained to you, to somebody in my situation. I don't know what they do with that information.* (52 year old, male)

> *At the Veteran's Administration, at the Lung Care and Rehab, I talked to just about everyone there about what they were on and what they thought about it.* (60 year old, male)

Personal Experience

The second theme in content of medication information that was described by subjects was labeled as 'personal experience.' This theme was anything that captured whether the subject had obtained or considered the personal experience of others with respect to medication information. Below were quotations from several subjects speaking about the content that was supplied in terms of personal experience:

> *I remember one situation where a coworker friend was having trouble with another hospital system. I told them, 'well, this is what I do...' She changed hospitals because the quality of her care for her chronic disease wasn't very good.* (52 year old, male)

> *When I was going to a place called Park House, which is a center for HIV people, and you talk to everyone. Everybody talks to everyone about what they're taking, how it's working, do you think this will work for me, how long have you been taking it, what kinds of results, it's a constant thing.* (42 year old, female)

> *We also talked about how that would affect me, changing antidepressants. But then after a couple months of not being on anything at all, I talked to my OB/Gyn and he said that he could tell that I was, I don't want to say happier, but more high spirited or whatever. He said just to make sure that when winter comes that I don't fall back into a depressive slump again because that can happen due to weather changes, but that was about it.* (32 year old, female)

> *It was mostly because she's not on the Spiriva, which I could advertise for them I think it's so great. We've talked about that, but her doctor is reluctant to put her on it. We discuss a lot the stress of our breathing, because we exercise together, so we talk a lot about what our breathing is like on a certain day and so forth.* (69 year old, female)

Factual Information

The third theme in content of medication information that was described by subjects was labeled as 'factual information.' This theme was anything that captured

whether the subject had obtained or sought factual information from others. Factual

information was spoken of, in general, however most often subjects spoke of information

that was able to be further described into one of four subthemes. Below were quotations

from several subjects speaking about the content that was supplied in terms of general,

factual information:

> *Everyone I talked to was very technical…Everyone was very technical, like it's this kind of drug, and it does this. This is actually what I wanted.* (32 year old, male)

> *My pharmacy gives me information right with the medications I receive. And so did the people down in the cities, regarding my liver.* (52 year old, female)

> *My oncologist, the older oncologist, I wasn't happy with him because they do not answer the questions. They do not want to argue with you. They do not want to explain why. They give you statistical information.* (48 year old, female)

In addition to speaking of factual information in a general sense, subjects also

spoke of more specific types of information that were divided into subthemes. The four

subthemes of factual information included: adverse effects or interactions, cost or

insurance, effectiveness, and use or dosing.   The following four quotations illustrate

subjects speaking about adverse effects or interactions, cost or insurance, effectiveness,

and use or dosing, respectively.

> *Also in terms of if something was normal or not, like if I was taking medication and I had an embarrassing side effect, I think I might ask a friend that had taken the medication before I went and asked the doctor.* (25 year old, female)

> *There's a pharmacist in primary care where if there's a medication, a particular class of medication and it's an economic situation, I'll go to her to ask for information about alternate resources for getting that medication, or an alternate*

medication, or, for example, she turned me onto Rx Outreach, which helped me get my Simvastatin at a much more discounted price. (52 year old, male)

We just talk about my medications, how they're working, how I feel taking them, whether I need refills or not, things like that. (42 year old, female)

This one has to do with the dosage and how much I'm going to be taking at one time. It's a one-time thing, and it sounds like an awful lot to be taking at one time, so I want to call and make sure that's correct. Those are the kinds of things I would be asking. (74 year old, female)

In summary, subjects talked about the content that was provided through their social networks related to medication information. Three themes and four subthemes were identified and described. The three themes included: beliefs and attitudes, personal experience and factual information. Factual information could further be divided into four subthemes which included: adverse effects or interactions, cost or insurance, effectiveness, and use or dosing. A summary of the themes and subthemes indentified under 'content' is provided in Table 10.

Table 10: Summary for 'Content' Provided in Social Networks

Summary for 'Content' Themes Provided in Social Networks	
Themes	*Subthemes*
1. Beliefs and Attitudes	
2. Personal Experience	
	3a. Adverse Effects or Interactions
3. Factual Information	3b. Cost or Insurance
	3c. Effectiveness
	3d. Use or Dosing

4.3.3 Function

The third objective for this study was to describe the function of the information that is supplied though individuals' social networks. In order to describe the function of the information that is provided through social networks, four a priori themes or categories were anticipated which included: decision making, monitoring, social support and validation. These four themes were confirmed in the data however; three additional subthemes of diagnosis, prescriptive or recommendation, and staying informed emerged and were identified and described. Therefore, the 'function' of medication information provided through social networks was described through seven themes.

Decision Making

The first theme of function that was described by subjects was labeled as 'decision making.' This theme was indicated when the person had talked with someone and gained information to specifically apply to a decision. Below were quotations from subjects speaking about the function of medication in terms of making decisions:

> *And then of course, we talk about birth control, like should I take it or should I not take it, should I go off it? So in that regard, I probably only talk to him, now that I think about it; I only talk to him about that decision.* (32 year old, female)

> *I don't hesitate to talk to them [the pharmacists] out here. They've been just absolutely wonderful, and when they say something, I believe them. In fact there's a couple drugs that I came in here with and they said, 'with everything you've gone through, I'm not sure that this is actually a large enough dose.' They would say, 'let me call your doctor and see if we can't do better than what this is.' I had no problem with them doing it.* (65 year old, male)

Diagnosis

The second theme of function that was described by subjects was labeled as 'diagnosis.' This theme was indicated when the person had talked with someone when trying to directly diagnose or treat a medication related problem. Diagnosis was a new theme that emerged during the data analysis. Below were quotations from subjects speaking about the function of medication in terms of diagnosis:

> *So yeah, anybody that would listen would know about it, because I was just in a tremendous amount of pain daily. I think my boyfriend at the time had to put up with it more than anybody, and probably my friends. My mom of course knew; she was just a mess about it because she had no idea. She was like why can't they figure out what's wrong with you? And usually she was pretty good at looking up in the medical dictionary different things; like she's the one that figured out I had Mono.* (28 year old, female)

> *With the Synthroid, it was really just talking to my physician and my family, because it runs in my family, so we were actually checking it pretty regularly, and then sure enough, I came in for a yearly physical, and it went down, and she was like, bam, you're starting on it.* (32 year old, female)

Monitoring

The third theme of function that was described by subjects was labeled as 'monitoring.' This theme referred to a subject who spoke about making sure a decision or course of action was something they wanted to maintain or change. Often, subjects were checking for reasons to change their minds, exploring possible threats with proceeding as planned, or continually getting a feel for the options that existed within the environment. Below were quotations from subjects speaking about the function of medication in terms of monitoring:

> *And then there was this cost thing, so I started talking to people, and they were like, oh yeah, my friend had one but it cost like $500, so then I was like, oh. And*

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did I ever go research any of this? No. Because I never really got to the point where I actually felt it was important enough to make a decision about it; this is more just kind of like canvassing, talking to people. (32 year old, male)

The physician would have been recommending something; there would have been give and take. My daughter would have given input. For example, the dosage would have been – not a negotiation. My daughter as the patient, and my wife and I as the parents, pleading with the physician to downsize or increase – not so much that, but kind of a nitty-gritty discussion about how to set the dosage, experiment a little bit, trial and error for a month or two and see what's happening, maybe scale it back a little bit after that, maybe increase a little bit after that. Kind of a practical effort to find the best result through initially talking; talking with the physician at an office visit and then having her repeat visits and comparing notes and trying to improvise a little bit, somewhat trial and error, decide what was best. (59 year old, male)

My sister is taking Evista, and she's had a remission of her osteopoenea, so it's on my list to confront my poor, beleaguered doctor with. Why this and not that? Have things improved or have they stayed the same? (69 year old, female)

Prescriptive or Recommendation

The fourth theme of function that was described by subjects was labeled as 'prescriptive or recommendation.' This referred to a subject obtaining a specific recommendation. However, this also referred to getting direction or guidance from a social network contact. Prescriptive/recommendation was a new theme that emerged during the data analysis. Below were quotations from subjects speaking about the function of medication in terms of getting a recommendation:

When I first encountered being told, 'This is probably what you need,' because I didn't know it was depression and that was from a physician, I just went, 'Mmmm, I don't know.' But I was desperate, so I just did it. I just took it. I didn't research it. I didn't look at the side effects. At that point I didn't care about a lot, so it was just that I had to do something. So that was on their advice and I didn't question it; I just took it. (57 year old, female)

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I don't think I would have thought to call my pharmacist and ask them questions; it seems like it's something that's not – I don't think most people do that; I think they call their doctors first, when I think most people know that their pharmacist is probably an easier contact, and they would know just as much or have some suggestions. (19 year old, female)

Then I went to the pharmacy, I got the bottles off the shelf, and I said can you tell me the difference between these two vitamins? Should I take a supplement? Should I take a multi-vitamin? So I got their advice, and I started taking that. (32 year old, female)

Okay, so then just two weeks ago I was complaining about dry skin to a friend. We're getting closer, but we're not really close yet. She told me to take fish oil, so I started taking that. (32 year old, female)

Social Support

The fifth theme of function that was described by subjects was labeled as 'social support.' This referred to a subject obtaining emotional support from another person with respect to medication or medication use. Below were quotations from subjects speaking about the function of medication in terms of social support from others:

She tells me what she's on, and then I'll tell her what I'm on, but she just doesn't get why I'm on so many different things. She only has a few, so I think she doesn't understand why mine's so severe. I said I have other psychological problems, so there are different issues, but she calls me every once in a while and we talk. She understands why I take them. (31 year old, female)

It was kind of reassuring because she was like, 'I'm sure this is what you have. If you just get the medicine it will go away,' because I was like, 'maybe it's something worse.' I didn't really want to go in to the doctor and be like, 'can you look at my bum?' So I talked to my mom first and she calmed me down and reassured me that maybe you should just try the Preparation H and see what happens. (25 year old, female)

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Staying Informed

The sixth theme of function that was described by subjects was labeled as 'staying informed.' This theme was indicated when a subject spoke in general terms about wanting to stay up to date or to seek out all the information they could get. They may not have included how they planned to use the information however, the information itself served to keep them informed. Staying informed was a new theme that emerged during the data analysis. Below were quotations from subjects speaking about the function of medication in terms of staying informed:

> *I remember he had put me on some medication. I can't tell you what it was; I just remember talking to him about it. I think you have to be aware of what's going on and ask questions. You have to be responsible for yourself.* (42 year old, female)

> *So a lot of the sharing of information with my sisters or cousins is to keep people up to date, to keep people informed.* (50 year old, female)

> *Alternatives, yes, I can listen. I'm very open to listening. I won't accept everything, but yes, let me know. I want to know. I want to be informed.* (48 year old, female)

Validation

The seventh theme of function that was described by subjects was labeled as 'validation.' This implied that the subject was confirming information with someone else, validating something they already knew or confirming that a decision was the correct one, for their situation. Below are quotations from subjects speaking about the function of medication in terms of providing validation:

> *As far as dosage, he put me on a really low dose to start; that kind of correlated with what I was learning in school, when I'd write about different anti-depressants.* (28 year old, female)

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I digest it, homogenize it and then I ask people, you know, 'This is what I'm thinking. Is there any reason I shouldn't do this?' (60 year old, male)

I don't think it really changed my mind. I think it just reinforced what the doctor had told me when we had discussed it, when the doctor had prescribed it for me. I just thought, well, I'm taking the right thing. I didn't really change. (75 year old, female)

When I'd draw the blood for the INR I would go to Rich [the pharmacist] and say, 'Rich, what do you think about that?' He told me, 'I would wait two days,' or 'I would increase 3 or 4.' I said, 'OK, I'll contact my surgeon and he'll receive the results immediately, and then he will tell me what he thinks.' So I would always compare what Rich told me and what he told me. 98 percent, they were on the same track. (48 year old, female)

In summary, subjects talked about the function that was provided through their social networks related to medication information. Seven themes were identified and described. The seven themes included: decision making, diagnosis, monitoring, prescriptive or recommendation, social support, staying informed, and validation. Three of these themes were newly indentified within Phase I of data analysis. The newly indentified themes included: diagnosis, prescriptive or recommendation, and staying informed. A summary of the themes indentified under 'function' is provided in Table 11.

Table 11: Summary of Information 'Function' in Social Networks

Summary of Information 'Function' in Social Networks
Themes
Decision Making
Diagnosis
Monitoring
Prescriptive or Recommendation
Social Support
Staying Informed
Validation

4.3.4 Summary of Themes

The theory and previous literature based themes in addition to the newly emerging themes have been described in the previous sections as they related to structure, content and function of medication information within social networks. All of themes that were discussed involved the first trajectory of medication information seeking behavior incidents that involved the interaction of another person (Figure 10).

The structure of social networks described by subjects was categorized according to type. Two types of social network contacts were a priori dichotomized into 'lay' and 'professional.' Within this dichotomy of lay and professional, eight subtypes emerged. Within the type 'lay,' subtypes included family, close friend, or acquaintance. Within the type 'professional,' subtypes of nurse, physician, pharmacist, related or friend professional and other emerged. During data collection and upon data analysis was the identification of a different type of social network contact. This third type was titled 'self.'

The content that was provided through social networks related to medication information was described by themes and subthemes. Three themes and four subthemes were identified and described. The three themes included: beliefs and attitudes, personal experience and factual information. Factual information could further be divided into four subthemes which included: adverse effects or interactions, cost or insurance, effectiveness, and use or dosing.

The function that was provided through social networks related to medication information was described by themes. Seven themes were identified and described. The seven themes included: decision making, diagnosis, monitoring, prescriptive or recommendation, social support, staying informed, and validation. Three of these themes were newly indentified within Phase I of data analysis. The newly indentified themes included: diagnosis, prescriptive or recommendation, and staying informed.

Overall, Phase I of the analysis explored the study objectives related to structure, content and function. It confirmed the identification of theory and previous literature based themes however, there was also the addition of new themes and subthemes. A comprehensive visual diagram of the medication information seeking behavior trajectory involving others was included in Figure 11. This diagram showed how the structure of social contacts and the themes and subthemes related to content and function are linked together to provide a total view of the role of social networks in medication information seeking behavior.

Figure 11: Thematic Scheme for the Role of Social Networks in Information Seeking Behavior
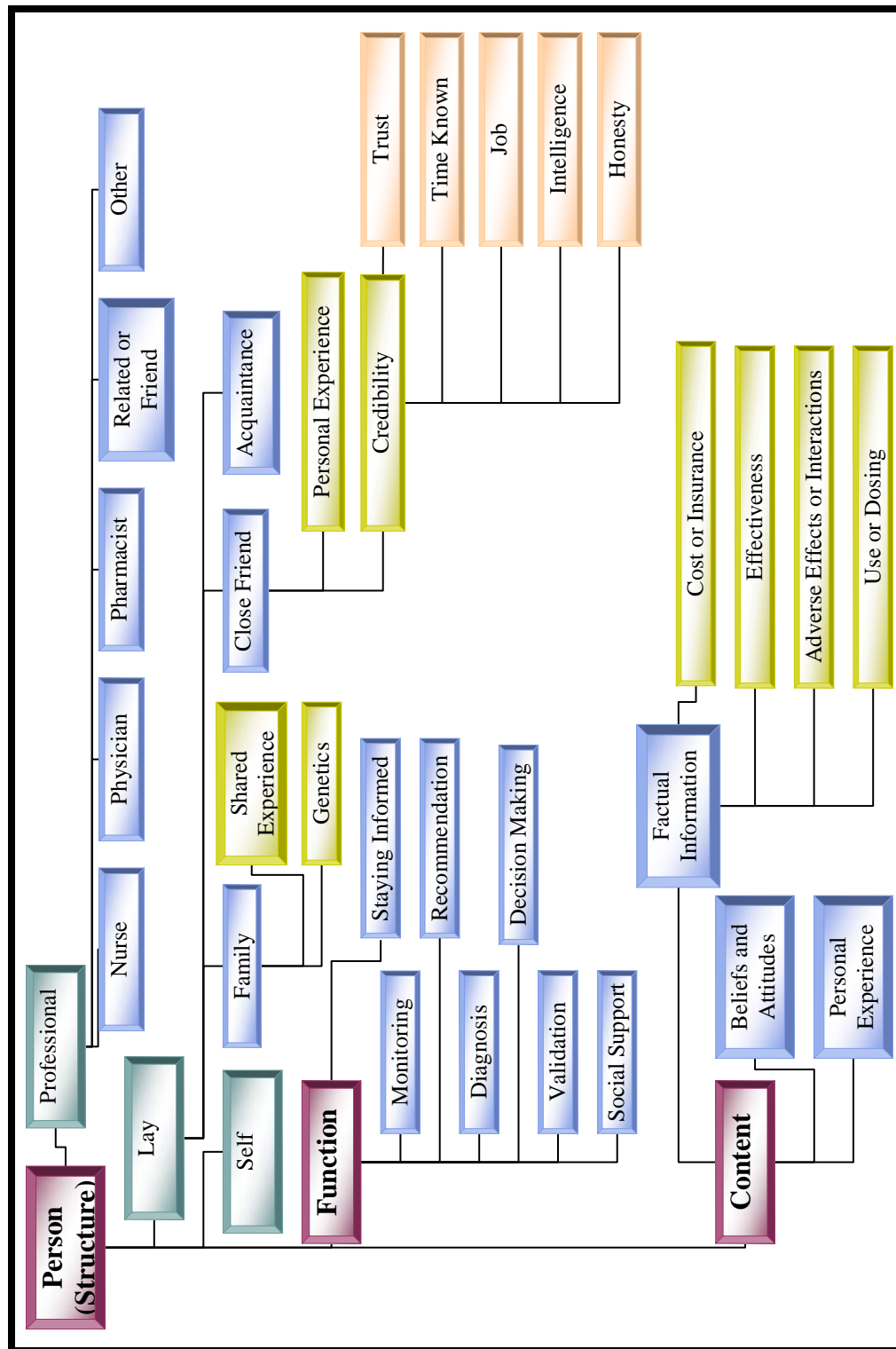
4.3.5 Other Aspects of the Medication Information Environment

The theory and previous literature based themes were outlined in Figure 10. This thematic hierarchy outlined that there would be two possible trajectories for which the medication seeking incidents of subjects would progress. The first trajectory could involve the interaction of another person or in other words, a social network contact, and the second trajectory would involve medication information incidents with no person involved. It was felt that even though the second trajectory did not involve the use of social networks, it would be important to identify and describe themes within this trajectory in order to (1) provide a comparison to the themes identified when subjects utilized social networks and (2) to describe the medication information environment in its entirety.

The findings related to the second trajectory have been separated from the previous results of Phase I. Overall, because these findings did not involve social network contacts, the previously outlined 'structure' related results do not apply in these results. In contrast, there were two dominant types of sources that subjects spoke about when seeking medication information which included: the 'Internet' and 'other' types of sources.

<u>Internet</u>

The first type of source that was described by subjects was labeled as 'Internet.' This included any reference to using the Internet to obtain information that did not directly involve another person. Below were quotations from subjects speaking about the source of medication with respect to the Internet:

The Internet is just a big thing. I could go to the library and get the same kind of information, but why when you can just type it in on Google, you know? And some of the information is just awful, I'm sure, and you kind of have to weed it out. So yeah, the Internet is really a big resource for me. (28 year old, female)

Also, I do a lot of research. If it's a medication I'm not familiar with, I'll go online and since I have a pretty technical background and I've been dealing with chronic disease for quite a while, I know where to look for what I consider good information. I usually go to hospitals and I go to pharmaceutical companies, and also I have a background in working with principal investigators in a medical research situation so I know how to pull up papers and that kind of stuff. I also go to blogs and look at blogs, and every once in a while I'll add something to it, and I'll email for information... I rely upon the Internet, usually the Internet to verify, to follow up on a medication to see what it's about or to find alternatives.
(52 year old, male)

I had gone on the Internet to look up Cymbalta to see what were the side-effects.
(31 year old, female)

Other

The second type of source that was described by subjects was labeled as 'other.'

This included any reference for thoughts when a subject looked for or obtained

medication information that did not involve other people and is not the internet or other

electronic resource. Most often this type of source was identified when subjects referred

to print material references or television media. Below were quotations from subjects

speaking about the source of medication with respect to other types of sources:

Then there were some medications that he needed to take and I used, at the group home we have a PDR or a nurse's drug handbook or something, I've forgot the exact title and I do look in there. Then, of course, you read the printouts that they give you. (57 year old, female).

I do sometimes get information from magazines too. But that's more kind of a trigger, like this magazine says there's a lot of fiber in this one food; then maybe when I'm at the grocery store the next time, I'll go look at it. So yeah, I guess I

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would do that as well, if I find a healthy food in a magazine or if I'd read that folic acid was good to take, I'd probably go ask someone else, but I might actually just start taking it. I guess I do get stuff from magazines, more on the positive than on the 'don't do this,' more on the 'you should do this' side. (32 year old, female)

I got that first of all in a Consumer's Report health magazine, and then I checked it on the Internet with a couple of other sources, and then I decided I would do it. (73 year old, female)

All other themes and subthemes related to content and function of medication information were consistent with the first social network trajectory with two exceptions. For the content of medication information 'use or dosing' did not emerge as a subtheme of 'factual information.' For the function of medication information, 'staying informed' did not emerge as a theme as it did in the first trajectory. In addition, because of the similarity of the themes coded for content and function not involving a social network contact, examples for each were not repeated.

In summary, the second trajectory for incidents of medication information seeking behavior involved sources related to the Internet of other types of media or print sources. The content of medication information in this trajectory included themes of beliefs and attitudes, direct personal experience, and factual information. Subthemes of factual information included adverse effect or interactions, cost or insurance and effectiveness. The function of medication information in this trajectory included themes of decision making, diagnosis, monitoring, prescriptive or recommendation, social support, and validation. A comprehensive visual diagram of the medication information seeking behavior trajectory involving no direct social contacts is provided in Figure 12. This diagram showed how the sources and the themes and subthemes related to content and

function were linked together to provide a view of medication information seeking

behavior when social networks were not involved.

Figure 12: Thematic Scheme for the Information Seeking Behavior Involving No Social Contact
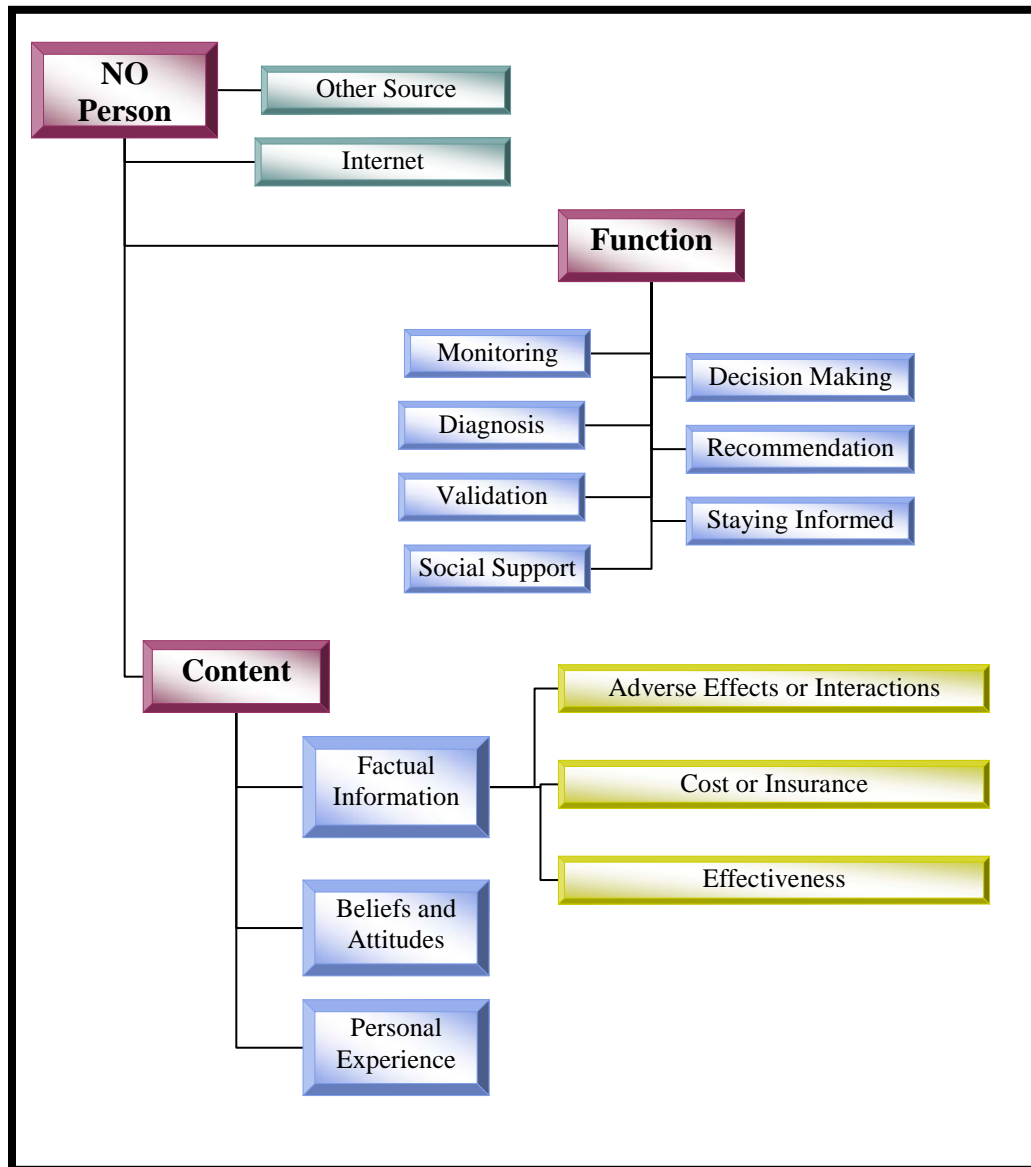
4.4 Analysis of Interviews: Phase II

Phase II used the findings from Phase I to go further and uncover patterns and relationships that could be identified within the data. Processes in Phase II used clustering of social network types, themes and subthemes to create "coding intersections" within the data to explore co-occurring concepts in order to draw out linkages forming within the data that would serve to develop further research questions. Phase II of the analysis followed what is described as a cross-case analysis or coding matrix development of qualitative data (Miles & Huberman, 1994).

4.4.1 Linking Social Network Structure with Content and Function Themes

Phase II was also consistent with data analysis techniques employed by the use of ethnographic content analysis (ECA) (Altheide, 1996). This approach to examine emerging linkages within the data was solely based on collected and coded data resulting from Phase I. A reflexive process was used to allow actual data to guide further questioning, inquiries and subsequent analyses, as is consistent with ECA. Further, the coding process used in Phase II could be further described as a synoptic strategy viewing data *across* cases. Across case analysis has been sited to be useful in qualitative studies using interview techniques, when a comprehensive view is desired more than other contextual features such as using chronological ordering or direct subject observation (Hardy & Bryman, 2004). Due to the nature of the research question, and because each medication information seeking behavior incident described by subjects was coded according to all applicable components of who, what and how/why (structure, content and function), coding occurrences were double and often triple coded into types, themes and subthemes. This duplicity of coding allowed for a closer examination of *who* within

subjects' social networks supplied *what* and the *how* or *why* subjects needed it. The

duplicity of coding within the data allowed for the further expansion of study results into

coding intersections. In order to explore these coding intersections, computer software

was used to assist with the matching of the coded data into cross-case displays or coding

matrix development of the qualitative data (Miles & Huberman, 1994).

Phase I analysis allowed for data to be separated according to emerging themes

and concepts. Building on the results presented in Phase I, Phase II used an across case

approach to link themes and concepts back together in a meaningful way. Cross-case

displays or coding matrices can be used in a variety of ways for exploring and presenting

findings related to qualitative textual data. For example, Miles and Huberman (1994) use

the term "pattern coding" to describe a higher level of coding which is more inferential

and explanatory. For this study, identifying the social network structure in the context of

co-occurring themes related to content and function assisted in the development of

findings with the strongest associations. According to Miles and Huberman (1994, p.

175), this approach is what is known as a 'variable oriented strategy' when researchers

look for re-occurring themes that cut across multiple case examples. Although coding

matrices of overall coding patterns should not be used as an absolute or final numerical

answer to determine study results, they served to guide data analyses and exploration of

patterns within the data that eventually lead to study results (Bazeley, 2007). For this

analysis, coding matrix tables were created with the assistance of the computer software,

NVivo 8, © QSR, International 2007, using coding "queries" (Bazeley, 2007).

The results of the coding matrices for the structure of social networks discussed

by subjects according to content and function were presented in Tables 12 and 13,

respectively. Each number presented in these tables represents coded incidents in the

data that co-occurred at each respective theme. For example, the number of times

subjects spoke about medication information seeking behavior incidents regarding

'factual' information occurred within 31 coding instances with physicians and 23 coding

instances with pharmacists.

Table 12: Coding Intersections: Content by Structure

Coding Intersections: Content By Social Network Structure				
	Factual Information	**Direct Personal Experience**	**Beliefs and Attitudes**	**Totals**
Nurse	3	0	0	3
Physician	31	2	0	33
Pharmacist	23	0	0	23
Related Friend/Professional	6	0	1	7
Other	3	0	1	4
Total Professional	**66**	**2**	**3[a]**	**71**
Family	26	18	9	53
Close Friend	15	21	5	41
Acquaintance	10	13	6	29
Total Lay	**51**	**52**	**20**	**123**
Self	**19**	**17**	**5**	**41**
Totals	**136**	**71**	**28**	**235**

[a] One coding instance was coded at "professional" in general - for beliefs and attitudes

Table 13: Coding Intersections: Function by Structure

	Coding Intersections: Function by Social Network Structure							
	Validation	Staying Informed	Social Support	Prescriptive or Recommendation	Monitoring	Diagnosis	Decision Making	Totals
Nurse	0	1	0	2	0	0	0	3
Physician	4	6	1	8	8	3	18	48
Pharmacist	3	2	0	3	1	0	3	12
Related Friend/Professional	1	0	0	0	1	0	2	4
Other	1	0	1	2	1	1	2	8
Total Professional	**9**	**12**[b]	**2**	**17**[c]	**11**	**4**	**25**	**75**
Family	5	3	6	9	10	2	7	42
Close Friend	3	2	3	4	6	1	8	27
Acquaintance	5	3	2	2	3	0	3	18
Total Lay	**13**	**9**[d]	**11**	**16**[d]	**19**	**3**	**19**[d]	**87**
Self	**1**	**2**	**2**	**13**	**0**	**0**	**3**	**21**
Totals	**23**	**23**	**15**	**46**	**30**	**7**	**47**	**183**

[b] Three coding instances were coded at "professional" in general
[c] Two coding instances were coded at "professional" in general
[d] One coding instance was coded at "lay" in general

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4.4.2 The Role of Health Professionals Providing Factual Information

The coding matrix presented in Table 12 showed how subjects viewed the flow of 'content' of medication information from those people specified within their social network. Professionals that were spoken of by subjects predominantly were linked to 'factual' types of information. Professional could be further specified according to type. Both physicians and pharmacists showed the greatest incidences of coding occurrences with factual types of information. Using information provided from Table 12 with respect to health professionals, case interviews were explored further to determine the context for how factual information was presented by subjects.

The following were several examples when subjects spoke of occurrences when physicians were relaying 'factual' medication related information. In this example, a male subject spoke about how both effectiveness and adverse effects were discussed with his physicians:

> *Those discussions focused on trying to understand recommendations the physicians were making to prescribe medications; what would be the hope-for, positive effects; what would be the risks or the known adverse effects.* (59 year old, male)

In this example, another male subject spoke about the types of questions posed to his physician during an encounter of starting a new medication and the types of general information he would hope to receive during the encounter.

> *I would ask either from him or from the nurse, how does it pertain to me? What does it do for me? What would it do for me? Does it raise them? Does it lower them? Is it to keep them unilateral? I know, like I said, Doxazosin is the newest one, but again, I've even been on that one before a long time ago because I've had high blood pressure for quite a while. In fact, just about everything in here, I've been on for quite a while but I get general information as to why they think I should be on it and what good it's going to do me. Mostly it's to regulate highs*

and lows. Mostly what I'm told is that it will be regulating highs and lows. (49 year old, male)

This is an example one female subject spoke about factual information with her physician with respect to cost information.

Yeah, I talked to my doctor. I was taking Lipitor and I got into this doughnut hole or whatever it is and all of a sudden the Lipitor is going to cost me an arm and a leg, so I asked him if there was anything that would be comparable that wouldn't be so expensive. He said yeah and he prescribed whatever you call it for cholesterol that I could get at I think it was Target or one of those, for about $4 rather than being in a doughnut hole. The Lipitor was going to cost me a couple hundred bucks. That's the last time I would do that, and I'm going to look into a few more because with the drug companies, they've gone nuts. It's crazy. I know what they're doing; they're just sucking me into that gap, and we've got to find a way of getting back to where we're comfortable. (76 year old, male)

In this example a female subject spoke about use or dosing information with her physician.

I thought time was up and that I didn't have to take it anymore. Then, when I went to the doctor, he said to cut them into and take half, so that's what I'm doing now. (89 year old, female)

In this example, a female subject explained how she talked about general information over with her physician related to several of her medications in addition to a discussion of outside information the subject obtained from a media source and how this might potentially change her currently therapy.

My last exam that I saw my doctor, we talked about the cholesterol medication that I'm taking and the osteoporosis medication, and she gave me all the information, how it worked and what was best. I think I asked her about one that I'd heard of that was supposed to be only a once-a-year. You get it once a year. I've seen it advertised on TV, and the once a month type, we talked about that and she seemed to think that the one that I take weekly was the best thing for me, so I continued with that. (75 year old, female)

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All of these examples demonstrate the role that physicians play in providing patients with 'factual' types of medication related information. Further, the type of factual information supplied to subjects by their physicians was varied with respect to effectiveness, use or dosing, adverse effects or cost types of information.

The following were several examples when subjects spoke of occurrences when pharmacists were relaying 'factual' medication related information. In this example, a male subject spoke about how he discussed cost related information with his pharmacist:

There's a pharmacist in primary care where if there's a medication, a particular class of medication and it's an economic situation, I'll go to her to ask for information about alternate resources for getting that medication, or an alternate medication, or, for example, she turned me onto Rx Outreach, which helped me get my Simvastatin at a much more discounted price. She turned me onto the fact that it had gone generic and I could get it from this mail order pharmacy, and they carry a lot of non-generic... or generic items, too, so that's an example of a pharmacist in primary care. (52 year old, male)

In this example, a female subject spoke about the events that led up to speaking with a pharmacist about the effectiveness and use related to a steroid treatment for a dental complication.

Yeah, I just happened to be. I had this cracked tooth. We didn't know it was cracked, but it's been two years where it's been a problem. It got to point where I had words with the dentist, and I don't know what to do, so he decided to put me on a Medrol dose pack. I hear steroids, I'm not happy. At that very same visit, I tried to have a conversation with him, like really, do you think I should start steroids, you've got to tell me why, why you think that's important. He explained that it's kind of a last effort to see if we can save the tooth without having to take it out, and that I was happy about, so he and I had a lengthy conversation. I still didn't feel good about it, so I call the Target pharmacist on the phone, and I talked to her, and I said I don't even know if I want to fill this prescription. I hear steroids – she was really good about explaining to me, way more on a technical level than he had, about what these steroids do, and I'm only taking them for six days. So then I filled the prescription. But then I know the pharmacist, again, and I looked up stuff online. It's kind of generic, but I really did, and I just did not feel

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good about taking it; I worried about gaining weight or – I just didn't know. So I considered all those things, and I took the medication. (32 year old, female)

In this example, a female subject spoke about the kinds of factual information she obtains from talking with her pharmacist, which included how a drug works or logistical availability information.

[Interviewer: *You mentioned that you're particularly close with your pharmacist. Can you talk about the types of things that you talk about regarding medications?*] *Jeez, I don't know because I haven't been on many. If something new comes out, not particular to me or if I hear of a new drug or if I see the commercials because they're all over the TV now, about how something works and I have a question, I'll ask her. Or if I hear of something that was recalled or anything like that, I generally call her right away and she's the first person I call.* (32 year old, female)

In this example a female subject spoke about how her pharmacists relay factual information to her with respect to adverse effects and interaction type information.

When I come to the pharmacy, Kevin and Steve [pharmacists] *are always really good about making sure that I've stopped one medication before I start a new one, or they'll point out the side-effects, and they're always really good. I trust this pharmacy because they know I'm on a lot of meds, and they make sure that they don't interact.* (31 year old, female)

In this final example of a pharmacist involvement in relaying factual information, a subject spoke about various types of information related to effectiveness and use of certain medications.

I talk to the pharmacist sometimes when they prescribe something for me about how it works or when I should take it, that kind of thing. They're always real helpful about any information that they can give me. There have been times when I've had to take something else like antibiotics or something that I don't take on a regular basis that I've had questions about, so I've talked to the pharmacist and that's probably the main one I would be discussing it with. (75 year old, female)

All of the preceding examples demonstrated the role that pharmacists play in providing patients with 'factual' types of medication related information. Further, the type of factual information supplied to subjects by their physicians was varied with respect to effectiveness, use or dosing, adverse effects or cost types of information.

As for other types of health professionals, Table 12 shows that nurses and other types of health professional such as dentists, were discussed much less than physicians and pharmacists with respect to medication information. However, there were several instances where subjects noted talking with 'related or friend professionals' regarding their medications. The following were several examples of subjects recalling these instances:

> *I've definitely asked my boyfriend* [medical resident] *questions about antidepressants because one of my... not my best friend, but one of my closer friends was also having side effects, or she thought she was having side effects but she didn't know if it was the result of the medication or not, and so I talked to him and just said, 'is it normal to feel this way?'* (25 year old, female)

> *Then what she* [licensed naturopathic practitioner/friend] *would also tell me and this is where I'm interested in helping my husband is the foods and nutrients that he needs because now with these drugs for the transplant, they deplete like the folic acid and magnesium. So that's where I'm doing more than knowing about the prescriptions.* (57 year old, female)

> *I might ask him* [brother/pharmacist] *what a certain drug is used for or if he has any knowledge of any interactions among them.* (42 year old, female)

> *Yes, the new one out there. I take Fosamex, and there's one out there called Evista that you take once a month. I asked her* [nurse/daughter] *about that, but no, my doctor would not put me on it.* (83 year old, female)

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In summary, subjects talked to related or friend professionals about a variety of contexts related to factual medication information including adverse effects or interactions as well as information related to use and dosing.

4.4.3 The Function of Information Provided by Health Professionals

The coding matrix presented in Table 13 showed how subjects viewed the 'function' of medication information from those specified within their social network as health professionals. Professionals that were spoken of by subjects predominantly were linked to 'decisions making.' Other functions of 'monitoring,' 'prescriptive or recommendation,' 'staying informed' and 'validation' were also often linked with professionals. Professional could be further specified according to type. Physicians showed the greatest total incidences of coding intersections with regard to the 'function' of medication related information. Using information provided from Table 13 with respect to health professionals, case interviews were explored to determine the context for how the function of information was presented by subjects. For physicians, the most prevalent coding intersections occurred at decision making, followed by monitoring and prescriptive or recommendation, as well as staying informed. Cross-case coding intersections also revealed that pharmacists were the next most cited type of professional with respect to 'function' of medication information. Pharmacists' were most prevalent at the coding intersections for decision-making, prescriptive or recommendation, and validation as well as staying informed. The biggest difference presenting between these two types of professionals were the 'monitoring' theme at physician in contrast to the 'validation' theme at pharmacist. For physicians, 'monitoring' was among the most

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frequently co-occurring themes, where as for pharmacists, 'validation' was among the most frequently co-occurring themes.

The following were several examples when subjects spoke about how information supplied by physicians was used according to its function with respect to the most predominant co-occurring themes. In this example, a female subject spoke about the role her physicians played in decision making regarding starting and stopping of anticoagulation therapy during ongoing chemotherapy.

> *I think I had only one chemo and I had six more to go, so when I asked my surgeon what options I had , he said, 'you have chemo to go, so what we can do is the Coumadin.' It was either/or, so he put me on Coumadin. I waited until the last chemo and three weeks after that I said, take it [an intravenous port] out…after he took it out I had to be five weeks more on Coumadin. Then my oncologist told me to stop finally.* (48 year old, female)

In this example, a male subject spoke about how he received information to help 'monitor' a medication situation. The subject was determining whether a course of action was something he wanted to maintain or change.

> *Yeah, there was one and I can't remember the name of it, but again, it was a new sleeping pill that came out and I did talk to the doctor a little bit about it. He said it's no different than the Ambien CR so there was no need to change, and I talked to* [the pharmacist] *out here about it and he said, 'it's not going to do much for you, so why change?' So then I just stuck to the generic. Since I've been on the Trazodone, I've been sleeping much better.* (66 year old, male)

In this example, a female subject recounted a time when she obtained information that was prescriptive in nature and that of a direct recommendation.

> *When I first encountered being told, 'This is probably what you need,' because I didn't know it was depression and that was from a physician, I just went, 'Mmmm, I don't know.' But I was desperate, so I just did it. I just took it. I didn't research it. I didn't look at the side effects. At that point I didn't care about a lot,*

so it was just that I had to do something. So that was on their advice and I didn't question it; I just took it. (57 year old, female)

The following was an example of a female subject discussing information with a physician related to the theme 'staying informed.' For this subject, staying informed of the latest treatments for her condition was how the information served her situation.

Yes. I talked to the doctor this morning about a medication called KP1461, which is in second-phase trials. Actually, it may cure HIV; they actually may have something that may cure it. It's had really good test results in the lab, and it eradicates it. (42 year old, female)

The following were several examples when subjects spoke about how information supplied by pharmacists was used according to its 'function' with respect to the most predominant co-occurring themes. In this example, a female subject spoke about how talking with a pharmacist impacted her decision to talk with the physician and stop taking a medication.

I e-mailed the doctor and said hey, look what's in the New York Times today, and he said oh, stop taking that. But in the sense of my reticence about the Fosamex, I was much more willing to move forward after talking to the pharmacist. Health Partners is really good, and I'll often call a pharmacy if I'm worried about interactions or if something's going on. (69 year old, female)

In the following example, a male subject spoke about a recommendation that was received from a pharmacist for an online website related to cost information.

For example, when I was looking for a cholesterol lowering drug, the cost of the medication... Rx Outreach has an online website and they have a list of their medications, and the pharmacist here in primary care turned me onto them and then I went to the website to look at how they ran their organization, and they have listings of medications. (52 year old, male)

The following example provided a description for how a female subject used her pharmacist to stay informed with the overall sense of knowledge about their medications.

I talk to the pharmacist sometimes when they prescribe something for me about how it works or when I should take it, that kind of thing. They're always real helpful about any information that they can give me. There have been times when I've had to take something else like antibiotics or something that I don't take on a regular basis that I've had questions about, so I've talked to the pharmacist and that's probably the main one I would be discussing it with. (75 year old, female)

The following was a final example for how information obtained from pharmacists 'function' in medication information seeking behavior. For this male subject, the function of the information provided by the pharmacist served as 'validation' to confirm previously obtained information.

I digest it, homogenize it and then I ask people, you know, 'This is what I'm thinking. Is there any reason I shouldn't do this?' And whether it's the doctor or my wife or whoever or a pharmacist. And I like to hear pharmacists especially say, 'Let me look that up real quick because I'm pretty sure, but I want to check.' Where a lot of doctors, they're supposed to look at your chart and then talk to you as if they know what's going on, but a lot of them don't. (60 year old, male)

In summary, physicians and pharmacists were often described by subjects to provide medication related information that served a variety of functions. Nurses, related professionals and other health professionals represented the minority of coding intersections within the data. Though coding intersections with these other types of professionals were not presented with case examples, all coding interactions were reviewed during analysis. Health professionals provided medication information that would function in terms of decision making, monitoring, prescriptive or recommendations, staying informed and validation with some differences among the function of information provided by that of physicians and pharmacists. Overall, health

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professionals presented the fewest coding intersections at themes related to diagnosis and social support.

4.4.4 The Role of Lay Social Contacts Providing Medication Information

The coding matrix presented in Table 12 showed how subjects viewed the flow of 'content' of medication information from those people specified within their social network. In contrast to professionals, lay social contacts that were linked consistently to all types of content related information. Lay social contacts could be further specified according to type. Both family and close friends showed the greatest incidences of coding occurrences; however these incidences were closely followed by acquaintances. Table 12 was used to guide exploration of case interviews with respect to lay social contacts in order to determine the context for how information content was presented by subjects.

According to the coding intersections for lay social contacts and content of medication information (Table 12) 'factual' information and 'personal experiences' themes made up the predominant themes of medication related information content discussed by subjects. Though beliefs and attitudes were discussed less than the previously mentioned two themes, they were much more often coded at the 'lay' type of social contact than at 'professional.'

The following were several examples when subjects spoke of occurrences of family members relaying medication information and the various types of content they provided. In the first example, a male subject discussed how his mother was a source for information relating to proper use and dosing of his medications.

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All my medication stuff, I usually talk to my mother about. She used to want to go to school to become a scientist researcher, so she knows a lot about these prescription pills she takes and stuff. Usually I just ask her about anything, because she's got a lot of weird names that I can't even remember – can't even pronounce myself. The only ones I ever ask her about are the ones I take – Trazodone or Seroquel. She tells me what to take with them and what not to take with them. (26 year old, male)

In the following example, a male subject spoke about a discussion with his sister relating to his personal experience with a medication.

With my sister Lois having a kidney transplant, one of her pain medications is hydrocodone and I was able to give her a good example of what it does for me and hopefully what it would do for her. (66 year old, male)

In the next example, a female subject spoke about how she received negative beliefs and attitudes from her mother about taking antidepressant medications and later disregarded this information.

And then later on down the road, I was explaining to my mom and stuff, and she'd had issues and she was seeing a psychologist and everything. She was totally against anything like that. She was like, oh, anti-depressants, you're changing your personality, but I didn't care; it made me feel better, so I took it anyway. (28 year old, female)

All of these examples demonstrate the role family members play in providing patients with various types of medication related information. Further, the type of information supplied to subjects by their family members was varied with respect to facts, personal experience, and beliefs and attitudes.

The following were several examples when subjects spoke of occurrences when close friends were relaying medication related information. In this example, a female

subject spoke about how she discussed factual types of information with a close friend

related to adverse effects and dosage.

> *I did talk to my best friend before I went on Adderall because she had been on it since as long as I can remember, and I'd gotten a diagnosis of ADD and was told I should be put on Adderall. I was a little weirded out about it and nervous and wanted to know what it was like, what other kinds of consequences it has. She told me to be really careful and that it does have some pretty bad stuff and it can start interfering with your life and that she doesn't sleep. She was on way too high of a dose. They figured it out eventually. So she said I need to be very careful about the dosage, too, and make sure that that was being taken care of, and that they didn't need to put you on any more than you actually needed.* (20 year old, female)

The following was an example of a female subject discussing personal

experiences with a close friend related to acne medications.

> *One of my close friends has been using this antibiotic for acne for like eight years, and that just strikes me... She thinks it's bad, but she doesn't want to stop taking it because the few times she's tried to wean herself off she really breaks out, and I think it's bad, too, because... When she takes it, it still helps her, but it just seems like a bad idea to take an antibiotic for such a long time, for so many years, and so I suggested to her using Retin-A (and I think she got some of it) because it helps me a lot. So she got some of it, but it was a low dose and it wasn't helping her enough. I guess we were comparing our experiences with acne medications.* (32 year old, female)

In this final example of close friends discussing medication information, a female

subject spoke about a time when hormone replacement therapy was discussed among

friends and their beliefs surrounding the issue.

> *One of the women said, 'you know, I haven't had a period in 20 years and now I have to go back and buy sanitary pads,' and I said, 'that's not for me. I don't think I want that.' Just the discussion about it sounded like it was a lot of stuff putting into your body that you didn't really need if you could get over your hot flashes and try and... it's like treating your menopause as a disease rather than as something natural that happens to people.* (68 year old, female)

All of these examples demonstrated the role close friends played in providing

patients with various types of medication related information. Further, the type of

information supplied to subjects by their friends was varied with respect to facts, personal

experience, and beliefs and attitudes.

As for lay social contacts coded as acquaintances, Table 12 shows these contacts

were discussed less than family and friends with respect to medication information.

However, there were still instances where subjects noted talking with 'acquaintances'

regarding their medications. The following are several examples of subjects recalling

these instances.

In this example, a female subject spoke about acquaintances as a source of

information related to vitamins and supplements.

> *Actually, through the dancers, who are acquaintances mostly, I've learned a lot*
> *about supplements; because of them I've started taking Spirulina and Lecithin*
> *and Evening Primrose oil capsules and stuff, so I have learned a lot about them*
> *from them.* (32 year old, female)

In this example, a female subject spoke about acquaintances as a source of

information related to adverse effects and the sharing of personal experiences of others.

> *Side effects is a big thing. I've talked about that with more than one person. If I*
> *find somebody who's on the same medication, I'll talk about the side effects and*
> *make sure I'm not alone with that, just more along the lines of if the medication*
> *gets mentioned I won't hesitate to share what experience I've had with it if I've*
> *been on it, and tell people what I had with it.* (20 year old, female)

In this example, a female subject spoke about acquaintances as a source of

information related to cost, treatment effectiveness, as well as personal experiences.

> *I know I've discussed with my colleagues here about the cholesterol medication. I*
> *know we've talked about that and how different pharmacies had different prices*

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on it, and which one worked the best and so forth. They told me what they were taking and I said, 'well, I'm taking this one,' and someone else is taking Lipitor, so we compared prices and how they worked. You get some good information that way, too, sharing experiences or knowledge or who had the cheapest prescriptions, which pharmacy had the cheapest prescriptions and so forth. (75 year old, female)

In this example, a female subject spoke about acquaintances as a source of information related to beliefs and attitudes surrounding the use of inter-uterine devices for contraception.

And you know, I just started talking to people, and I got all this weird resistance from people, like oh, you know that's still a hormone, so you're not getting out of taking a hormone, and what if it fell out – okay, maybe those weren't the medical people, but I'm just saying some of what people would tell me. 'I really heard you should not get it until after you had kids, and you could become sterile, and what if it got lost,' which it totally wouldn't, but I did hear that from people. (32 year old, female)

In summary, subjects talked to lay social contacts about a variety of content surrounding medication information including factual information, personal experiences, and beliefs and attitudes. Family member and close friends showed the greatest incidences of coding co-occurrences related to factual information, personal experiences and beliefs and attitudes; however these incidences were closely followed by acquaintances. Table 12 was used to guide exploration of case interviews with respect to lay social contacts in order to determine the context for how information content was presented by subjects. Examples for each type of lay social contact were presented along with respectively co-occurring content themes.

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4.4.5 The Function of Information Provided by Lay Social Contacts

The coding matrix presented in Table 13 showed how subjects viewed the 'function' of medication information from those specified within their social network as lay social contacts. Lay contacts that were spoken of by subjects predominantly were linked to 'decisions making,' 'monitoring,' 'prescriptive or recommendation,' 'staying informed,' 'social support' and 'validation.' Lay contacts were less often linked with 'diagnosis.' Lay contacts could be further specified according to type. Family members showed consistently occurring coding intersections across 'function' related themes with the exception of diagnosis and staying informed. Subjects more often spoke of close friends with respect to the 'decision making' and 'monitoring' themes. Subjects discussed acquaintances less than the previously mentioned type of lay contacts. However, of those times when acquaintances were mentioned they were most often coded in conjunction with the theme 'validation.' Using information provided from Table 13 with respect to lay social contacts, case interviews were explored to determine the context for how the 'function' of information was presented by subjects.

The following are several examples when subjects spoke about how information supplied by family members was spoken of with respect to type of 'function' theme. The first example was a female subject who spoke about how a family member helped her make a decision to continue taking a medication.

> *Well, my niece in South Dakota's a social worker, and she's always interested in medication. By the way, I talk to her quite often. I'm on a medication now, and I told her I quit taking it and she said oh, you can't quit taking it, you'll run into problems.* (89 year old, female)

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The following was an example of a female subject who spoke about monitoring her reaction to medication, with respect to her children helping gage how the adverse effects affect her day-to-day life.

I listen to my children more now, too, because they give me input on my medications, the way that I react on them, the side effects, if I drowse off, or they have a hard time waking me up, or things like that. My children have influence on me, too, with my medications, so I get advice from them, also. (31 year old, female)

In this example, a male subject spoke about a time when his mother gave him a recommendation to see a physician when he was having, what turned out to be, an adverse reaction to a medication.

I developed some really bad joint pain... I thought it was from going to the gym and lifting weights and stuff, and I though I might have done something; that was my initial process. I didn't give too much thought of it; I just kind of toned that down. When that didn't do anything, and once I started to kind of notice it every day where it was starting to actually affect my everyday life, I talked to my mom and she just suggested that I should probably go talk to the doctor about it and see. (19 year old, male)

In the following example, a male subject spoke about how he uses family members to confide for social support relating to health and medications.

The others, people like my wife – there could be some common experiences there, though the gender is different – there it would be to talk in detail about health issues and personal feelings and so forth. So that would be my wife, my brother, certain other family members; capability to confide in. (59 year old, male)

In this final example of the function of information provided by family members, a female subject spoke about how her husband acted to validate information related to medication use.

But I did feel that the information I got was – talking to my husband, I thought I should bring him in, as kind of the barometer of, yeah, but, remember, you've been in a lot of pain with the tooth, and probably good for you to take – he doesn't know anything about medicine, but just from, 'well I don't know, it seems like a good idea, and if you talked to those people, then they probably are right,' so he kind of was my validator, okay, you're right, I should take the medication. (32 year old, female)

The following are two examples when subjects spoke about how information supplied by close friends was used according to its 'function' with respect to the most predominant co-occurring themes of 'decision making' and 'monitoring.' In this first example, a female subject spoke about how talking with close friends influenced a decision to stop taking an osteoporosis medication.

Oh, sure, I talked to my girlfriends, my book club. I did discuss that with them, too, and they said, 'oh, I went off of it, too. I went off of Fosimex, too. I read the same article.' (68 year old, female)

In this second example, a female subject spoke about how she used her friend's experiences to scan the information environment to obtain information that might affect a change in medication therapy.

Well, her husband used to be on Zoloft so we'd talk about that. She'd run things by me because he quit taking it and then she'd describe what his behaviors were and what he was like and stuff. She would ask me if I thought that he should try to get back on it. We'd talk about vitamin supplements, like glucosamine. We talk about that a lot because she swears by it. (32 year old, female)

In the following two several examples subjects spoke about how information supplied by acquaintances was used according to its 'function' with respect to the most predominant co-occurring theme of 'validation.' In the first example, a female subject

spoke about how hearing about experiences from an acquaintance validated a previously

made decision for continuing on a certain type of cholesterol medication.

> *Somebody was here that… one of the volunteers, I think, or somebody was saying they took one that worked a little differently from the regular statin for cholesterol and that they had problems with it and it wasn't working that well, so they were seeing which one was the best. I thought, well, I don't want to take that one because he's had a bad experience with it. I don't think it really changed my mind. I think it just reinforced what the doctor had told me when we had discussed it, when the doctor had prescribed it for me. I just thought, well, I'm taking the right thing. I didn't really change.* (75 year old, female)

In the second example, a female subject spoke about how she talked about

adverse effects with others to confirm or validate her experiences.

> *Side effects is a big thing. I've talked about that with more than one person. If I find somebody who's on the same medication, I'll talk about the side effects and make sure I'm not alone with that.* (20 year old, female)

Overall, lay social contacts were often described by subjects to provide

medication related information that served a variety of functions. Acquaintances

represented the minority of coding intersections within the data as compared to family

members and close friends. Subjects spoke of obtaining medication information from

family members with respects various 'function' themes. Subjects spoke of obtaining

medication information from close friends most often with respect to 'decision making'

and 'monitoring' function themes. Subjects spoke of obtaining medication information

from acquaintances most often with respect to the theme 'validation.'

In summary, lay social contacts provided medication information that would

function in terms of decision making, monitoring, prescriptive or recommendations,

social support, staying informed and validation. There were some differences among the

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function of information provided by that of family members, close friends, and acquaintances. Lay social contacts were least mentioned in terms of information provided with the function of 'diagnosis.' Overall, lay social contacts differed from health professionals in terms of providing information relating to the theme 'social support.'

4.4.6 Social Network Self View

One type of social network source for medication information that was described by subjects was labeled as 'self.' At the outset of the study, the social network perspective from a subject's 'self view' was not anticipated. However, after conducting the pilot interviews, it became clear that subjects viewed themselves as an important part of the information environment among their social network. Presented in Phase I results were the ideas that generally presented among subjects regarding their self view. Subjects often discussed their own role in providing information to members of their social networks. However, during Phase II a more in-depth analysis of subjects' self view was undertaken, similar to that applied to other social network contact types. For subjects, they viewed the content of information that they had provided to others by speaking about all three of the major content themes: beliefs and attitudes, personal experience and factual information. The following were several examples of subjects who spoke about the content that they had provided to others. In the first example, a male subject spoke about how he had used factual information about his diabetic therapy and relayed it to others.

> *Yes, that's happened quite often about people that just found out they're diabetic and they'll say, 'You're a diabetic. What do you do for this or that?' And then I tell them, which we have done, both my wife and I have attended these, I call them*

a kind of seminars, like in Duluth we'd have to go for a couple days or even a week and we'd find out all the different things that were being done for diabetes and diet and all that sort of stuff, and I thought, hey, that's the place to go. Usually, that way you don't have to worry about somebody coming back and saying, 'hey, you gave me a bum steer' or something because we get the facts the way we should have. Usually those things are not that expensive, or no cost at all, and that way I think we're getting proper guidance. (75 year old, male)

In the next example, a female subject spoke about how strangers saw her using her inhaler medication, and asked her for advice on how to use it properly.

Recently, I went into Byerly's one afternoon and I had been running around and my breathing was stressed, so when I got inside the store, I just went over into a little corner and did my Albuterol. I noticed this couple just staring at me, so I just did it and I started on my way, and the woman came walking over toward me. She said I want to apologize for staring at you, but this is my brother and he was just told that he has emphysema, and he just today got that prescription from his doctor and he doesn't know how to use it. She said could you talk to him, because I told him that it's okay, that's what you use that for when your breathing is stressed and it's fast-acting relief. She said I looked over and there you were using it, and I said look, you don't have to be concerned about using that in public. I said well, it doesn't bother me because it helps me to breathe. (69 year old, female)

In this example, a female subject spoke about her role in relaying her attitude about antidepressant medications to a friend.

I have a friend who has been depressed for years and she gets medications but sometimes they're questionable, and she'll say what do you think I should do, and I say go see your MD, I don't think it's right. I will say that. I think with some of those drugs that give you suicidal thoughts, that's all I'll say, is go check it because I don't know. My mother took antidepressants and I'm starting to have suicidal thoughts for the first time. I'm kind of the person who'll say I don't want that, so I do have people ask me sometimes what I think. (73 year old, female)

In the next example, a male subject spoke about a time when he made a recommendation to another person based on his personal experience.

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There was one lady that is a diabetic also and was having a great deal of trouble sleeping. I told her about the Ambien, what it did to me, for me, and then she took that up with her doctor and her doctor gave her Ambien to try. As far as I know she's still on it and doing extremely well. (66 year old, male)

As presented in Table 12, subjects' experiences when talking with others about medications in term of their 'self' role included content themes of factual information, personal experience, and beliefs and attitudes. Further exploration of the data revealed that most often subjects spoke about factual information related to use or adverse drug reactions as well as their personal experience with medications. In contrast to the other types of social network contacts discussed so far, subjects saw the function of the information they provided within their social networks to be largely focused on a recommendation related function. Table 13 highlighted this, showing the largest pattern of coding instances for self/function to be listed under prescriptive or recommendation. The following were several examples of subjects who spoke about their role in providing medication information that was prescriptive in nature. In the first example, a male subject spoke about recommendation about medications and of physicians to others in his residential community.

Well, and I live in an apartment for the elderly. I did; I just moved. It was 24 units in there. I was the youngest. I'm 66 and I was the youngest person in there. Every one of them actually had some type of aches and pains or some severe problems, and I've made recommendations to them not only for drugs but what doctors to see and so forth in regards to what they're feeling, and knock on wood, every one that I've made so far has been received very favorably by the people, so that way it goes well. (66 year old, male)

In the second example, a female subject spoke about how she made recommendations to her mother to take or not take certain prescriptions or over the counter medications.

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Okay, I remember at least once or twice I've told people not to take certain medications that I've had bad experiences with, like one that I can specifically remember is my mom was talking about Paxil and I had a pretty bad experience with Paxil. I told her, 'don't take that. Don't try it. Don't bother.' Her, too, especially, I've also recommended things like over the counter things to maybe replace some of her more hardcore sleeping medications, to try some over the counter stuff that's actually worked for her, that worked for me. So mostly with my mom, I think. (20 year old, female)

In this final example, a male subject spoke about a recommendation made to his wife for a treatment that had also worked well for him.

I wound up getting a cortisone shot and the physician who injected it told me all the dangers of steroids and why he didn't like shoving that needle in me with this base material that was going to dissolve my muscle tissue. But he said it's one time, and it worked almost instantly and my hip problem was gone. I told my wife. I said shoulder and hip might be two different things and I don't know what's wrong with you, but ask about a steroid shot to see if there is something that can do, because it might be boom—pain gone. What you're supposed to do is to chart mentally if it comes back, because if it slowly comes back, it might be something else wrong and you can't keep getting steroid injections. (58 year old, male)

Overall, of those subjects who spoke about their 'self' role among others, they spoke of all aspects related to the content of medication information. The function of the information provided by subjects to others was largely focused on recommendations or was prescriptive in nature.

4.4.7 Individual Characteristics for Framing of Social Networks Use

As stated previously, individual characteristics were collected from study subjects. Section 4.1 discussed the individual characteristics of all subjects enrolled in this study (Tables 3-7). However, in addition to the first three study objectives was a fourth which stated: describe individual characteristics of people who use various types of social networks to obtain medication information. Therefore, in order to answer this

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study objective a review was conducted for the individual characteristics according to whom the subject mentioned in their interview. With the overall individual characteristics in mind for this study, separating out the individual characteristics according to reported social network contacts allowed further comparisons to build upon results of Phase II. Table 14 showed all individual characteristics according to reported social network contact. Calculations made in Table 14 were done in two ways. First, average age, health status and number of medications were calculated using the total number of subjects reporting a social network subtype. For example, 22 subjects reported a close friend as a social network contact for medication information. Of those 22 who reported a close friend, the average age was 48.8. Calculations for gender, education, work status, geographic residence, attitudes toward medications and medication experiences used the total number of subjects having the respective characteristic. For example, 22 subjects reported a close friend as a social network contact for medication information. Of those 22 who reported a close friend, 18 were female. The study sample included 28 total females therefore, 64.3 percent (18/28) of all females reported a close friend as a social network contact. Specified individual characteristics were evaluated according to which social network subtype was reported. Further, the total number of subjects representing each individual characteristic and percentage reporting each social network subtype were included.

Some noticeable differences were found among general individual characteristics according to social network contact type. Overall, older subjects tended to speak to health professionals, specifically the physician and pharmacist (average age 56.6 and 56.8, respectively) to seek medication information when compared to other social

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network contacts. However, of those subjects who spoke to lay social contacts, older

patients tended to speak to family (average age 55) than to close friend or acquaintances.

Using average reported health status, the subjects with a higher health status

reported speaking with other health professionals (8.5) related professionals (8.1) and

close friends (7.8). Subjects with lower health statuses reported speaking with

acquaintances (7.1), family (7.2), physicians (7.2) and pharmacists (7.2). Similar to

subjects with lower health statuses, the subjects with the highest average number of

medications reported speaking to physicians (6.7) and pharmacists (7.0).

Female subjects most often reported talking to physicians (82.1 percent) and

family (75 percent). This finding was similar for male subjects, who most often reported

family (91.7 percent) and physicians (83.3 percent) as a social network contact for

medication information. The most notable differences between gender was females more

often reported talking to close friends (64.3 percent compared to 33.3 percent of males).

Subjects with at least some college education most often reported talking to

physicians (82.1 percent). This compared to those subjects with a high school education

who most often reported talking with family members (91.7 percent). However, the

largest difference between education level and social network contact was for close

friends. Those subjects with college more often report talking with close friends about

medications, 67.9 percent, as compared to only 25 percent for those with high school

education. There was also a large difference between the college and high school

educated subjects with respect to 'self.' A higher number of college-educated subjects

reported giving medication information to others in their social network (71.4 percent)

than did high school-educated subjects (50 percent).

Work status was also compared to reported social network contacts. Employed subjects most often reported talking to physicians and family (80 percent, respectively). Retired subjects most often reported talking to physicians (93.3 percent), family (80 percent) and pharmacists (80 percent). Unemployed subjects most often reported talking to family (75 percent). In addition, unemployed subjects were the most often to report 'self,' or providing medication information to others (75 percent). Students, more often than other groups, reported talking to related or friend professionals (100 percent).

Subjects who considered themselves urban dwellers reported talking with physicians the most (83.3 percent). In contrast, suburban dwellers reported talking most often with family (77.8 percent). Similar to both groups, subjects who considered themselves as rural dwellers reported a high frequency of talking to both physicians (100 percent) and family (92.3 percent) the most. Additionally, rural subjects more often reported talking with pharmacists (84.6 percent) than urban (55.6 percent) or suburban (44.4 percent) dwellers.

Some additional differences were found among health related individual characteristics according to social network contact type. Subjects who were listed as having a positive attitude toward medications more often reported talking to family members (84.2 percent). In contrast, subjects who were listed as having a negative attitude toward medications more often reported talking to physicians and pharmacists (100 percent, respectively). Subjects who were listed as having both positive and negative attitudes towards medications more often reported talking to acquaintances and physicians (80 percent, respectively) and acting as an information provider as 'self' (90

percent). Finally, those with a neutral attitude toward medications most often reported talking to family (100 percent).

Subjects who were listed as having successful medication use experiences were most often to report talking with family (90 percent) and physicians (85 percent). Subjects who were listed as having problematic medication use experiences were most often to report talking with physicians (100 percent) and pharmacists (83.3 percent). Subjects listed as having both successful and problematic medication use experiences Most often reported 'self' (78.6 percent) as a provider of medication information within their social network.

In summary, the individual characteristics of study subjects did show similarities and differences according to reported social network contact type. Table 14 provided a summary of subjects' individual characteristics according to social network contacts they reported talking to when seeking and obtaining medication information. Appendix F is included to provide a more detailed visual depiction of how each characteristic category (gender, education, work status, geographic residence, attitude toward medications, and medication experiences) can be divided into grouping according to subject reported social network contacts.

Table 14: Individual Characteristics by Social Network Contact

Individual Characteristic	Total # Subjects by Characteristic	Lay — Close Friend	Acquaintance	Family	Self	Professional (In General)	Health Professionals — Physician	Pharmacist	Nurse	Other	Related/Friend Professional
Total # Subjects Reporting Social Network Subtype		22	23	32	26	14	33	25	7	4	13
Average Age (55.3)	40	48.8	51.2	55.0	54.7	49.6	56.6	56.8	43.7	40.0	52.5
Average Health Status (7.3)	40	7.8	7.1	7.2	7.5	7.4	7.2	7.2	7.4	8.5	8.1
Average # of Medications (5.9)	40	4.2	6.1	6.5	6.0	6.2	6.7	7.0	5.4	4.5	3.8
Gender											
Female	28	18 · 64.3%	16 · 57.1%	21 · 75.0%	18 · 64.3%	11 · 39.3%	23 · 82.1%	18 · 64.3%	4 · 14.3%	3 · 10.7%	11 · 39.3%
Male	12	4 · 33.3%	7 · 58.3%	11 · 91.7%	8 · 66.7%	3 · 25.0%	10 · 83.3%	7 · 58.3%	3 · 25.0%	1 · 8.3%	2 · 16.7%
Education											
College	28	19 · 67.9%	17 · 60.7%	21 · 75.0%	20 · 71.4%	11 · 39.3%	23 · 82.1%	19 · 67.9%	5 · 17.9%	3 · 10.7%	10 · 35.7%
High School	12	3 · 25.0%	6 · 50.0%	11 · 91.7%	6 · 50.0%	3 · 25.0%	10 · 83.3%	6 · 50.0%	2 · 16.7%	1 · 8.3%	3 · 25.0%
Work Status											
Employed	10	7 · 70.0%	5 · 50.0%	8 · 80.0%	5 · 50.0%	4 · 40.0%	8 · 80.0%	6 · 60.0%	3 · 30.0%	1 · 10.0%	4 · 40.0%
Unemployed	12	6 · 50.0%	8 · 66.7%	9 · 75.0%	9 · 75.0%	6 · 50.0%	8 · 66.7%	6 · 50.0%	1 · 8.3%	1 · 8.3%	1 · 8.3%
Student	3	3 · 100.0%	3 · 100.0%	3 · 100.0%	2 · 66.7%	1 · 33.3%	3 · 100.0%	1 · 33.3%	1 · 33.3%	1 · 33.3%	3 · 100.0%
Retired	15	6 · 40.0%	7 · 46.7%	12 · 80.0%	10 · 66.7%	3 · 20.0%	14 · 93.3%	12 · 80.0%	2 · 13.3%	1 · 6.7%	5 · 33.3%
Geographic Residence											
Urban	18	12 · 66.7%	12 · 66.7%	13 · 72.2%	12 · 66.7%	10 · 55.6%	15 · 83.3%	10 · 55.6%	3 · 16.7%	3 · 16.7%	7 · 38.9%
Suburban	9	5 · 55.6%	3 · 33.3%	7 · 77.8%	5 · 55.6%	1 · 11.1%	5 · 55.6%	4 · 44.4%	1 · 11.1%	0 · 0.0%	2 · 22.2%
Rural	13	5 · 38.5%	8 · 61.5%	12 · 92.3%	9 · 69.2%	3 · 23.1%	13 · 100.0%	11 · 84.6%	3 · 23.1%	1 · 7.7%	4 · 30.8%
Attitude Toward Medications											
Positive	19	12 · 63.2%	10 · 52.6%	16 · 84.2%	11 · 57.9%	6 · 31.6%	15 · 78.9%	11 · 57.9%	2 · 10.5%	0 · 0.0%	6 · 31.6%
Negative	5	3 · 60.0%	2 · 40.0%	4 · 80.0%	2 · 40.0%	2 · 40.0%	5 · 100.0%	5 · 100.0%	1 · 20.0%	0 · 0.0%	1 · 20.0%
Positive and Negative	10	6 · 60.0%	8 · 80.0%	6 · 60.0%	9 · 90.0%	6 · 60.0%	8 · 80.0%	6 · 60.0%	2 · 20.0%	4 · 40.0%	4 · 40.0%
Neutral	6	1 · 16.7%	3 · 50.0%	6 · 100.0%	4 · 66.7%	0 · 0.0%	5 · 83.3%	3 · 50.0%	2 · 33.3%	0 · 0.0%	2 · 33.3%
Medication Experiences											
Successful	20	9 · 45.0%	9 · 45.0%	18 · 90.0%	11 · 55.0%	5 · 25.0%	17 · 85.0%	12 · 60.0%	3 · 15.0%	1 · 5.0%	7 · 35.0%
Problematic	6	4 · 66.7%	4 · 66.7%	4 · 66.7%	4 · 66.7%	4 · 66.7%	6 · 100.0%	5 · 83.3%	2 · 33.3%	2 · 33.3%	2 · 33.3%
Both Successful & Problematic	14	9 · 64.3%	10 · 71.4%	10 · 71.4%	11 · 78.6%	5 · 35.7%	10 · 71.4%	8 · 57.1%	2 · 14.3%	1 · 7.1%	4 · 28.6%

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4.5 Confirmation of Methodological Rigor

As stated in section 3.5.2 of chapter 3, the rigor of this research study was shown by the credibility, transferability and trustworthiness of the methods and consensus of the analysis process with expert reviewers.

The primary researcher for this study was a licensed pharmacist. Though this tends to lend to positive credibility of the research study with respect to patient interviewing skills and techniques, it could also account for biases of the researcher. For this study, the primary author disclosed biases such that her prior experience in patient care practice was the motivation to explore the current research question. Her concern for the free and easily accessible amount of health information, especially from less credible types of sources, helped to form the basis of this research. Discloser of these details lend to overall credibility of the research study. Further, a thorough discussion of study weaknesses and limitations are discussed in Chapter 5, (section 5.7). This in-depth discussion of study weakness and limitations adds to the overall credibility for this research study.

The degree of transferability for this study can be determined by those researchers interested in using similar research questions and methodologies. Items to help to determine the transferability for this study are highlighted by (1) a full description of individual characteristics as described in Chapter 4 (section 4.1: Tables 3-7), (2) threats to generalizability as discussed in Chapter 5 (section 5.7), (3) the purposeful recruitment and sampling strategy as discussed in Chapter 3 (section 3.2 and 3.3), (4) a thick description of all methods as discussed in Chapter 3, (5) a comparison of results to prior literature as discussed in Chapter 5 (section 5.4), (6) and discussion of future research as

discussed in Chapter 5 (section 5.8). These six items could help an outside researcher determine the degree of transferability of this study to other research applications.

The inquiry audit was used to describe this study's trustworthiness or dependability (Hoepfl, 1997) as a strategy to strengthen the rigor of this study. Auditing was conducted on the research *process*. For example, project advisors as well as the funding source "review board" were made aware as to timing of all study recruitment and interviewing, the finalized interview script, full disclosure was made of transcription services used: including pricing, services rendered, and payment details, as well as disclosure of details concerning software to store files related to data analysis. Auditing was conducted on the research *product* or results. For example, as consistent with Institutional Review Board protocols, audio files and transcribed text were stored on the password protected, university issued computer of the primary author and backed up regularly onto the secure University of Minnesota server/network. In addition, data analysis and coding procedures including results relating to thematic operationalization were discussed and confirmed through consensus with faculty advisors throughout data analysis. Reviews of ongoing analysis and forthcoming results were conducted twice during the course of data analysis. These reviews included an opportunity for feedback from faculty advisors in which code development was confirmed and assistance was provided with theme identification and description.

CHAPTER 5:
Discussion, Conclusions and Recommendations

This study was designed to expand the understanding of health communication by describing how interactions with others contribute to the perceptions and experience of health and illness, specifically related to medication information seeking behavior within the medication use experience. This study used a qualitative strategy to investigate the role of social networks in health information seeking behavior.

This study supported the idea that medication information seeking behavior is a complex behavior that often involves many types of people from within one's social network. Ethnographic content analysis found that themes were supported from theory and previous research from domains of health information seeking behavior and social networks. However, the study's application in the context of pharmacy practice found that medication information seeking behavior presented new themes and dimensions that had not been noted within previous research applications.

The research was conducted at three types of settings including a primary care clinic, community pharmacies, and a senior center. The study included 40 participants with diverse characteristics related to age, occupation, health conditions, and medication use as well as others. The typical subject was female, college educated, retired, urban dwelling, and had an average age of 55.3 years. Additionally, the average subject took approximately 6 medications on a regular basis, had positive attitudes toward medications, and cited successful medication experiences. The study subjects had a wide

range of occupations and medical conditions that helped provide a context for the interviews for understanding subjects overall medication use experiences.

Interviewing and ethnographic content analysis were completed when a diverse sample was obtained in regards to individual characteristics as well as the target number obtained (35-50). Additionally, interviewing and ethnographic content analysis were completed when conceptual saturation was achieved, such that no new themes or subthemes were created after a majority of the data had been analyzed. The remaining data were used as verification to check for consistency of concept categorization.

5.1 Summary of Phase I Results

Phase I of data analysis used ethnographic content analysis to answer the first three study objectives related to structure, content and function. It confirmed the identification of theory and previous literature based themes that were outlined in Figure 10, including trajectories one and two. In addition, new themes and subthemes were uncovered. Phase I used trajectories one and two as a way to organize the themes and subthemes.

The structures of subjects' social networks were identified using information seeking behavior trajectory 'one' that involved the interaction of another person. If a person was involved in the medication information seeking behavior incident, it was expected that the type of social contact could be placed into one of two categories: lay or professional. Within this dichotomy of lay and professional, eight subtypes emerged. Within the type 'lay,' subtypes included family, close friend, or acquaintance. Within the type 'professional,' subtypes of nurse, physician, pharmacist, related or friend

professional and other emerged. During data collection and upon data analysis was the identification of a third type of social network contact. This third type was titled 'self.'

The content that was provided through social networks related to medication information was described by three themes and four subthemes. The three themes included: beliefs and attitudes, personal exp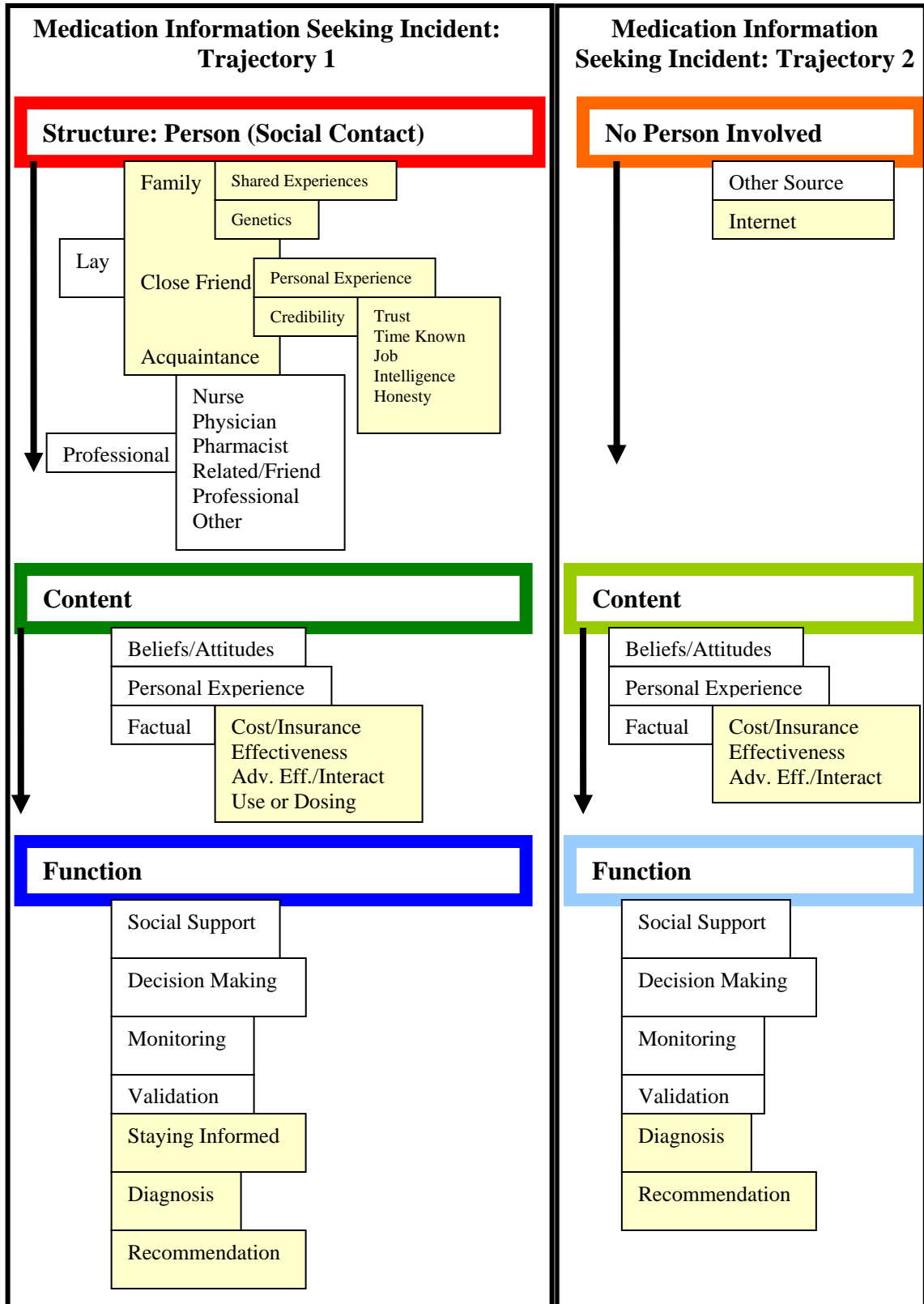erience and factual information. Additionally, factual information could further be divided into four subthemes which included: adverse effects or interactions, cost or insurance, effectiveness, and use or dosing. The function that was provided through social networks related to medication information was described by seven themes. The seven themes included: decision making, diagnosis, monitoring, prescriptive or recommendation, social support, staying informed, and validation. Three of the seven 'function' themes were newly indentified within phase I of data analysis. The newly indentified themes included: diagnosis, prescriptive or recommendation, and staying informed.

The second trajectory for incidents of medication information seeking behavior involved sources related to the Internet or other types of mediated or print sources. The content of medication information in this trajectory included themes of beliefs and attitudes, direct personal experience, and factual information. Subthemes of factual information included adverse effect or interactions, cost or insurance, and effectiveness. The function of medication information in this trajectory included themes of decision making, diagnosis, monitoring, prescriptive or recommendation, social support, and validation. All other themes and subthemes related to content and function of medication information were consistent with the first social network trajectory with two exceptions. For the content of medication information 'use or dosing' did not emerge as a subtheme

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of 'factual information.' For the function of medication information, 'staying informed' did not emerge as a theme in the second trajectory. The differences in themes between the two different trajectories indicated that social interaction as part of the information seeking behavior process makes a difference in terms of the content provided and the function of the information.

Overall, the summary of findings for Phase I can be highlighted by comparing the initial, a priori thematic hierarchy (Figure 10) to the final thematic schemes for trajectories one (Figure 11) and two (Figure 12). For ease of viewing, the final overall thematic hierarchy was summarized by Figure 13.

Figure 13: Final Thematic Hierarchy

Medication Information Seeking Incident: Trajectory 1

Structure: Person (Social Contact)

- Lay
  - Family
    - Shared Experiences
    - Genetics
  - Close Friend
    - Personal Experience
      - Credibility
        - Trust
        - Time Known
        - Job
        - Intelligence
        - Honesty
  - Acquaintance
- Professional
  - Nurse
  - Physician
  - Pharmacist
  - Related/Friend
  - Professional
  - Other

Content

- Beliefs/Attitudes
- Personal Experience
- Factual
  - Cost/Insurance
  - Effectiveness
  - Adv. Eff./Interact
  - Use or Dosing

Function

- Social Support
- Decision Making
- Monitoring
- Validation
- Staying Informed
- Diagnosis
- Recommendation

Medication Information Seeking Incident: Trajectory 2

No Person Involved

- Other Source
- Internet

Content

- Beliefs/Attitudes
- Personal Experience
- Factual
  - Cost/Insurance
  - Effectiveness
  - Adv. Eff./Interact

Function

- Social Support
- Decision Making
- Monitoring
- Validation
- Diagnosis
- Recommendation

5.2 Summary of Phase II Results

Phase II used the findings from Phase I to uncover patterns and relationships within the data. Processes in Phase II used the clustering of social network types, themes and subthemes to create "coding intersections" within the data in order to explore co-occurring concepts. This phase of analysis identified linkages within the data that could serve to develop further research questions. Phase II of the analysis followed what has been described as a cross-case analysis or coding matrix development of qualitative data (Miles & Huberman, 1994).

Content provided by professionals within subjects' social networks were predominantly linked to 'factual' types of information. Professionals could be further specified according to type. Both physicians and pharmacists showed the greatest incidences of coding occurrences with factual types of information. Further, the type of factual information supplied to subjects by their physicians was varied with respect to effectiveness, use or dosing, adverse effects or cost types of information. Nurses and other types of health professionals such as dentists were discussed much less than physicians and pharmacists with respect to medication information. However, there were several instances where subjects noted talking with 'related or friend professionals' regarding their medications. As was consistent with physicians and pharmacists, nurses, other professionals and related or friend professionals were most often linked with content related to factual medication information.

Similar to the process discussed in Phase II results related to content, Phase II results related to function of information from health professionals was explored using matrices of coding intersections. Professionals predominantly linked to the theme of

decision making. Other function themes of monitoring, prescriptive or recommendation, staying informed and validation were also often linked with professionals.   Professionals could be further specified according to type. Overall, physicians were the most cited type of professional. For physicians, the most prevalent coding intersections occurred at decision making, followed by monitoring and prescriptive or recommendation, as well as staying informed. Cross-case coding intersections revealed that pharmacists were the second most cited type of professional. Pharmacists' were most prevalent at the coding intersections for decision making, prescriptive or recommendation, validation and staying informed. The biggest difference presenting between these two types of professionals were the 'monitoring' theme by physicians in contrast to the 'validation' theme by pharmacists. For physicians, 'monitoring' was among the most frequent co-occurring themes, whereas for pharmacists, 'validation' was among the most frequent co-occurring themes.

Overall, physicians and pharmacists were often described by subjects to provide medication related information that served a variety of functions. Nurses, related professionals and other health professionals represented the minority of coding intersections within the data. Health professionals provided medication information that would function in terms of decision making, monitoring, prescriptive or recommendations, staying informed and validation with some differences among the function of information provided by that of physicians and pharmacists. Overall, health professionals presented the fewest coding intersections at themes related to diagnosis and social support.

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In order to discuss the findings related to health professionals with respect to content and function of medication information, models were created to show how the findings fit together. Figure 14 summarizes the role of health professionals in patients' social networks. The overall findings from this study suggest that health professionals predominately provide content related to factual information to patients, and that patients in turn, use this information to function to predominately make decisions, monitor the information environment, stay informed, take a recommendation, and validate information. However, patients use factual information from health professionals to a lesser extent to make a diagnosis or obtain social support. Figure 14 uses a visual model to demonstrate how medication information would flow from the health professional, to the patient and applied to various functions by the patient. The function themes in larger ovals indicate major functioning roles and smaller ovals indicate minor functioning roles.

Because this study was focused on the concept of medication information, the role of the pharmacist in patients' social networks is of particular interest. The results related specifically to pharmacists were separately discussed, even though these results were also accounted for in the previous discussion of health professionals in general. Figure 14 summarized the role of pharmacists according to study findings. The overall findings from this study suggest that pharmacists predominately provide content related to factual information to patients, and that patients in turn, use this information to predominately function to make decisions, stay informed, take a recommendation, and validate information. However, patients use factual information from pharmacists to a lesser extent to make a diagnosis, monitor the information environment, or obtain social support. Figure 15 uses a second visual model to demonstrate how medication

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information would flow from the pharmacist, to the patient and applied to various functions by the patient. The function themes in larger ovals indicate major functioning roles and smaller ovals indicate minor functioning roles.

Figure 14: The Overall Role of All Health Professionals in Patients' Social Networks
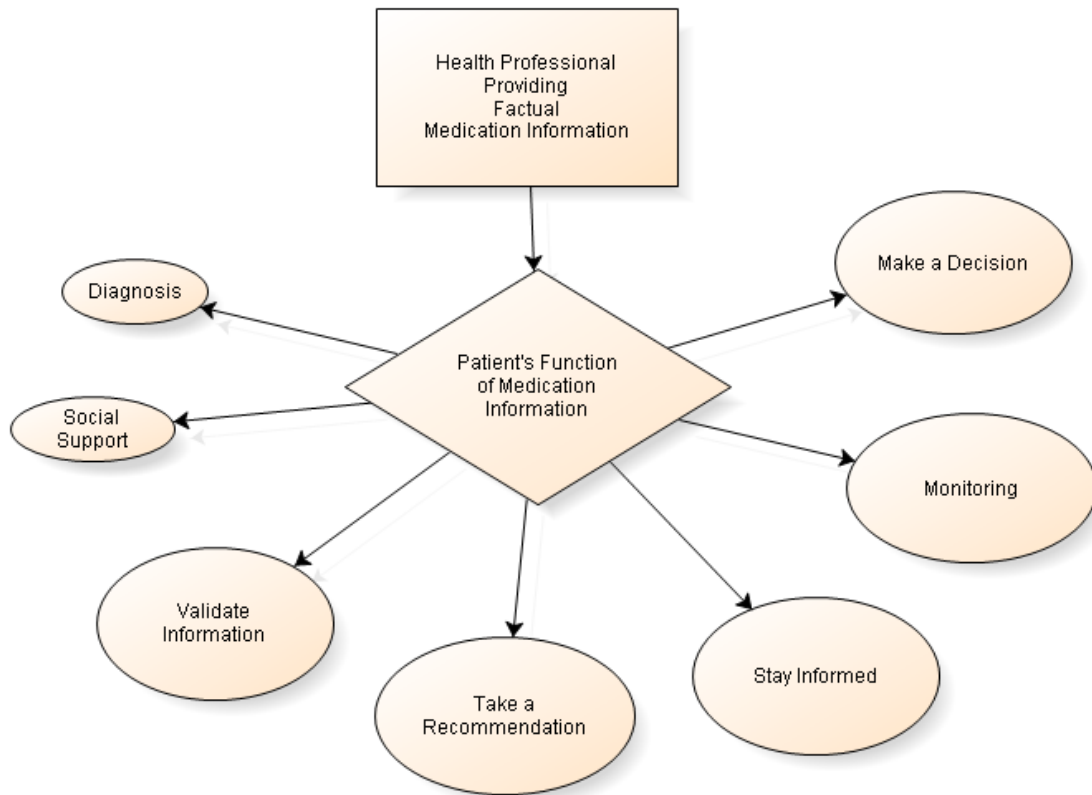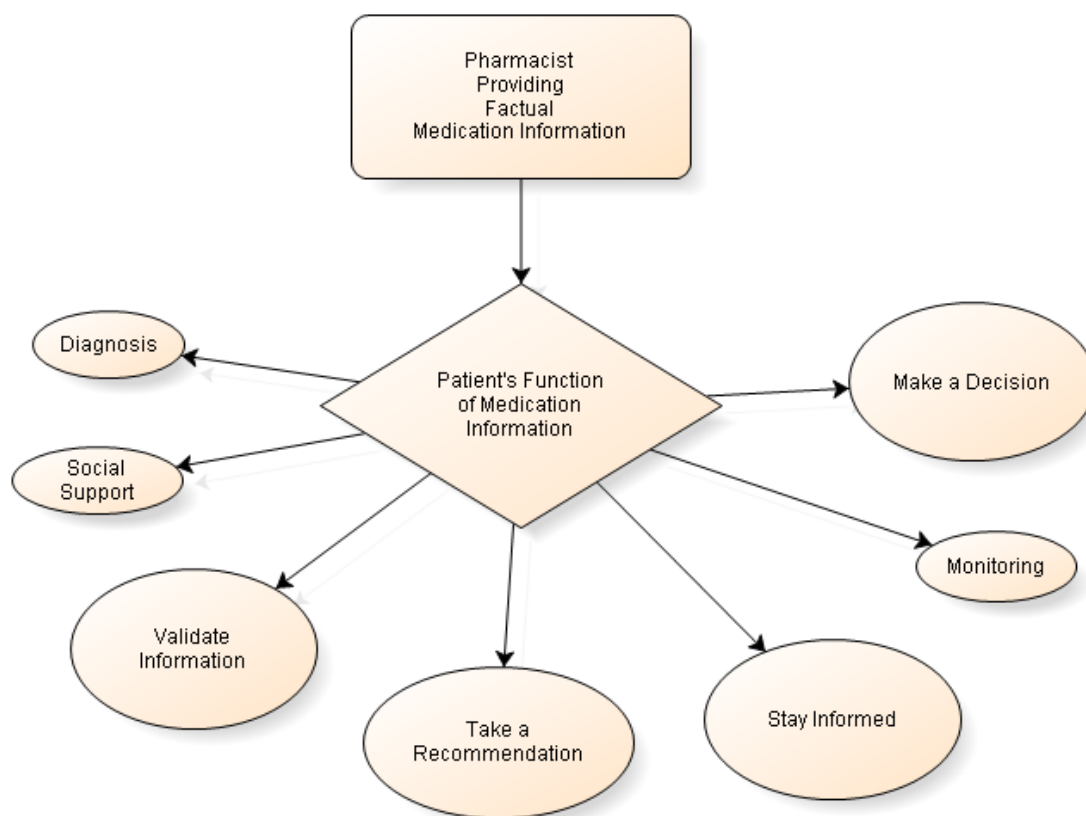
Figure 15: Role of Pharmacists in Patients' Social Networks

Medication Information content was provided by lay social contacts within subjects' social networks. Subjects viewed the flow of 'content' of medication information from these people differently than the health professionals within their social network. In contrast to professionals, lay social contacts were linked consistently to all themes of 'content' related information including factual information, personal experience, and beliefs and attitudes. Lay social contacts could be further specified according to type. Family members and close friends showed the greatest incidences of coding occurrences; however these incidences were closely followed by acquaintances. Matrices of coding intersections with respect to lay social contacts were used to guide exploration of interviews in order to determine the context for how information content was spoken of by subjects. According to the coding intersections for describing the content provided by lay social contacts, 'factual' information and 'personal experience' themes made up the predominant content themes of medication related information discussed by subjects. Though beliefs and attitudes were discussed less by subjects they were coded more often than at 'professional.' Information supplied to subjects by their family members and close friends was varied with respect to factual information, personal experience, and beliefs and attitudes. Lay social contacts coded as acquaintances were discussed less than family and friends. However, there were still instances subjects noted talking with 'acquaintances' regarding their medications with respect to facts, personal experience, and beliefs and attitudes.

Similar to the process discussed in Phase II results related to content, Phase II results related to function of medication information from lay social contacts was explored using matrices of coding intersections. Lay social contacts spoken of by

subjects predominantly linked to decisions making, monitoring, prescriptive or recommendation, staying informed and validation. Overall, lay contacts were less often linked with the theme 'diagnosis.' Lay contacts could be further specified according to type. Family members showed consistently occurring coding intersections across function related themes with the exception of 'diagnosis' and 'staying informed.' Subjects more often spoke of close friends with respect to the 'decision making' and 'monitoring' themes. Subjects discussed acquaintances less than family member or close friend types of lay contacts. However, of those times when acquaintances were mentioned, they were most often coded in conjunction with the theme 'validation.'

In summary, lay social contacts provided medication information that would function in terms of decision making, monitoring, prescriptive or recommendations, social support, staying informed and validation. There were some differences among the function of information provided by family members, close friends, and acquaintances. Acquaintances represented the minority of coding intersections (i.e. were mentioned the least) within the data as compared to family members and close friends. Overall, lay social contacts were least mentioned with the function of 'diagnosis.' Lay social contacts differed from health professionals in terms of providing information relating to the theme 'social support.' Lay social contacts were often linked to the function of social support where health professionals were not.

Similar to the models developed for the overall roles of health professionals (Figure 14) and specifically of the role of the pharmacists (Figure 15), models were also created to show a visual representation for findings related to lay social contacts. Subjects spoke of obtaining medication information from family members with respect to

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various function themes. Figure 16 summarizes the role of family members in patients'

social networks. The overall findings from this study suggest that family members

provide content related to all types of medication information including factual

information, personal experiences, and beliefs and attitudes to patients. Further, patients

in turn use this information to function predominately to make decisions, monitor the

information environment, take a recommendation, obtain social support and validate

information. However, patients use information from family members to a lesser extent

to obtain or make a diagnosis or to stay informed.

Subjects spoke of obtaining medication information from close friends most often

with respect to 'decision making' and 'monitoring' function themes. Figure 17

summarizes the role of close friends in patients' social networks. The overall findings

from this study suggest that close friends provide content related to all types of

medication information including factual information, personal experiences, and beliefs

and attitudes to patients. Further, patients in turn use this information to function

predominately to make decisions and monitor the information environment. However,

patients use information from close friends to a lesser extent to make a diagnosis, take a

recommendation, obtain social support, stay informed, or validate information.

Subjects spoke of obtaining medication information from acquaintances most

often with respect to the theme 'validation.' Figure 18 summarizes the role of

acquaintances in patients' social networks. The overall findings from this study suggest

that acquaintances provide content related to all types of medication information

including factual information, personal experiences, and beliefs and attitudes to patients.

Further, patients in turn use this information to function predominately to validate

information. However, patients use information from acquaintances to a lesser extent to make a decisions, make a diagnosis, monitor the information environment, take a recommendation, obtain social support, or to stay informed.

Subjects who spoke about their 'self' role among their social networks, spoke of all aspects related to the content of medication information including factual information, personal experiences, as well as beliefs and attitudes. The function of the information provided by subjects as 'self,' to others was largely focused on recommendations or was prescriptive in nature. Figure 19 summarizes the role of the 'self' view for patients' social networks.

Figure 16: Role of Family Members in Patients' Social Networks
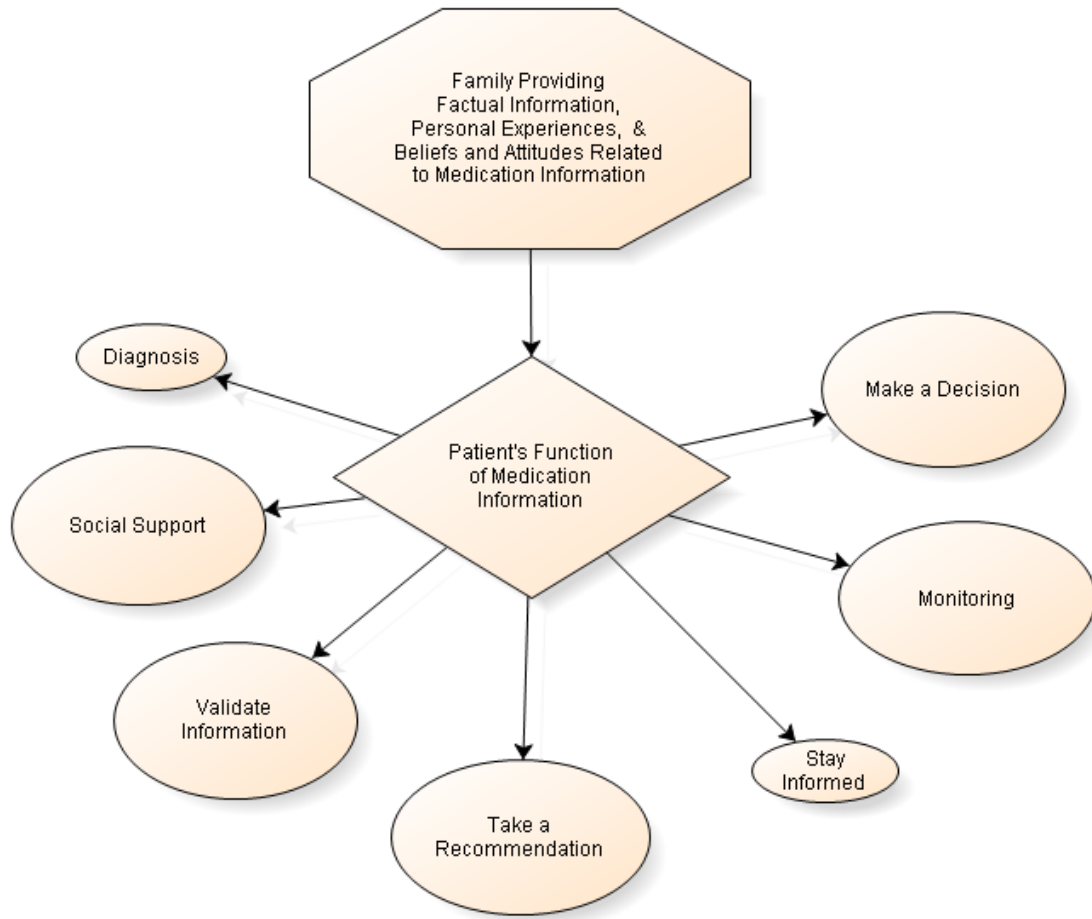
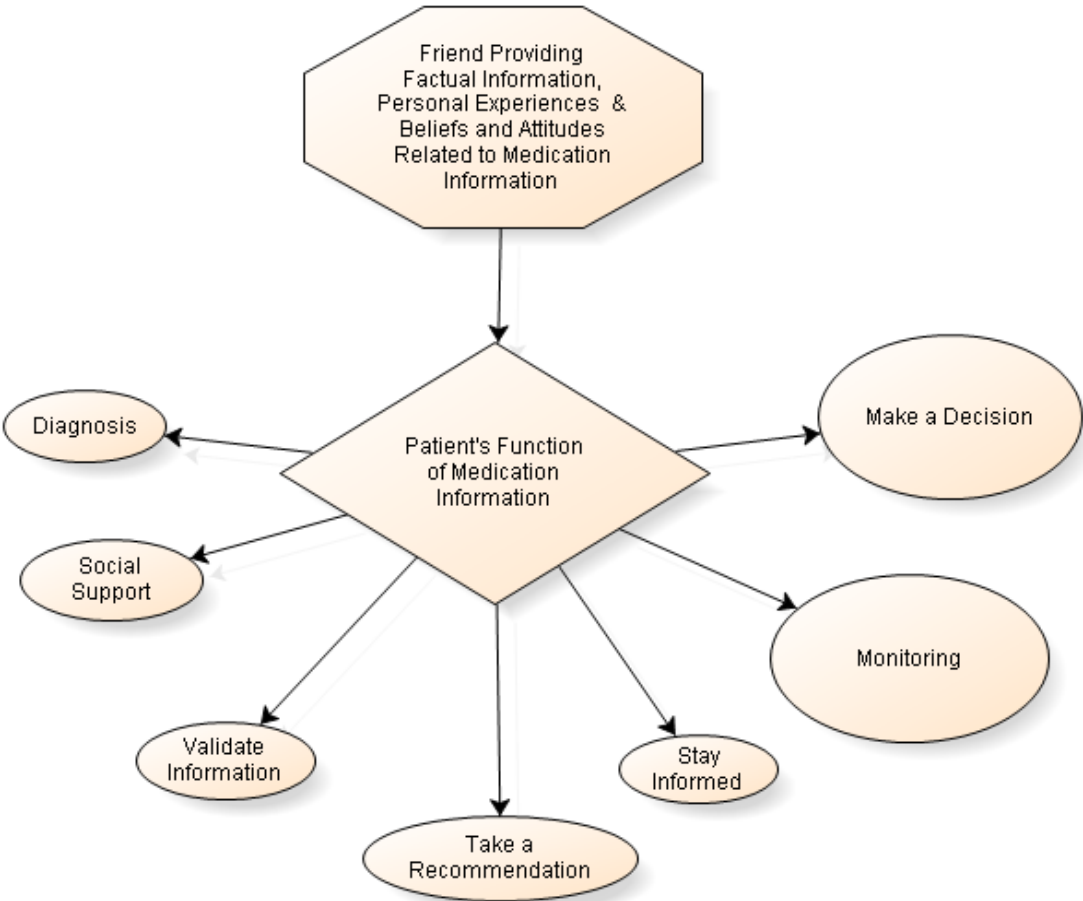**Figure 17: Role of Friends in Patients' Social Networks**

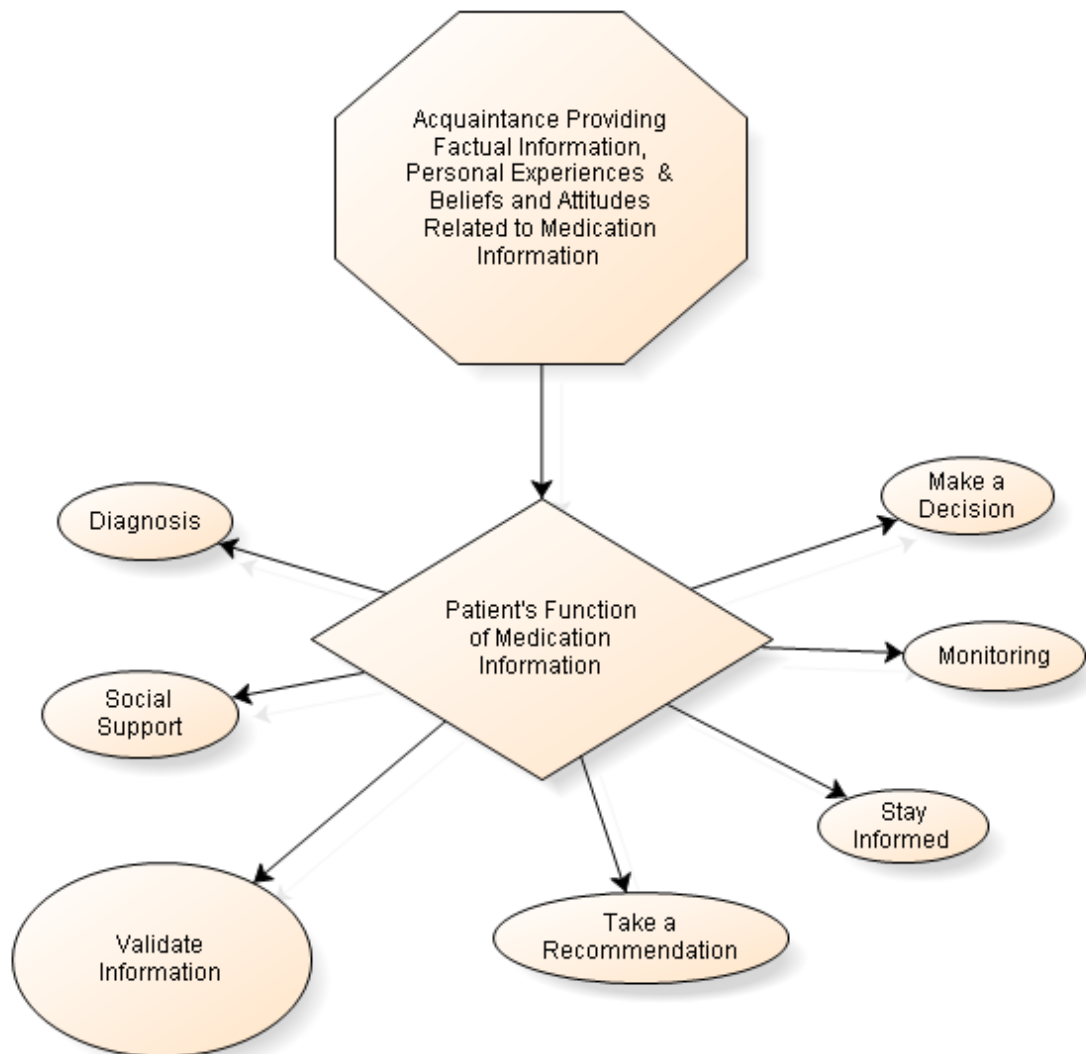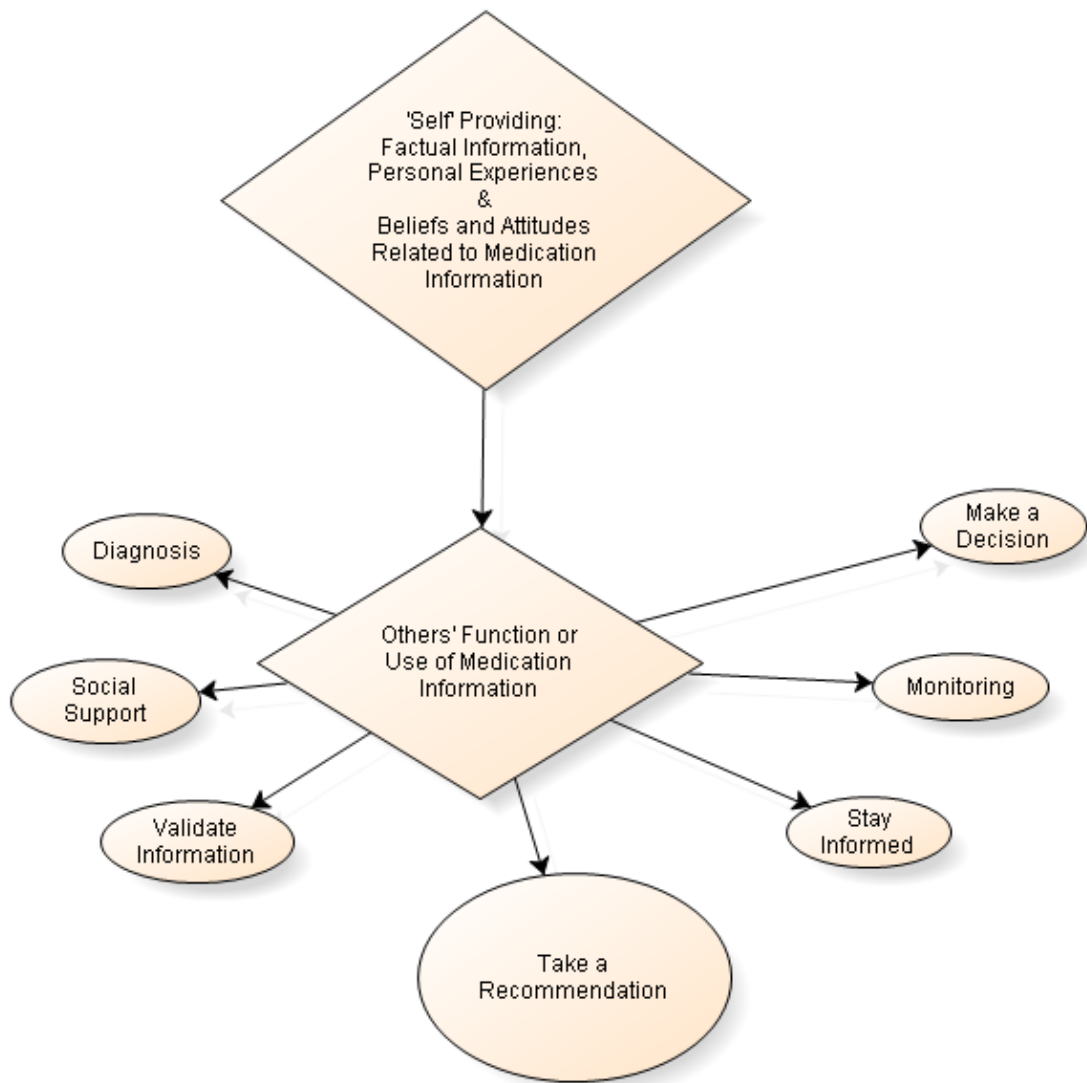**Figure 18: Role of Acquaintances in Patients' Social Networks**

Figure 19: Role of 'Self' in Patients' Social Networks

5.3 Overall Summary of Results

In summary, findings answered the research question for this study which was: *what is the role of social networks in medication information seeking behavior of patients*? Findings answered this question by addressing the study objectives which were (1) describe the structure of social networks that supplies medication information (2) describe the content that is provided through individuals' social networks related to medication information (3) describe the function of the information that is supplied through individuals' social networks and (4) describe individual characteristics of people who use various types of social networks to obtain medication information.

Findings related to the structure, content, function and individual characteristics of subjects were divided in two phases. Findings from Phase I built the more detailed findings of Phase II. Findings showed that social networks play an important role in the medication information seeking behaviors of patients. Structurally, social networks for seeking medication information were made up of health professionals such as physicians or pharmacists as well as lay social contacts such as family, friends or acquaintances. In addition, social networks also included related or friend professionals. Patients also acknowledged the role they, themselves play within their own social network to provide others with medication information, which was described as the 'self' or 'selfview.'

Themes related to the content and the function of information provided by the social networks were identified and described. Content themes included factual information, information related to personal experiences, and information related to beliefs and attitudes. The function of medication information sought and obtained by patients was used to make decisions, make diagnoses, monitor the information

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environment, take a recommendation, obtain social support, stay informed, and validate newly acquired or prior knowledge.

The social network structure type, or who was utilized by subjects, displayed somewhat different roles in terms of what medication information content is provided and the subsequent function of this information. For health professionals, including physicians and pharmacists, the strongest overall role was to provide the patient with factual information in order to support patient decision making, monitoring of the information environment, provide recommendations, keep informed, and validation of newly acquired or prior knowledge. The role of pharmacists among patients' social networks seemed to focus primarily on providing factual information to assist patient with decision making, giving recommendations, keeping or staying informed, and to validate newly acquired or prior knowledge. In contrast, the role of lay social networks also was to provide factual information with the additional roles of providing personal experiences and beliefs and attitudes so that patients can make decisions, monitoring of the information environment, take a recommendations, obtain social support, keep informed, or validate newly acquired or prior knowledge. The noted difference between the role of health professionals and lay social contacts was that lay social contacts provide personal experiences and beliefs and attitudes with the additional function of social support. These three themes did not emerge in findings related to health professionals.

In addition to social network roles provided by professionals and lay social contacts, subjects had a prominent view of their 'self' role for others. Subjects tended to see their 'self' role as related to all aspects of the content of medication information. The

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function of the information provided by subjects to others was largely focused on recommendations or prescriptive in nature.

This study also found some trends related to individual characteristics in terms of reported social network contacts. Overall, subjects with an older average age reported speaking to health professionals more than lay social contacts. However, of those subjects who cited speaking with lay social contacts about medications, older subjects tended to speak more to family than to close friends or acquaintances. Subjects with higher health statuses reported speaking with other health professionals, related professionals and close friends. Subjects with lower health statuses reported speaking most often with acquaintances, family, physicians and pharmacists. Similar to subjects with lower health statuses, subjects with the highest average number of medications reported speaking to physicians and pharmacists.

Female subjects more often reported talking to close friends as compared to male subjects. Subjects with a college education reported most often talking with a physician. In contrast, high school educated subjects most often reported talking with family members. Additionally, college-educated subjects more often reported talking with close friends about medications than did those subjects with a high school education. College-educated subjects also reported acting as a medication information source for others ('self') within their social network more often than did subjects with a high school education.

Employed subjects most often reported talking to physicians and family. Retired subjects most often reported talking to physicians, family and pharmacists. Unemployed subjects most often reported talking to family. In addition, unemployed subjects were the

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most often to report 'self,' or providing medication information to others. Students were found more often than other groups to report talking to related or friend professionals.

Urban dwelling subjects reported talking with physicians the most. In contrast, suburban dwellers reported talking most often with family. Similar to both groups, subjects who considered themselves as rural dwellers reported a high frequency of talking to both physicians and family. Additionally, rural subjects more often reported talking with pharmacists than did urban or suburban dwellers.

Some additional differences were found among health related individual characteristics according to social network contact type. Subjects who were listed as having a positive attitude toward medications more often reported talking to family members. In contrast, subjects who were listed as having a negative attitude toward medications more often reported talking to physicians and pharmacists. Subjects who were listed as having both positive and negative attitudes towards medications more often reported acting as an information provider as 'self.' Subjects with a neutral attitude toward medications most often reported talking to family.

Subjects who were listed as having successful medication use experiences were most often to report talking with family and physicians. Subjects who were listed as having problematic medication use experiences were most often to report talking with physicians and pharmacists. Subjects listed as having both successful and problematic medication use experiences most often reported themselves as a provider of medication information.

Overall, subjects who cited acting as a social network resource for medication information to others ('self') were younger, had a higher reported health status and used

more medications than the average study subject. Subjects who reported speaking to

family, physicians or pharmacists were older, had a lower reported health status and used

more medications than the average study subject. Subjects who reported speaking to

close friends were younger, had a higher reported health status and used less medications

than the average study subject.

The results of this study provide strong support for the role of social networks in

medication information seeking behavior. Overall, patient social network structure and

the content and function of medication information provided from within, in addition to

the context provided by individual patient characteristics, provide a foundation for further

research. These recommendations for future research are described in section 5.8.

5.4 Comparison to Previous Studies

The results for this study compare with previous literature of the studies that have

specifically focused on the role of social networks and health information seeking

behavior (see Chapter 2, section 2.3.1). This study was consistent with the findings

presented by Wellman (1995) that subjects utilized lay contact to make decisions with

respect to their health care. This study showed that family members and friends were

both involved in the function theme of 'decision-making.' Similar to findings presented

by Tardy and Hale (1998) this study found the importance of personal experiences in the

role of social networks for providing medication information. According to Tardy and

Hale (1998), personal experiences helped social network contacts establish credibility

with others. The finding that personal experience lends to credibility within a social

network is one area that has potential for future research applications in medication

information seeking behavior. Findings from the current study could support future research applications.

In comparison to the study completed by Morey (2007) the current study supported the finding that subjects overwhelmingly cite interpersonal contacts as sources for health information. With respect to gender, Morey (2007) found no differences among health information seeking behavior tendencies. In contrast, the current study uncovered that more often female subjects reported talking to close friends. Morey (2007) also noted that older subjects sought more health information in general than younger subjects. Although the current study did not quantify the amount of medication information sought as in Morey's (2007) study, some age differences emerged which related to older subjects citing health professionals more often than younger subjects. Of all subjects who mentioned speaking with lay social contacts about medications, older patients tended to speak more to family members than other lay social network contacts. Morey's (2007) study also found that most subjects sought information for themselves; however noted some instances of subjects who sought information on behalf of others. The current research study similarly noted that most subjects sought information for themselves, however, the theme related to 'self' emerged noting the important role that subjects feel they have to others within their social networks to provide or become a resource for medication information. Finally, the current research study supports findings presented by Agadjanian (2002) that subjects used lay social network contacts when there was a need for social support in the form of such things like understanding others' experiences or obtaining beliefs and attitudes.

5.5 Discussion of Results

This study found that the role of social networks on medication information seeking behavior presented dimensions that had not been explored within previous research applications in the integrated domains of health information seeking behavior and social network applications. Overall, this study suggests that health professionals predominately provide factual information to patients, and that patients in turn use this information to function in a variety of ways relative to their medication use experiences. One finding was that different types of health professionals provide similar types of medication information, but the information provided serves to function in different ways depending on which health professionals provide it. For example, physicians help patients 'monitor' the information environment more so than pharmacists. In contrast, pharmacists have a more targeted medication information role toward helping patient make decisions, stay informed, provide recommendations, and validate information.

Although subjects in this study did not report talking to health professionals regarding personal experiences or beliefs and attitudes relative to their medications, it remains unknown if patients simply do not expect this information to be discussed by their providers or if receiving this information from lay social contacts fulfills another inherent behavioral need of patients in order to help them navigate decisions and experiences during the medication use process.

Subjects in this study viewed medication information from lay social contacts differently than the health professionals within their social networks. Lay social contacts differed from health professionals in terms of providing information relating personal experience and beliefs and attitudes. Despite that the information content differed

between lay contacts and health professionals, the functioning information role of lay contacts was similar to health professionals except that lay contacts were more often described to provide social support.

The noted differences between the content and function of the medication information provided by health professionals and lay social contacts contributes to our understanding of the information seeking patterns and information needs of patients. Although health professionals will be unable to prevent patients from seeking information from lay social contacts, gaining an understanding of the types of information sought from other sources, health professionals can further adapt to offering patients information that goes beyond "just the facts" to help patients relate and shape their overall understanding of the medication use experience.

One of the most striking findings of this study was the commonality among the role of health professionals *and* lay social contacts to provide patients with factual medication information. Information has become so readily available and easily accessible, it is not surprising patients are talking with and receiving information from lay social contacts about medication information.

In summary, the role of social networks in medication information seeking behavior of patients is one that is complex, dynamic, and important to the medication use experience. Patients use social network contacts from both inside and outside of health care to satisfy all types of information needs. Patients also readily acknowledge the role they have to play for others within their own social networks. This study provides a more complete understanding of the social role of patients' informational environments. Providers can use this study to better understand patients' information needs.

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5.6 Scientific Contribution of Research

These findings are important to researchers in the discipline of Social and Administrative Pharmacy, and particularly to researchers in the domain of medication use behavior and pharmacist-patient relationships. These findings could also be of interest to researchers who study health communication and health information behavior. Findings from this study could be applied to patient empowerment initiatives, improvement of patient-provider communication and adjustment of the medication information provided to patients by health care providers. Previous research in the area of medication information seeking behavior identified that social communications play a role in the provision of medication information (Morris et al., 1984). The results from the current study build upon these findings by identifying the important role that social communications among patients' social networks play in all aspects related to the application or function of medication information in addition to its provision or content.

In addition, other important aspects of this research contribute to the understanding of the changing role of the pharmacist. This study confirms the current argument that the role of the pharmacist has moved beyond a simple provisional and informational role and into an expanded role that serves to help patients apply medication information in ways to help them understand and sift through the entire information environment. Finally, this research has found that lay social contacts are a vital source for patients in which to obtain information related to medications, including factual types of information, and in turn play a vital role in how patients apply this newly acquired knowledge. Health practitioners should be made more aware of this important aspect of a

patient's social environment in order to have a clearer picture for how they can seamlessly align themselves into a patient's social network. Further, this research can provide health practitioners a clearer picture of the importance of learning whom patients are getting their information from in order to optimize decision making in the medication use process.

5.7 Implications for Pharmacy Practice

Results from this initial research application for describing the role of social networks in the medication information environment can provide useful recommendations for pharmacy practitioners. The patient's perception that they can obtain factual information from nearly any source, including social contacts or other media such as the Internet, was perhaps one of the most striking findings. Pharmacy practitioners can use this information to understand that patients may not need additional factual information, but instead need help applying factual information into decision making and other applications to optimize therapeutic outcomes. Pharmacy practitioners must take advantage of their important role within the medication information environment and adapt themselves to the specific information needs of the patient. In order to achieve this, pharmacy practitioners should develop relationships with patients such that patients feel comfortable discussing all types of medication information they have obtained, from various sources, and allow for assistance given by pharmacists with respectably assisting patients with applying appropriate information and discounting misleading information.

Further, pharmacy practitioners should not rush to conclusions that just because patients are receiving factual information from other sources that this factual information is unreliable or inaccurate. Pharmacy practitioners should screen patients thoroughly for what they already know, and gently correct previously acquired incorrect information or relay new accurate information.

The results showing the role for lay social contacts in patients' medication information environment to provide personal experiences and beliefs and attitudes was also an important finding. Importance was noted because pharmacy practitioners should recognize that patients need more than just factual information within their medication use experience. In addition to factual information, practitioners should not be apprehensive to provide patients with anonymous anecdotal accounts of other patients' successes and problems with applicable drug therapies, as well as to provide professional opinions related to medication therapy. Provision of all types of information to patients will in turn help patients recognize the expanding role of the pharmacist in decision-making applications relative to medication therapy as well as deepen relationships between practitioners and their patients. Encouraging pharmacists to have conversations that go beyond provision of factual information will serve to progress not only the practice of pharmacy, but further serve to optimize patient care.

Lastly, pharmacy practitioners should not sway patients from obtaining outside sources of information. These sources of information often become vital for application within the medication use process. However, pharmacists should create relationships with their patients such that patients feel comfortable coming back to pharmacists with outside information in order to obtain assistance in making application to their own

therapy. Creating an environment where patients can have no apprehension with disclosing outside information to a health professional has the potential to encourage patient-provider communication and optimize medication use outcomes.

5.8 Study Limitations

The research findings should only be interpreted with acknowledgment of the theoretical and methodological limitations of the study. Although prior literature and theory from the domains of health information seeking behavior and social network approaches in health care settings were considered for the study design, integrating theoretical frameworks from two different types of research domains can be a difficult task. Finding a balance between remaining true to the original theories and adapting of concepts to the context of pharmacy took particular care and attention to detail.

In the domain of health information seeking behavior, the importance of capturing the entire information environment has been discussed (Tse et al., 2004). However, due to the limited scope of this study, certain aspects of the information environment were not considered as in depth as social contacts. Other health information sources have been cited to include health services organizations, government or other public health initiatives (Brashers et al., 2002; Parrott, 2004). Additionally, the role of the Internet as a source of health information also has been cited to be an influential role in patient health decision making (Cline & Haynes, 2001; Dutta-Bergman, 2004b). Other factors that were not considered in this study were contextual factors such as the health care structure or delivery of medication services to patients, cultural related factors, or type of information seeking behavior such as active or passive seeking patterns.

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There are other aspects that have been investigated in health information seeking behavior that were not investigated in this study. This study did not describe findings related to what aspects of information make certain types applicable to patients' medication therapy or not. For example, does it matter whether patients are receiving positive or reinforcing information or negative or discouraging information? This study did not describe whether information seeking behavior is a type of coping mechanism or just satisfying an underlying curious personality.

In the domain of social networks, this study had certain theoretical limitations. Research has often discussed the importance of understanding the relationship dynamics for the interpersonal ties within social networks. These dynamics may include describing social network relationships as formal or informal or as strong or weak or any variation of these categorizations. Further, it has been cited that although two people might obtain similar information from a parent, the dynamics between, or the relationship characteristics that form a social network connection, can influence aspects related to their interactions with the member of the social network (Granovetter, 1973). These dynamics often serve further to classify social network type according to tie "strength" or other relationship characteristics. This study did not describe the dynamics for each social network contact that was cited by subjects. Relationship dynamics related to the degree to which people rely on their social networks was also not established. Additionally, this study did not capture the degree of positive or negative influence social networks had on functions of medication information. That is, the actual degree to which information assisted with a positive or negative therapeutic outcome could not be assessed. Finally, one limitation of this study was its inability to capture a "whole" social

network description for each patient. Because a whole network approach was not

practical to obtain from each study subject, social network characteristics such as overall

network density or connectivity could not be determined.

Methodological limitations for this study were related to subject recall bias, social

desirability bias, researcher bias, and overall transferability. Despite the use of an eco-

map recall tool and a funneling approach within the interview script, recall bias is still a

concern. It is unknown how far back people need to consider when thinking about their

social network and information seeking behaviors. People often mentioned deceased

persons as well as people no longer in their life. In addition, some people tended to only

recall recent instances, such as information seeking behavior instances that occurred

within the last week or last month. Further, in this study people did not mention casual

acquaintances as much as family and close friends. It is unknown to the degree to which

casual acquaintances are remembered in terms of the information they have provided to

subjects. It was surprising that subjects infrequently discussed casual acquaintances.

However, recall bias was likely a factor in this observation. This observation bodes well

to the following quotations from an influential social network researcher, "it is

remarkable that people receive crucial information from individuals whose very existence

they have forgotten" (Granovetter, 1982).

Social desirability bias may have played a role in interview responses provided by

subjects. During the course of recruitment and data collection, full disclosure of study

objectives were made. Therefore, the undisguised nature of the interviews combined

with the knowledge that the interviewer was a licensed pharmacist may have directly or

indirectly influenced subjects to answer questions that portrayed them only obtaining

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factual information from health professionals and obtaining limited information from outside sources. Although all subjects knew the interviewer was a licensed pharmacist, the fact that she also disclosed that she was a graduate student might have helped curb any initial social desirability bias, as a student status may have allowed subjects a greater degree of honesty.

Researcher bias is a significant limitation for this study. However, precautions through the entire research process were taken to remove the influence of biases during interviews and data analysis. Researcher bias was minimized by processes throughout data collection and analysis that were transparent as to what was obtained from data and how analysis progressed from start to finish. As discussed in the methodology chapter, expert verification of coding and audit tracking from outside reviewers were conducted. However, despite the transparency of the process, the fact that only one researcher both conducted and analyzed data presents the potential for bias.

Overall transferability was a limitation for this study. The small sample size, local population of the State of Minnesota, and self-selecting status of volunteers all present factors that impact this study's transferability of results to other study populations. However, because the methodology of this study was based on qualitative ideology, the study findings were not intended to be "transferred" to larger populations. It is believed that although the study may not be generalizable to the entire U.S. population, that future researchers could potentially transfer the *methods* used in this study to a study in a similar setting and context and yield similar findings.

5.9 Recommendations for Future Research

Study results provide a view of the role of social networks in medication information seeking behavior. Patient social network structure described by the content and function of medication information provided from within, in addition to the context provided by individual patient characteristics, provide a foundation for further research. More specifically, future research is needed in the area of medication information seeking behavior which encompasses larger domains of medication use behavior and may include research related to medication decision making, pharmacist-patient relationships, and health communication. Research is needed to explore the degree to which information seeking behavior impacts medication decision making with respect to how often patients apply newly acquired information to change or maintain a current course of medication therapy. Research could explore the degree to which patients seek specific information with a purpose to validate a decision in contrast to seeking information that might be opposite to their current course of action. Medication information seeking behavior could be researched with applications to the pharmacist-patient relationship to determine whether increased seeking incidents correspond to improved relationships or how to determine if active information seekers expand content of information sought based on the type of relationship they have with their pharmacist. For example, would stronger pharmacist-patient relationships provided a expanded amount of medication information related to beliefs and attitudes, personal experiences, in addition to factual information? Finally, this study provides an opportunity to expand health communication research toward a better understanding of the types of medication information that patients require and the types of communication channels that patient pay attention to.

This research provides support that 'factual information' is indeed provided by *both* health professionals and lay social contacts. However, future research is needed to determine whether factual information from one source has the potential to outweigh factual information from another source. For example, would factual information obtained from a family member take precedence over factual information provided by a physician when applied to a medication related decision? This question presents an issue of social network source credibility. Future research could be conducted to help establish how a patient places a level of credibility to a source, especially lay social network sources. This research began to uncover some themes related to this, such as family member's 'shared experiences,' however, more in-depth interviewing is needed to uncover when shared experiences might sway a decision away from the advice of a health care provider, based on a patient's perception of source credibility.

This research has provided support for future research for uncovering a better understanding of the patient's self view for the information they provide others. It is unknown whether patients who strive to make recommendations to others within their social network receive a form of reinforcement or validation in terms of their own medication use outcomes. For example, do patients who make recommendations to friends and family have better medication related outcomes? More research that would conduct in-depth interviewing could begin to shed light on this phenomenon.

This research provides continued support for the idea that the role of the pharmacists has expanded beyond a reference source of factual information. This research suggested that medication information provided by pharmacists serve a variety of functions for patients to apply in the decision making process. However, future

research is needed to determine the actual function of information provided by pharmacists within a patient's decision making. This type of research could be conducted of the pharmacist alone, the patient alone, or patient-provider dyads. A series of interviews over time or data collected in the form of recall diaries would provide longitudinal data to help further extend this research.

Another area of future research would be to continue this investigation in a solely older adult population. This study supports that older adults are the demographic who tend to talk with health professionals and family members the most about medication information. A large-scale survey, using themes and subthemes identified in this qualitative research could be conducted in older adults to provide a more generalizable picture for the behaviors of older adults with respect to medication information seeking behavior and the use of or reliance on social networks.

Finally, this research did not collect data related to the ethnicity or culture of the subjects interviewed. Future research could conduct similar studies focusing on specific patient ethnicities to understand if ideas of race and culture influence information seeking behavior patterns of patients, particularly with respect to use of social network contacts.

In conclusion, the previously mentioned recommendations for future research could provide valuable insight into patient's medication information seeking behaviors, and lead to important contributions to research domains related to patient care and medication outcomes, pharmacy practice, health communication, and information seeking behavior.

APPENDIX A
DEFINITION OF STUDY TERMINOLOGY

Activated Ties: those people who a person contacted in the case of a specific scenario; a new or specific contact for social support

"Ecomap:"   The ecological map or 'ecomap' is a clinical tool to describe the structure and other details of family or social relationships

Formal social networks: describes personal contacts that act as organized circuits of information and where interaction usually occurs in a planned or structured setting (e.g. health systems, government, teachers, employers)

Health Communication: "The art and technique of informing, influencing, and motivating individual, institutional, and public audiences about important health issues. The scope of health communication includes disease prevention, health promotion, health care policy, and the business of health care as well as enhancement of the quality of life and health of individuals within the community" (Parrott, 2004).

Health Information: Often referred to as 'consumer health information' carrying an implied meaning for any information that the public may use to learn about, make decisions of, or apply to scenarios regarding health behavior as well as the prevention or treatment of disease.

Health Information Seeking Behavior: A participatory action taken by individuals to obtain information relevant to their health care (Stavri, 2001).

Informal social networks: describes personal contacts that comprise causal or spontaneous sources of information and interaction usually occurs in an unplanned or unstructured setting (e.g. family, friends, or acquaintances)

Information: "Any difference that makes a difference to a conscious human mind." (Case, 2007)

Information Behavior: "The totality of human behavior in relation to sources and channels of information, including both active and passive information seeking behavior, and information use. Thus, it includes face-to-face communication with others, as well as the passive reception of information as in, for example, watching television advertisements, without any intention to act on the information given." (Wilson, 2000)

Information Seeking Behavior: "The purposive seeking of information in relation to a goal." (Spink & Cole, 2006)

Latent Ties: general social contacts that a person may identify with whom they choose to discuss important matters; "usual" source of social support

Lay Ties: interpersonal relations and social contacts with those persons outside of the healthcare system (e.g. family, friends, and acquaintances)

Medication Information: In a consumer context, a description for the type of information patients obtain to learn, make decisions, and engage in management of their medication therapy. May include things such as adverse effects, cost, or effectiveness.

Medication Use Experience: Describes both subjective and objective details surrounding one's use of medication. These details may include, but are not limited to such things as feelings or attitudes, choices or decisions, circumstances or context as well as treatment outcomes related to taking one or more medications.

Professional Ties: refers to the "formal" or social contacts "inside" the healthcare system (e.g. physician, pharmacist, or nurse)

Social networks: conceptual structures that characterize a set of relationships

Social network analysis: a type of methodology to help understand the behavioral phenomena of resource exchange between personal and organizational relationships

Social support: it is a type of 'resource' that a person will have available or perceive to have available from their social contacts

Strong Ties: A type of categorization for the ties in a social networks describing the relations including, but not limited to family or friends

Weak Ties: A type of categorization for the ties in a social networks describing the relations between acquaintances or distant contacts

APPENDIX B
STUDY RECRUITMENT POSTING

VOLUNTEERS SOUGHT FOR RESEARCH STUDY

Marcia Worley, Ph.D. a professor and Andrea Kjos, Pharm.D. a graduate student, both from the University of Minnesota, are seeking approximately 50 volunteers to participate in a research study they are conducting. Volunteers must be at least 18 years of age.

The goal of the study is to better understand how people use their family, friends or other acquaintances to learn about information surround health and medications.

Volunteers would be asked to sit for one interview to discuss their experiences with the ways that family, friends or others have shaped their experiences with their health and medications as well as recount times when they have sought information about medications. Each interview will last about 1 hour. Volunteers will receive a $35.00 gift card to a retail or grocery store.

Interested persons should contact Andrea Kjos at kjos0023@umn.edu or 612-624-6105.

Please leave a message which includes your first name and a phone number where you can be reached.

APPENDIX C
STUDY RECRUITMENT FOLLOW-UP LETTER

September/October 2008

Dear _____:

Thank you for volunteering to participate in a study concerning the role of family and friends when seeking health information. The information you provide will help us learn about how people use "others" as a resource when learning about their health and medications.

You volunteered to participate on _____ ___, 2008 from ____ to ____. The interview will be held at:

If for some reason you availability has changed, please call as soon as possible to cancel or reschedule your interview. If you have any questions, please call my office at 612-624-6105.

I look forward to meeting you.

Sincerely,

Andrea L. Kjos, Pharm.D.
Graduate Student

APPENDIX D
STUDY CONSENT FORM

The Role of Social Networks in Medication Information Seeking Behavior

You are invited to be in a research study to explore the roles of family and friends when you seek health information. The information you provide will help us learn about how people rely upon other people as a resource when learning about their health and medications. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by: Marcia Worley, Ph.D. and Andrea Kjos, Pharm.D. in the College of Pharmacy at the University of Minnesota.

Background Information

The purpose of this study will be to describe how patients use family, friends and acquaintances to obtain information about medicines. Understanding how family, friends and acquaintances shape patient experiences with their health and medications will help pharmacists and other providers assist patients in making health care decisions.

Procedures:

If you agree to be in this study, we will ask you to participate in a personal interview that will last about 1 hour. The interview will be audio recorded.

Risks and Benefits of being in the Study:

This study has no risks involved, except for the potential stress of discussing your past experiences about your health, illnesses, and medications. Subjects will be encouraged to share both positive and negative experiences related to health situations. There are no benefits directly to the subject, but there could be societal benefits someday.

Compensation:

You will receive payment with a $35.00 gift card to a retail merchandiser or grocery store upon completion of the interview.

Confidentiality:

The records of this study will be kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify a subject. Research records will be stored securely and only researchers will have access to the records. We will tape record the session because we do not want to miss any of your comments.

Recorded interviews will be stored securely and only researchers will have access to them.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota, Fairview, or Snyders Drug Stores. If you decide to participate, you are free to not answer any question or withdraw at any time with out affecting those relationships.

Contacts and Questions:

The researchers conducting this study are: Andrea Kjos and Marcia Worley. You may ask any questions you have now. If you have questions later, you are encouraged to contact Marcia Worley at the University of Minnesota College of Pharmacy - Duluth 211 Life Science; 1110 Kirby Drive Duluth, MN 55812-3003, (218) 726-6006, worl0016@d.umn.edu or Andrea Kjos at the University of Minnesota College of Pharmacy – Twin Cities 7-170 Weaver Densford Hall, 308 Harvard St. SE, Minneapolis, MN 55455, (612) 624-6105, kjos0023@umn.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

You will be given a copy of this information to keep for your records.

Statement of Consent:

I have read the above information. I have asked questions and have received answers. I consent to participate in the study. If I am receiving this form in the mail, I will return it to the researcher at the time of the interview.

Signature: _____Date: _____

Signature of Investigator: _____Date: _____

APPENDIX E
STUDY INTERVIEW SCRIPT WITH ECOMAP EXAMPLE

General Introduction

Greetings_____, thank you very much for agreeing to be interviewed today! My name

is Andrea Kjos and I am a graduate student at the University of Minnesota College of

Pharmacy. I am also licensed as a pharmacist and have several years of experience

talking with people about medications. I am working on a research project that is looking

at how people use <u>others</u> in their life as a resource for health information related to the

medications they take.

The interview for today has three parts. The first part will ask a few questions all about

you – such as where you went to school, your age, and the medications you take. The

second part will ask you to think about all the people in your life and how you would

describe your social connections. The third part will ask about certain times you have

used other people to help you get the health information you were seeking.

PART I

Individual Characteristics Questions (5-10 minutes)

    1.) What year were you born?

    2.) Where was the last place you attended school?

    3.) Are you currently working?

    4.) What is/was your occupation?

    5.) Do you live in a city, a suburb or in a rural area?

    6.) Describe your health in your own words.

Probe: On a scale of 1 to 10, with 10 being perfect health and 1 being the sickest

you can imagine – how do you rate your health?

7.) What medications do you take?

8.) What are your thoughts on the medications you take?

Probe: Do you have any problems with them? Have they made a positive impact

on your life? Have they made a negative impact on your life?

9.) What kinds of experiences have you had with your medication treatments?

Probe: Either successful or problematic?

PART II

Main Questions on Social Networks (10-15 minutes)

Introduction

Now I would like to discuss the people you surround yourself with and talk to the most.

Take a minute to think about the people in your life. They may be people you consider

"important" or just casual acquaintances. Sometimes we see people often and sometimes

we only see these people occasionally. Also, think about <u>formal</u> conversations you have

such as a telephone call or a doctors appointment as well as <u>informal</u> conversations like at

a party or passing on the street.   *No response necessary.*

I will next provide you with the opportunity to complete a short exercise to help you

visualize your social "solar system." The exercise will be creating an "Ecomap."

Subject will be prompted for interest in completing the Ecomap Exercise.

Ecomap Exercise

I have provided you with an example of an "ecomap".   An ecomap is a diagram of your

social "solar system."   On the sheet of paper provided, draw an ecomap of the people in

your life. It is OK to use my ecomap to guide you. List what the person's relation to

you, such as spouse, neighbor, or co-workers. The people in your ecomap might be

people you often discuss important matters with or perhaps more trivial matters. Try to

be as comprehensive as you can and list everyone you can think of. One strategy that

may be helpful to begin is to place the people you talk to the most and that you consider

the "most important", closest to your circle in the center and people you talk to less

further away. (10 minutes)

>**Follow-Up**: For example, you might include family members, friends, neighbors,
>
>coworkers. As well as your health providers, such as physicians, nurse

practitioners, clinic nurses, pharmacists or counselors.

>**Transition**: You will use your ecomap to help you answer the questions in the

next part of the interview.

Alternate to Ecomap Exercise

 If a subject prefers not to complete the Ecomap Exercise or is having trouble

understanding the concept, the interview will be permitted to continue. The role of the

Ecomap is only to help subjects recall their social network and more formally describe

their social network structure. The questions will be adjusted so that the subject will

strictly answer questions related to "thinking about the people you talk to in your life."

1.) After reviewing the individuals you have just thought about and/or written down –

A. Who are the people you talk to most frequently? AND Who are your family and closest friends?

B. When you are in a crisis or must make a big decision, who do you talk to?

C. Who are the "experts" or "professionals" in your life that you go to for information?   OR With whom in your social network do you consider your relationship a "professional" one?

D. Who are the people you consider acquaintances and see or talk to less often?

2.) With whom to you talk about health matters in general?

3.) With whom do you discuss your medications?

3a.) Why do you choose to discuss things with these people?

PART III

Medication Information Narrative Accounts (20-40 minutes)

Next, I would like you to think about a time when you have needed information about a medication. Maybe it was after something had been recommended for you, before you stopped taking a medication or if you needed to change a medication. These times of starting, stopping, and changing are often when people seek information to help make a good decision.

(If person is <u>not currently taking medications</u>, (answered in Part 1) read the following:

Even if you don't currently take medications, you can think about a time when medications were involved in your treatment. For example, what pain medication you

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desired for having your wisdom teeth out, or during the birth of a child. Think about

times when you asked for or were given information on medication options.

1.) Tell me about a time when you talked with <u>someone</u> about a medication.   (Use your

ecomap help you think about who you might have talked to.)

       A. Who did you talk to?

       B. What things did you discuss?

           Probe: Was this "factual" information or someone's opinion?

           Probe: Was it based on someone's personal experience?

       C. Was the medication something you take or were thinking about taking?

2.) Repeat Question 1 if subject has more to share and time allows.

3.) Tell me about a time when you, <u>on your own</u>, searched for information about a

medication.

       A. What did you do?

       B. What kind of information were you looking for?

       C. Was the information for you or someone else?

       D. Who did you talk to? Use your eco-map to guide your memory.

       E. How did you use the information you obtained from this person?

           Probe: Did it change any of your decisions?

           Probe: Did it reinforce something you already knew?

4.) Describe a time when someone <u>else</u> has sought medication information from you.

Follow-Up*: At this point, if they have not talked about a <u>lay social contact</u> as a source of information, ask the following question.*

5.) Similar to your experiences, many people get medication information from health professionals. However, can you tell me about a time when you discussed your medication with someone outside of health care, like a family member or a friend?

     A. Who was it?

     B. Where did you talk?

     C. What kinds of things did you discuss?

     E. How did you use the information you obtained from this person?

          Probe: Did it change any of your decisions?

          Probe: Did it reinforce something you already knew?

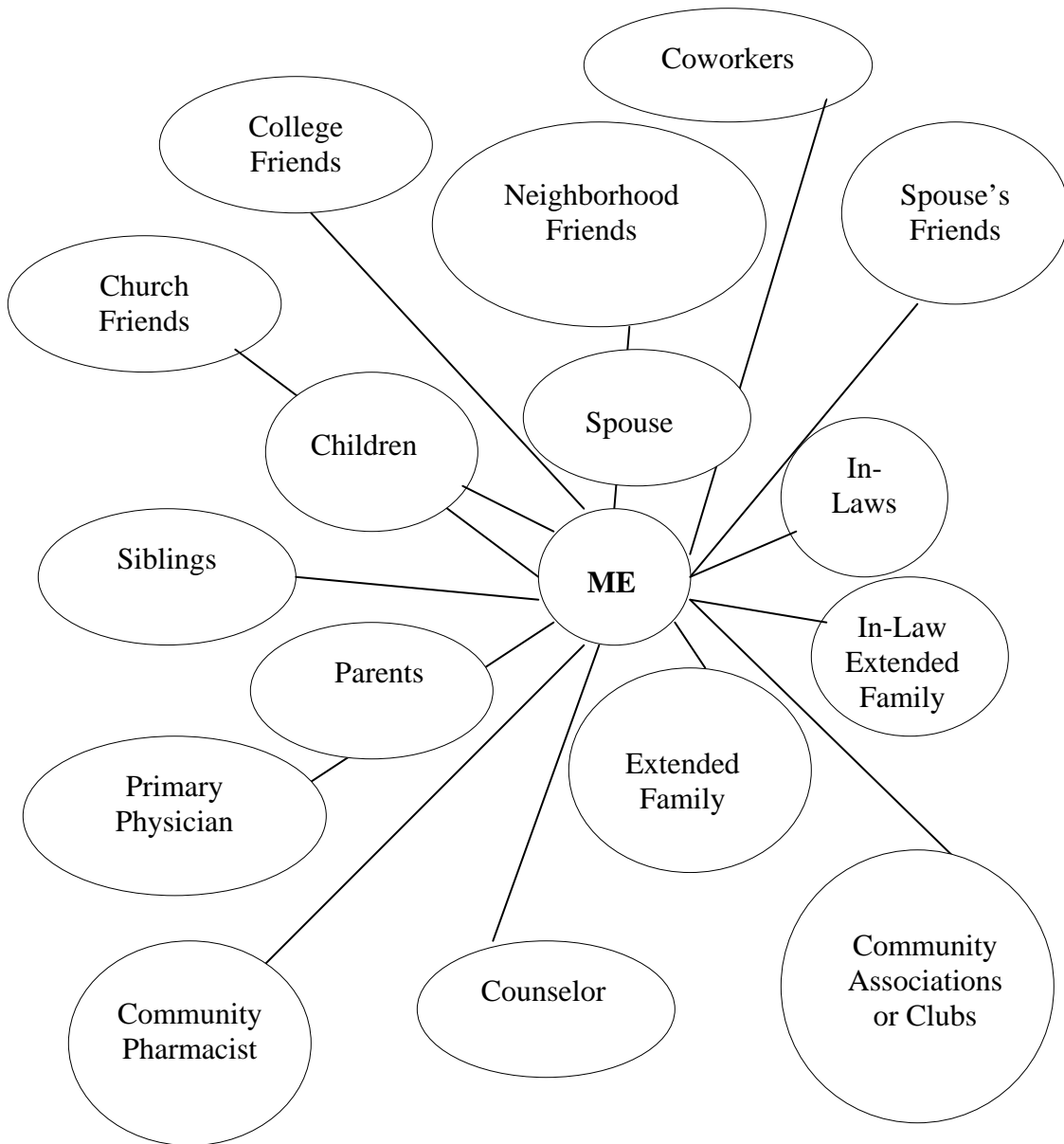   **Probe**: Did you share this information with a health care professional?

            If yes, who?

6.) Repeat Question 5 if subject has more to share and time allows.
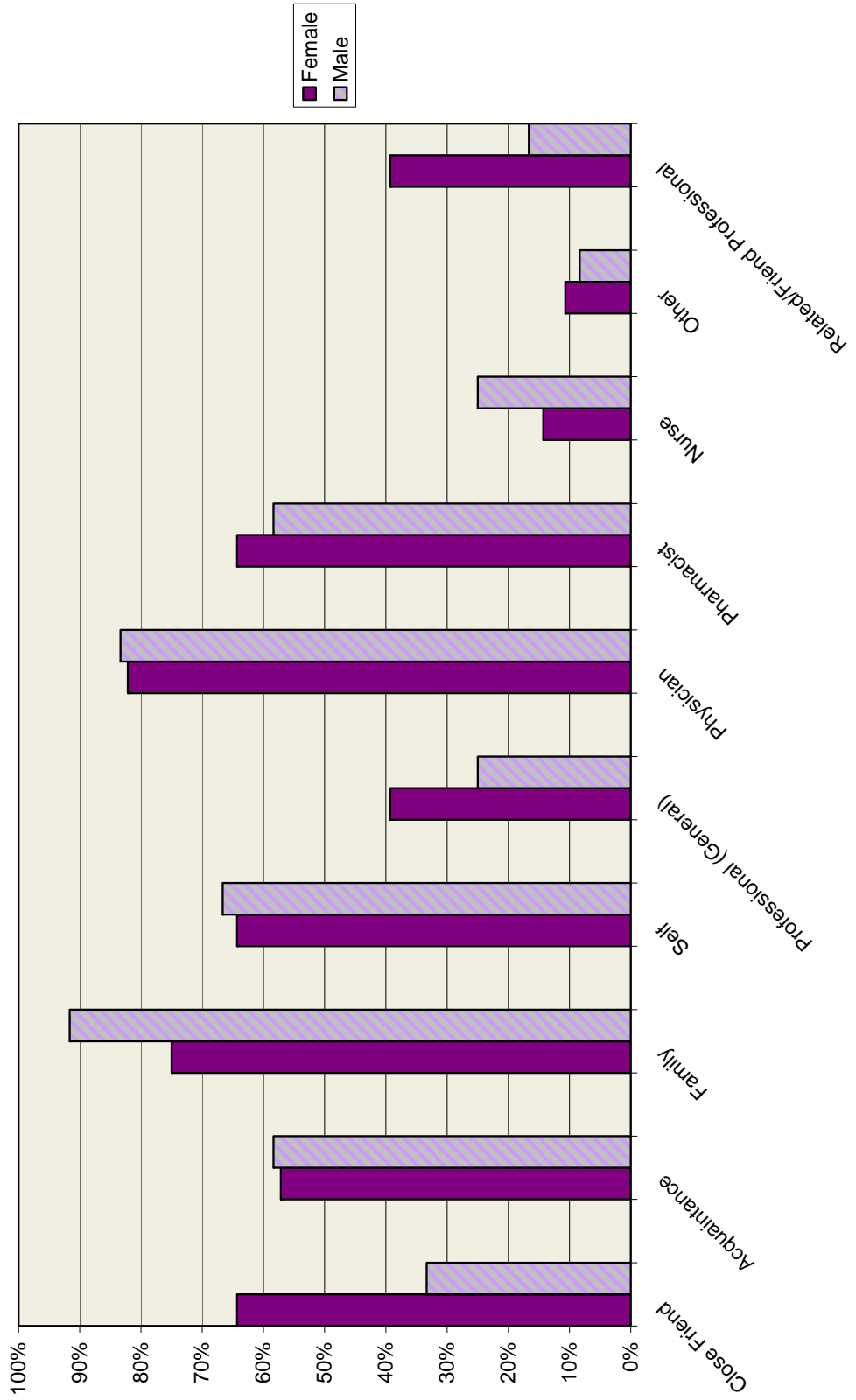
Total Time Estimate: 35 – 60 minutes

ECOMAP EXAMPLE

Coworkers

College
Friends

Neighborhood
Friends

Spouse's
Friends

Church
Friends

Children

Spouse

In-
Laws

Siblings

ME

In-Law
Extended
Family

Parents

Extended
Family

Primary
Physician

Community
Pharmacist

Counselor

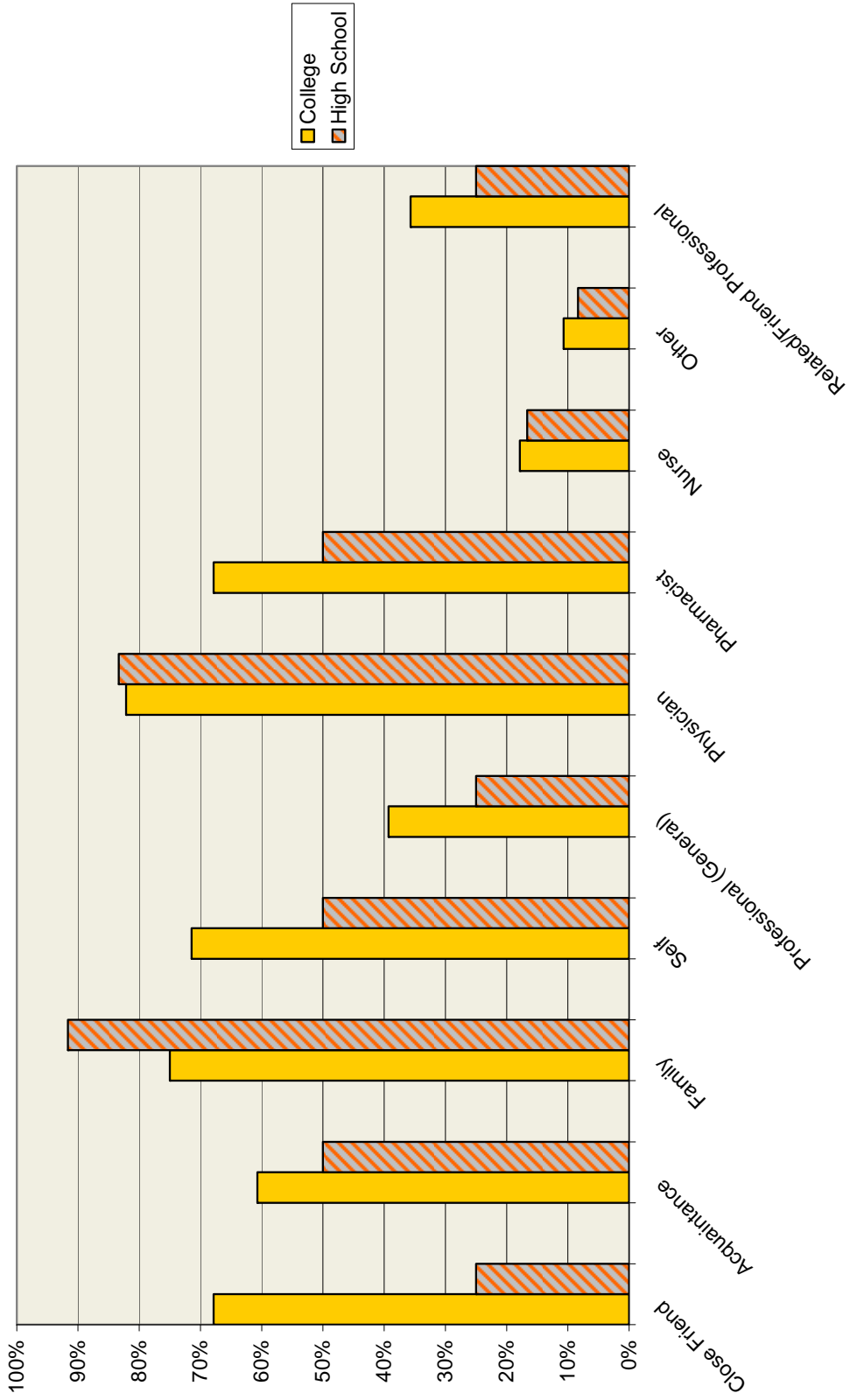Community
Associations
or Clubs

APPENDIX F
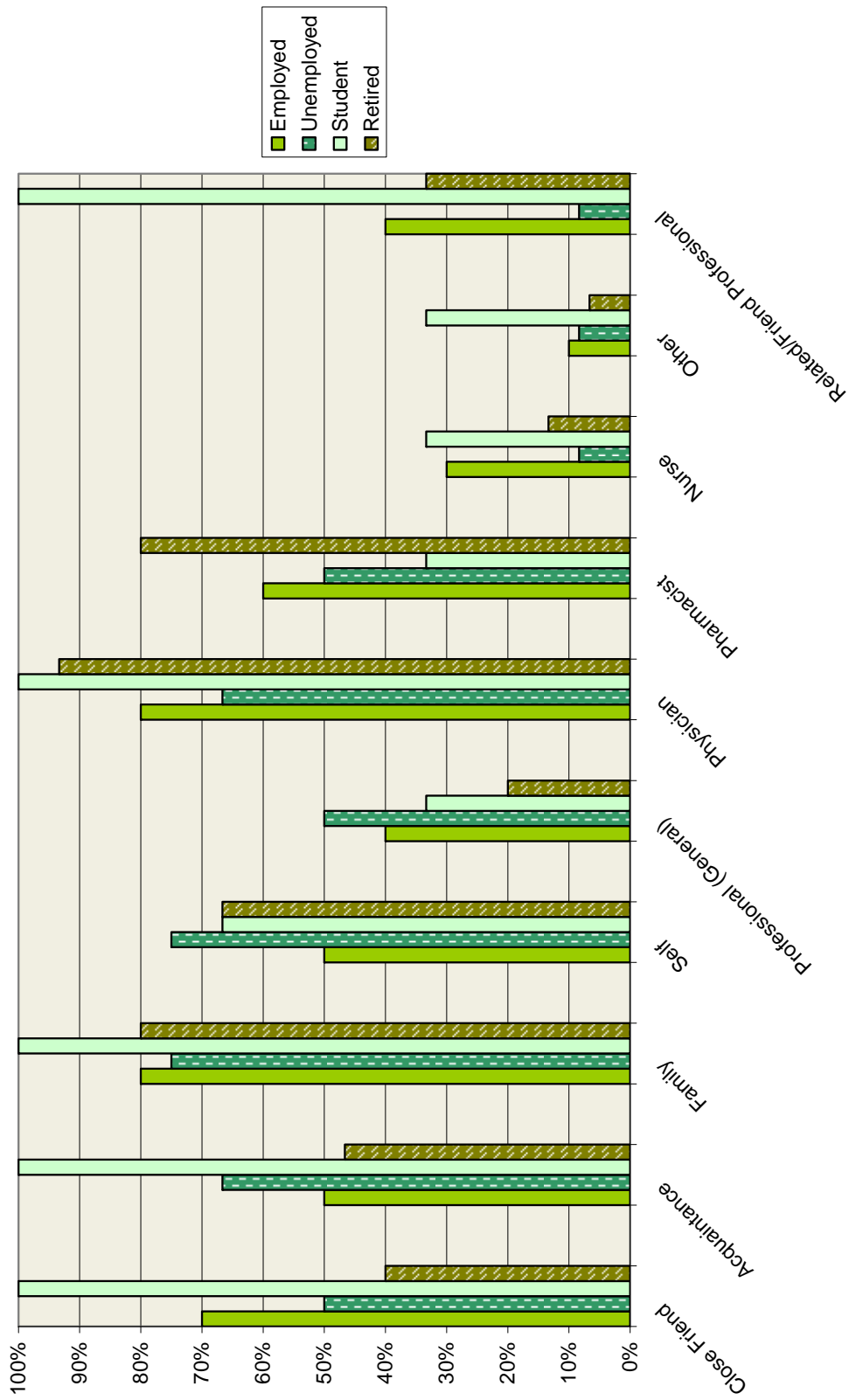INDIVIDUAL CHARACTERISTIC CHARTS BASED ON TABLE 14

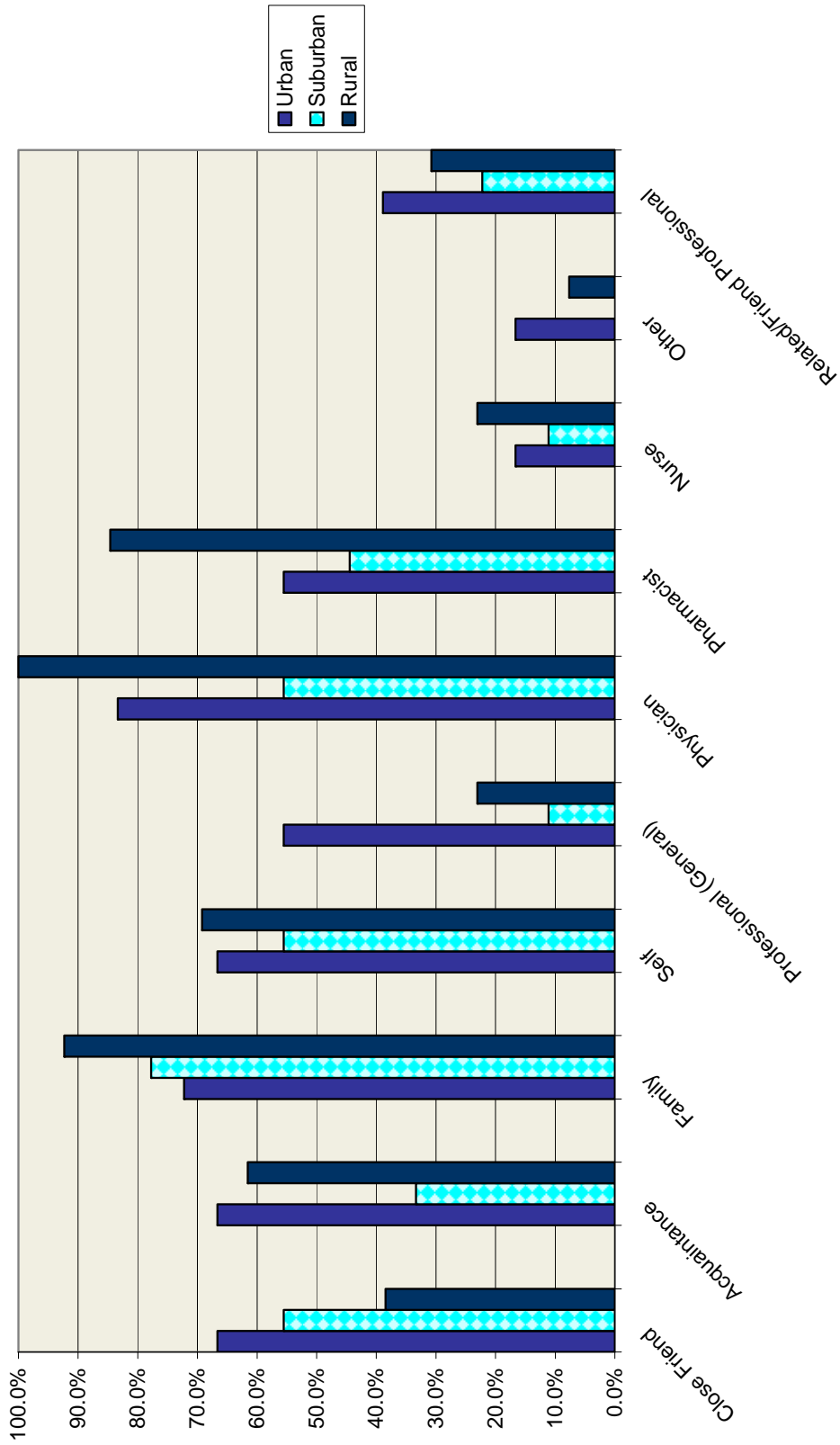**Gender by Social Network Contact for Medication Information Seeking Incidents**

Education Level by Social Network Contact for Medication Information Seeking Incidents
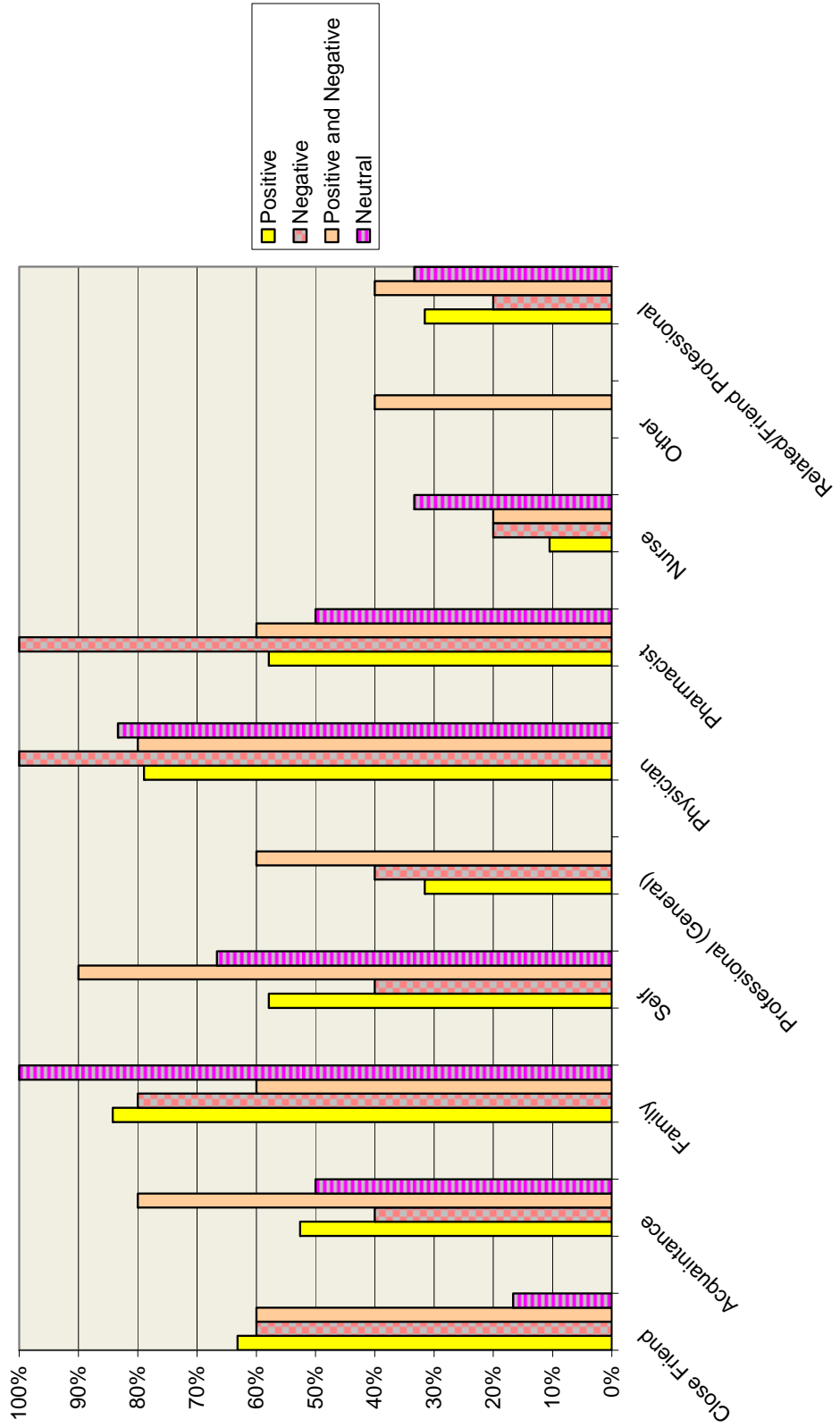
Legend:
- College
- High School

X-axis categories (left to right): Close Friend, Acquaintance, Family, Self, Professional (General), Physician, Pharmacist, Nurse, Other, Related/Friend Professional

Y-axis: 0% to 100%

Work Status by Social Network Contact for Medication Information Seeking Incidents

Legend: Employed, Unemployed, Student, Retired

Categories: Close Friend, Acquaintance, Family, Self, Professional (General), Physician, Pharmacist, Nurse, Other, Related/Friend Professional

Geographic Residence by Social Network Contact for Medication Information Seeking Incidents

Legend: Urban, Suburban, Rural

Categories: Close Friend, Acquaintance, Family, Self, Professional (General), Physician, Pharmacist, Nurse, Other, Related/Friend Professional

Attitude Toward Medication by Social Network Contact for Medication Information Seeking Incidents

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Medication Experience by Social Network Contact for Medication Information Seeking Incidents
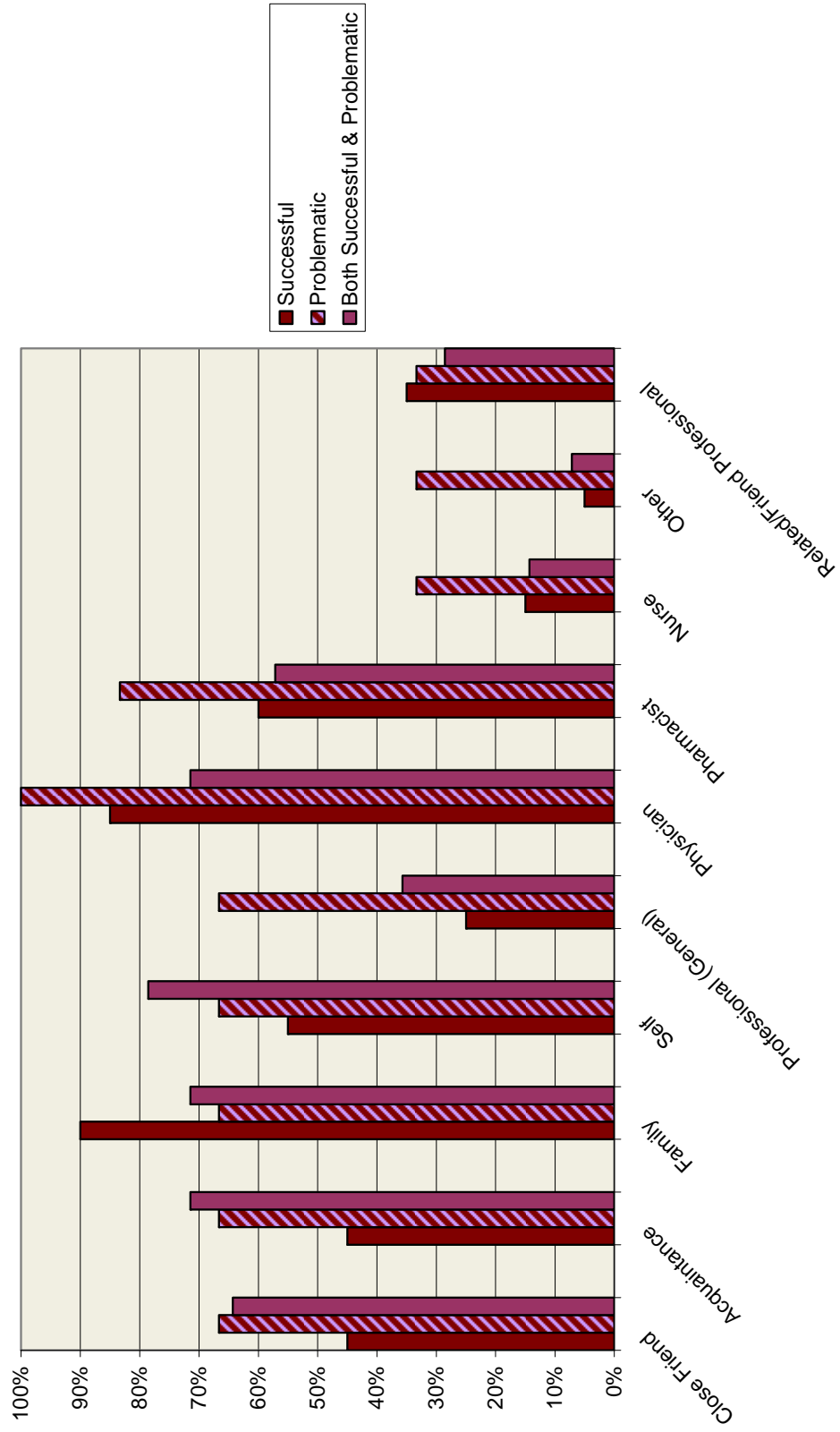
REFERENCES

Agadjanian, V. (2002). Informal social networks and epidemic prevention in a third world context: cholera and HIV/AIDS compared. In J.A. Levy & B.A. Pescosolido (Eds.), *Social Networks and Health. Volume 8*, (pp 201-221). Boston: Elsevier Science Ltd.

Al-Saffar, N., Abdulkareem, A., Salah, A.Q., & Heba, M. (2008). Depressed patients' preferences for education about medications by pharmacists in Kuwait. *Patient Education & Counseling*, *72*(1), 94-101.

Altheide, D.L. (1987). Ethnographic content analysis. *Qualitative Sociology, 10*, 65-77.

Altheide, D.L. (1996). *Qualitative Media Analysis: Qualitative Research Methods Series*, Volume 38. Thousand Oaks: Sage.

Altheide, D.L. (2003). Ethnographic content analysis. In: M.S. Lewis Beck, A. Bryman & T.F. Liao (Eds.), *The Sage Encyclopedia of Social Science Research Methods*, Thousand Oaks: Sage. Retrieved February 15, 2009, from http://www.sage-ereference.com.floyd.lib.umn.edu/socialscience/Article_n292.html.

Amerson, A.B., & Gora-Harper, M.L. (2001). Introduction to the Concept of Medication Information. In P.M. Malone, K. Wilkinson Mosdell, K.L. Lier, & J.E. Stanovich (Eds.). *Drug Information: A Guide for Pharmacists*, 2nd Edition. (pp. 1-18). New York: McGraw-Hill.

Ankem, K. (2006). Factors influencing information needs among cancer patients: A meta-analysis. *Library & Information Science Research, 28*, 7-23.

Atkin, C. (1973). Instrumental utilities and information-seeking. In P. Clarke (Ed.), *New Models for Mass Communication Research* (pp. 205-242). Beverly Hills: Sage.

Baker, L.M. (1995). A new method for studying patient information needs and information-seeking patterns. *Topics in Health Information Management*, *16*, 19-28.

 Baker, L.M. & Pettigrew, K.E. (1999). Theories for practitioners: two frameworks for studying consumer health information seeking behavior. *Bulletin of the Medical Library Association, 87*(4), 444-450.

Baker, L.M., Wilson, F.L., Nordstrom, C.K., & Legwand, C. (2007). Mothers' knowledge and information needs relating to childhood immunizations. *Issues in Comprehensive Pediatric Nursing, 30*, 39-53.

Bates, J.A. (2004). Use of narrative interviewing in everyday information behavior research. *Library and Information Science Research, 26*, 15-28.

Bateson, G. (1972). *Steps to an ecology of mind*. New York: Ballantine Books.

Bawden, D. (2006). Users, user studies and human information behavior. *Journal of Documentation, 62*(6), 671-679.

Bazeley, P. (2007). *Qualitative Data Analysis with NVivo*. Thousand Oaks: Sage.

Birkel, R.C., & Reppucci, N.D. (1983). Social networks, information-seeking, and the utilization of services. *American Journal of Community Psychology, 11*(2),185-205.

Blay, N., & Donoghue, J. (2006). Source and content of health information for patients undergoing laparoscopic cholecystectomy. *International Journal of Nursing Practice, 12*, 64-70.

Boyatzis, R.E. (1998). *Transforming Qualitative Information: Thematic analysis and code development*. Thousand Oaks: Sage.

Brashers, D.E., Goldsmith, D.J., & Hsieh, E. (2002). Information seeking and avoiding in health contexts. *Human Communication Research, 28*(2), 258-271.

Brewer, D.D. (2000). Forgetting in the recall-based elicitation of personal and social networks. *Social Networks, 22,* 29-43.

Brewer, D.D., Garrett, S.B., Rinaldi, G. (2002). Patterns in the recall of sexual and drug injection partners. In J.A. Levy, & B.A. Pescosolido, (Eds.). *Social Networks and Health. Volume 8,* (pp. 131-149). Boston: Elsevier Science Ltd.

Brown, J.B., Carroll, J., Boon, H., & Marmoreo, J. (2002). Women's decision-making about their health care: views over the life cycle. *Patient Education and Counseling, 48*, 225-231.

Carlsson, M. (2000). Cancer patients seeking information from sources outside the health care system. *Supportive Care in Cancer*, *8*, 453-457.

Case, D.O. (2007) *Looking for Information: A survey of research on information seeking, needs and behavior*. 2nd Ed. Boston: Elsevier-Academic Press.

Chia, H., & Foo, M. (2006). Workplaces as communities: the role of social networks in who seeks, gives, and accepts information on justice issues. *Journal of Community Psychology, 34*(3), 363-377.

Chiu, L.F., & West, R.M. (2007). Health intervention in social context: understanding social networks and neighbourhood. *Social Science and Medicine, 65*, 1915-1927.

Cline, R.J.W. & Haynes, K.M. (2001). Consumer health information seeking on the Internet: the state of the art. Health Education Research, 16, 6: 671-692.

Cline, R.J.W. (2003) Everyday Interpersonal Communication In T.L. Thompson, A.M. Dorsey, K.I. Miller, & R. Parrott (Eds.). *Handbook of Health Communication* (pp 285-311). Mahwah, NJ: Lawrence Erlbaum Associates.

Cohen, S., & Lemay, E.P. (2007). Why would social networks be linked to affect and health practices? *Health Psychology, 26*(4), 410-417.

Cotton, S.R., & Gupta, S.S. (2004). Characteristics of online and offline health information seekers and factors that discriminate between them. *Social Science and Medicine*, 59, 1795-1806.

Courtright, C. (2005). Health information-seeking among Latino newcomers: an exploratory study. *Information Research* (online), 10(2). Retrieved November 11, 2007, from http://informationr.net/ir/10-2/paper224.html.

Cravey, A.J., Washburn, S.A., Gesler, W.M., Arcury, T.A., & Skelly, A.J. (2001). Developing socio-spacial knowledge networks: a qualitative methodology for chronic disease prevention. *Social Science and Medicine, 52*, 1763-1775.

Cross, R., Rice, R.E., & Parker, A. (2001). Information seeking in social context: structural influences and receipt of information benefits. *IEEE Transactions on Systems, Man, and Cybernetics – Part C: Applications and Reviews, 31*(4), 438-448.

Czaja, R., Manfredi, C., & Price, J. (2003). The determinants and consequences of information seeking among cancer patients. *Journal of Health Communication, 8*, 529-562.

Dervin, B. (1992). From the mind's eye of the user: The sense-making qualitative-quantitative methodology. In J. Glazier & R. Powell (Eds.). *Qualitative Research in Information Management* (pp. 61-84). Englewood, CO: Libraries Unlimited.

DeVito, A.J., Bogdanowicz, J., & Reznikoff, M. (1982). Actual and intended health-related information seeking and health locus of control. *Journal of Personality Assessment, 46*(1), 63-69.

Dixon-Woods, M., Angell, E., Ashcroft, R.E., & Bryman, A. (2007). Written work: The social function of Research Ethics Committee letters. *Social Science and Medicine, 65*, 792-802.

Donabedian, A. (1966). Evaluating the Quality of Medical Care, Part 2: Health Services Research I. *The Milbank Memorial Fund Quarterly, 44*(3), 166-206.

Doty, B., Zuckerman, R., Finlayson, S., Jenkins, P., Rieb, N., & Heneghan, S. (2008) How does degree of rurality impact the provision of surgical services at rural hospitals? *Journal of Rural Health. 24*(3), 306-10.

Dutta-Bergman, M.J. (2004a). Primary sources of health information: comparisons in the domain of health attitudes, health cognitions, and health behaviors. *Health Communication, 16*(3), 273-288.

Dutta-Bergman, M.J. (2004b). Health attitudes, health cognitions, and health behaviors among Internet health information seekers: population-based survey. *Journal of Medical Internet Research, 6*(2).

Dutta-Bergman, MJ. (2005). Developing a profile of consumer intention to seek out additional information beyond a doctor: the role of communication and motivation variables. Health Communication, 17(1), 1-16.
Economic Research Service: United States Department of Agriculture. (2005) *Measuring Rurality: Rural-Urban Commuting Area Codes*. Retrieved December 15, 2008 from http://www.ers.usda.gov/briefing/rurality/ruralurbancommutingareas/.

Evans, M. (2007). Decisions to use complementary and alternative medicine (CAM) by male cancer patients: information-seeking roles and types of evidence used. *BioMed Central Complementary and Alternative Medicine, 7*(25).

Eysenbach, G., & Diepgen, T.L. (1999). Patients looking for information on the Internet and seeking teleadvice. *Archives of Dermatology*, *135*, 151-156.

Faber, A.D., & Wasserman, S. (2002). Social support and social networks: synthesis and review. In J.A. Levy, & B.A. Pescosolido, (Eds.). *Social Networks and Health. Volume 8,* (pp. 29-72). Boston: Elsevier Science Ltd.

Flynn, D.A. (2005). Seeking peer assistance: use of e-mail to consult weak and latent ties. *Library and Information Science Research, 27*, 73-96.

Friis, L.S., Elverdam, B., & Schmidt, K.G. (2003). The patient's perspective: A qualitative study of acute myeloid leukemia patients' need for information and their information-seeking behavior. *Supportive Care in Cancer, 11*, 162-170.

Gallant, M.P., Spitze, G.D., & Prohaska, T.R. (2007). Help or Hindrance? How family and friends influence chronic illness self-management among older adults. *Research on Aging, 29*(5), 375-409.

Gassner, L., Dunn, S., & Piller, N. (2002). Patients' interpretation of the symptoms of myocardial infarction: implications for cardiac rehabilitation. *Intensive and Critical Care Nursing, 18*, 342-354.

Granovetter, M.S. (1973). The strength of weak ties. *American Journal of Sociology, 78*, 1360-1380.

Granovetter, M.S. (1982). The strength of weak ties: a network theory revisited. In P.V. Marsden & N. Lin (Eds.). *Social Structure and Network Analysis* (pp 105-130). Beverly Hills, CA: Sage Publications.

Gray, N.J., Klein, J.D., Noyce, P.R., Sesselberg, T.S., & Cantrill, J.A. (2005). Health information-seeking behaviour in adolescence: the place of the internet. *Social Science and Medicine, 60*, 1467-1478.

Gore, P., & Madhavan, S. (1993). Credibility of the sources of information for non-prescription medicines. *Journal of Social and Administrative Pharmacy, 10*(3), 109-122.

Gollop, C.J. (1997). Health information-seeking behavior and older African American women. *Bulletin of the Medical Library Association, 85*(2), 141-146.

Gorman, G.E., & Clayton, P. (2005). *Qualitative research for the information professional: a practical handbook*. London, Facet Publishing.

Golafshani, N. (2003). Understanding reliability and Validity in Qualitative Research. *The Qualitative Report, 8*(4), 597-607.

Hardy, M., & Bryman, A. (2004). *Handbook of Data Analysis*. Thousand Oaks: Sage.

Hawkins, R.L., & Abrams, C. (2007). Disappearing acts: the social networks of formerly homeless individuals with co-occurring disorders. *Social Science and Medicine, 65*, 2031-2042.

Haythornthwaite, C. (1996). Social Network Analysis: An Approach and Technique for the Study of Information Exchange. *Library and Information Science Research, 18*, 323-342.

Hoepfl, M. (1997). Choosing qualitative research: A primer for technology education researchers. *Journal of Technology Education, 9*(1), 47-63.

Issle, L.M. (2000). Women's Perceptions of Outcomes of Prenatal Case Management. *Birth, 27*(2), 120-126.

Jinnett, K., Coulter, I., & Koegel, P. (2002). Cases, context, and care: the need for grounded network analysis. In J.A. Levy, & B.A. Pescosolido (Eds.). *Social Networks and Health. Volume 8,* (pp 101-110). Boston: Elsevier Science Ltd.

Johnson, J.D. (1997). *Cancer-related information seeking*. Cresskill, NJ: Hampton Press.

Johnson, J.D., Case, D.O., Andrews, J.E., & Allard, S.L. (2005). Genomics – The perfect information seeking research problem. *Journal of Health Communication, 10*, 323-329.

Johnson, P.H., & Kittleson, M.J. (2003). A qualitative exploration of health behaviors and the associated factors among university students from different cultures. *The International Electronic Journal of Health Education*, 6, 14-25.

Kalichman, S.C., Benotsch, E.G., Weinhardt, L., Austin, J., Luke, W., & Cherry, C. (2003). Health-related Internet use, coping, social support, and health indicators in people living with HIV/AIDS: preliminary results from a community survey. *Health Psychology, 22*(1), 111-116.

Kelly, K.M., Andrews, J.E., Case, D.O., Allard, S.L., & Johnson, J.D. (2007). Information seeking and intentions to have genetic testing for hereditary cancers in rural and Appalachian Kentuckians. *Journal of Rural Health, 23*(2), 166-172.

Kincaid, D.L. (2000). Social networks, ideation, and contraceptive behavior in Bangladesh: a longitudinal analysis. *Social Science and Medicine, 50*, 215-231.

Knaus, C.S. (2000). The ability of the AIDS quilt to motivate information seeking, personal discussion, and prevention behavior as a health communication intervention. *Health Communication, 12*(3), 301-316.

Knobloch, L.K., & Solomon, D.H. (2002). Information seeking beyond initial interaction. *Human Communication Research, 28*(2), 243-257.

Knoke, D., & Kuklinski, J. H. (1982). *Network Analysis*. Beverly Hills: Sage Publications.

Kreps, G.L., & Thornton, B.C. (1984). *Health Communication*. White Plains, N.Y: Longman Inc.

Kuhlthau, C.C. (1991). Inside the search process: Information seeking from the user's perspective. *Journal of the American Society for Information Science, 42*,5, 361-371.

Kvale, S. (1996). *Interviews: an introduction to qualitative research interviewing*. Thousand Oaks, CA. Sage Publications.

Larner, A.J. (2006). Searching the Internet for medical information: frequency over time and by age and gender in an outpatient population in the UK. *Journal of Telemedicine & Telecare, 12*(4), 186-8.

Lenz, E.R. (1984). Information seeking: a component of client decisions and health behavior. *Advances in Nursing Science, 6*(3), 59-72.

Levy, J.A., & Pescosolido, B.A. (*Eds*). (2002). *Social Networks and Health. Volume 8*, Oxford, UK: Elsevier Science Ltd.

Liu, Y., Doucette, W.R., Farris, K.B., & Nayakankuppam, D. (2005). Drug information-seeking intention and behavior after exposure to direct-to-consumer advertisement of prescription drugs. *Research in Social and Administrative Pharmacy, 1*, 251-269.

Longo, D.R. (2005). Understanding health information, communication, and information seeking of patients and consumers: a comprehensive and integrated model. *Health Expectations, 8*, 189-194.

Lu, Y. (2007). The human in human information acquisition: Understanding gatekeeping and proposing new directions in scholarship. *Library and Information Science Research, 29*, 103-123.

Malone, M., Mathes, L., Dooley, J., & While, A.E. (2005). Health information seeking and its effect on the doctor-patient digital divide. *Journal of Telemedicine and Telecare, 11*(S1), 25-28.

Mayer, D.K., Terrin, N.C., Kreps, G.L., Menon, U., McCance, K., Parsons, S.K., & Mooney, K.H. (2007). Cancer survivors' information seeking behaviors: A comparison of survivors who do and do not seek information about cancer. *Patient Education and Counseling, 65*, 342-350.

Mazor, K.M., Baril, J., Dugan, E., Spencer, F., Burgwinkle, P., & Gurwitz, J.H. (2007). Patient education about anticoagulant medication: Is narrative evidence or statistical evidence more effective? *Patient Education and Counseling, 69*, 145-157.

Meischke, H., & Johnson, D.J. (1995). Women's selection of sources for information on breast cancer detection. *Health Values, 19*, 31-38.

Miles, M.B., & Huberman, A.M. (1994). *An Expanded Sourcebook: Qualitative Data Analysis*, 2nd Edition. Thousand Oaks, Sage.

Miller. M.J., Abrams, M.A., McClintock, B., Cantrell, M.A., Dossett, C.D., McCleeary, E.M., McGee, M.J., O'Keefe, K.J., & Sager, E.R. (2008). Promoting health communication between the community-dwelling well-elderly and pharmacists: the Ask Me 3 program. *Journal of the American Pharmacists Association, 48*(6), 784-92.

Morey, O.T. (2007). Health information ties: preliminary findings on the health information seeking behaviour of an African-American community. *Information Research, 12*(2). Retrieved November 11, 2007, from http://informationr.net/ir/12-2/paper297.html.

Morris, L.A. (1982). A survey of patients' receipt of prescription drug information. *Medical Care. 20*(6), 596-605.

Morris, L.A., Grossman, R., Barkdoll, G.L., Gordon, E., & Soviero, C. (1984). A survey of patient sources of prescription drug information. *American Journal of Public Health, 74*, 1161-1162.

Morris, L.A., Grossman, R., Barkdoll, G., & Gordon, E. (1987a). A segmental analysis of prescription drug information seeking. *Medical Care, 25*(10), 953-964.

Morris, L.A., Grossman, R., Barkdoll, G., Gordon, E., & Chum, M.Y. (1987b). Information search activities among elderly prescription drug users. *Journal of Health Care Marketing, 7*(4), 5-15.

Morris, L.A., Tabak, E.R., & Olins, N.J. (1992). A segmentation analysis of prescription drug information-seeking motives among the elderly. *Journal of Public Policy & Marketing, 11*(2), 115-125.
Morris, L.A. Tabak, E.R., & Gondek, K. (1997). Counseling patients about prescribed medication: 12 year trends. *Medical Care, 35*(10), 996-1007.

Newby, D.A., Drew, A.K., & Henry, D.A. (2001). Drug information for consumers: should it be disease or medication specific? Results of a community survey. *Australian and New Zealand Journal of Public Health, 25*(6), 564-570.

O'Brien, M.R. (2004). Information-seeking behaviour among people with motor neuron disease. *British Journal of Nursing, 13*(16), 964-968.

O'Reilly, C.A. (1983). The use of information in organizational decision making: a model and some propositions. In L.L.C. Cummings & B.M. Shaw (Eds.). *Research in Organizational Behavior, Volume 5*. Greenwich, Conn: JAI Press.

Office of Disease Prevention and Health Promotion: Department of health and Human Services (2000). Health communication. In *Healthy People 2010, 2nd Edition*. (pp. 11-3 - 11-20).

Oliffe, J. (2006). Being Screened for Prostate Cancer: A Simple Blood Test or a Commitment to Treatment? *Cancer Nursing, 29*(1).

Omnibus Budget Reconciliation Act of 1990. (1992). In: P.L. 101-508; S4401, 1927(g) and OBRA 90 Regulations. *Federal Register*. November 2, 57, FR(212), 49397-49401.

Patton, M.Q. (1987). *How to Use Qualitative Methods in Evaluation*. Newbury Park, CA. Sage Publications, Inc.

Parrott, R. (2004). Emphasizing "communication" in health communication. *Journal of Communication, 54*(4), 751- 787.

Pennbridge, J., Moya, R., & Rodrigues, L. (1999). Questionnaire survey of California consumers' use and rating of sources of health care information including the Internet. *Western Journal of Medicine, 171*(5-6), 302-305.

Pescosolido, B.A. (1986). Migration, medical care preferences and the lay referral system: A network theory of role assimilation. *American Sociological Review, 51*, 4, 523-540.

Pescosolido, B.A. (1992). Beyond rational choice: the social dynamics of how people seek help. *American Journal of Sociology, 97*(4), 1096-1138.

Pescosolido, J.A., & Levy, J.A. (2002). The role of social networks in health, illness, disease and healing: the accepting present, the forgotten past, and the dangerous potential for a complacent future. In L.A. Levy, & B.A. Pescosolido (Eds.). *Social Networks and Health, Volume 8* (pp 3-25). Boston: Elsevier Science Ltd.

Pescosolido, B.A. (2006). Of Pride and Prejudice: The Role of Sociology and Social Networks in Integrating the Health Sciences. *Journal of Health and Social Behavior, 47*, 189-208.

Pettigrew, K.E. (1999). Waiting for chiropody: contextual results from an ethnographic study of the information behavior among attendees at community clinics. *Information Processing and Management 35*, 801-817.

Rakowski, W., Assaf, A.R., Lefebvre, R.C., Lasater, T.M., Niknian, M., & Carleton, R.A. (1990). Information-seeking about health in a community sample of adults: correlates and associations with other health-related practices. *Health Education Quarterly, 17*(4), 379-93.

Ray, R.A., & Street, A.F. (2005). Ecomapping: an innovative research tool for nurses. *Journal of Advanced Nursing. 50*(5), 545-52.

Rempel, G.R., Neufeld, A., & Kushner, K.E., (2007). Interactive use of genograms and ecomaps in family caregiving research. *Journal of Family Nursing. 13*(4), 403-19.

Richards, T. (2002). An intellectual history of NUD*IST and NVivo. *International Journal of Social Research Methodology, 5*(3), 199-214.

Roter, D.L., & Hall, J.A. (2006). *Doctors talking with patients/ patients talking with doctors: Improving communication in medical visits, 2nd Edition*. Westport, Connecticut: Praeger Publishers.

Rubin, H.J., & Rubin, I.S. (1995). *Qualitative interviewing: the art of hearing data*. Thousand Oaks, CA: Sage Publications.

Schatell, D., Wise, M., Klicko, K., & Becker, B.N. (2006). In-center hemodialysis patients' use of the Internet in the United States: a national survey. *American Journal of Kidney Diseases, 48*(2), 285-291.

Schatz, R., Belloto, R.J., White, D.B., & Bachmann, K. (2003). Provision of Drug Information to Patients by Pharmacists: the impact of the Omnibus Budget Reconciliation Act of 1990 a decade later. *American Journal of Therapeutics, 10*, 93-103.

Schommer, J.C., Worley, M.M. Kjos, A.L., & Schondelmeyer. S.W. (2008). A Thematic Analysis for how Patients, Prescribers, Experts, and Patient Advocates View the Process for Choosing Prescription Medications. *Research in Social and Administrative Pharmacy*. In Press.

Shannon, C. (1949). The mathematical theory of communication. In C. Shannon & W. Weaver (Eds.). *The mathematical theory of communication* (pp. 31-125). Urbana, Illinois: University of Illinois Press.
Shi, H., Nakamura, K., & Takano, T. (2004). Health values and health-information-seeking in relation to positive change of health practice among middle-ages urban men. *Preventive Medicine, 39*, 1164-1171.

Sleath, B., Roter, D., Chewning, B., & Svarstad, B. (1999). Asking questions about medication: analysis of physician-patient interactions and physician perceptions. *Medical Care, 37*(11), 1169-1173.

Sleath, B., Wurst, K., & Lowery, T. (2003). Drug Information Sources and Antidepressant Adherence. *Community Mental Health Journal, 39*(4), 359-368.

Smith, K.C., McLeod, K., & Wakefield, M. (2005). Australian Letters to the Editor on Tobacco: Triggers, Rhetoric, and Claims of Legitimate Voice. *Qualitative Health Research, 15*, 1180-1198.

Spink, A., & Cole, C. (2004). A human information behavior approach to a philosophy of information. *Library Trends, 52*(3), 617-628.

Spink, A., & Cole, C. (2006). Human information behavior: Integrating diverse approaches and information use. *Journal of the American Society for Information Science and Technology, 57*(1), 25-35.

Stark, Stacy L. (2006). *Using Network Analyst and Model Builder to Find Closest Pharmacies: Geographic Information Sciences Laboratory*. Presentation given August 8th, at University of Minnesota, Duluth.

Strauss, A.L., & Corbin, J. (1998). *Basics of Qualitative Research: Grounded Theory Procedures and Techniques, 2nd Edition*. London: Sage.

Stavri, Z. (2001). Personal health information seeking: A qualitative review of the literature. *MedInfo*, 10, 1484-8.

Talja, S., Keso, H., & Pietilainen, T. (1999). The production of 'context' in information seeking research: a metatheoretical view. *Information Processing and Management, 35*, 751-763.

Tardy, R.W., & Hale, C.L. (1998). Getting "plugged in": a network analysis of health information seeking among "Stay-at-home-moms." *Communication Monographs, 65*.

Taylor, R.S. (1968). Question-negotiation and information seeking in libraries. *College and Research Libraries, 29*, 178-194.

Tesch, R. (1990). *Qualitative Research: Analysis Types and Software tools*. New York: Falmer.

Timko, M. & Loynes, R.M.A. (1989). Market information needs for prairie farmers. *Canadian Journal of Agricultural Economics*, 37, 609-627.

Tse, T., Gemoets, D., & Rosemblat, G. (2004). Consumer Health Information Seeking; A Report to the Board of Scientific Counselors, *U.S. National Library of Medicine*, LHNCBC, (pp 5).

Tu, H.T., & Hargraves, J.L. (2003). Seeking health care information: most consumers still on the sidelines. *Findings from Center for Studying Health System Change: Issue Brief: 61*. Retrieved December 3, 2007, from: http://www.hschange.org/CONTENT /537/?topic=topic03.

U.S. Census Bureau. *American Fact Finder: Census 2000 Data*. Retrieved December 15, 2008, from: http://factfinder.census.gov/.

Wathen, C.N., & Harris, R.M. (2006a). An examination of the health information seeking experiences of women in rural Ontario, Canada. *Information Research, 11*(4).

Wathen, C.N. (2006b). Health information seeking in context: how women make decisions regarding hormone replacement therapy. J*ournal of Health Communication, 11*, 477-493.

Wellman, B. (1995). Lay Referral Networks: Using conventional medicine and alterative therapies for low back pain. *Research in the Sociology of Health Care, 12*, 213-238.

Weimann, G. (1983). The strength of weak conversational ties in the flow of information and influence. *Social Networks, 5*, 245-267.

Williams, P., Barclay, L., & Schmied, V. (2004). Defining social support in context: a necessary step in improving research, intervention, and practice. *Qualitative Health Research, 14*(7), 942-960.

Wilson, T.D. (1999a). Re: information behavior [message 003358, 133lines]. Retrieved November 3, 2007, from open Lib/Info Sci Education Forum (JESSE) Listserv archive (http:/listserv.utk.edu/archives/jesse.html): http:/listserv.utk.edu/cgi-bin/wa?A2=ind9912&L=jesse&F=&S=&P=5004.

Wilson, T.D. (1999b). Models in information behavior research. *Journal of Documentation, 55*(3), 249-270.

Wilson, T.D. (2000). Human information behavior. Informing Science, 3(2), 49-56.

Winter, G. (2000). A comparative Discussion of the Notion of 'Validity' in Qualitative and Quantitative Research. *The Qualitative Report, 4*(3-4).

Wright, E.R., & Pescosolido, B.A. (2002). "Sorry, I forgot:" The role of recall error in longitudinal personal network studies. In L.A. Levy, & B.A. Pescosolido, (Eds.). *Social Networks and Health, Volume 8*, (pp. 113-129). Boston: Elsevier Science Ltd.