

INFORMATION PROCESSING IN A STRUCTURED INTERVIEW:
IDENTIFYING USE OF HEURISTICS
AND HEURISTIC-BASED BIAS

by

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DEDICATION

To my loving husband, Chris and to the super stars in my life: Olivia Freeman, Andrew Ruud, and Cecilia Fierro, for all your support and encouragement during these years of research and writing.

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To my Committee Chair, Dr. Norman Cobb, who guided my work to its fruition along with Santos Hernández, Joan Rycraft, Marjorie Barrett, and Ted Watkins, who provided steadfast support.

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ABSTRACT

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The survey interview has been recognized as the most frequently used data collection procedure in the social sciences (Dijkstra & van der Zouwen, 1987). Although the survey interview is an essential methodological tool in social science research, it is fraught with problems of validity and reliability. Cognitive psychology offers a perspective to further explore the methodological facets of the survey interview. Research in the underlying cognitive processes involved in information processing over the past two decades has enhanced the understanding and utility of the survey interview

in survey methodology (Tourangeau, Couper, & Conrad, 2004; Tourangeau, Rips, & Rasinski, 2000; Sudman, Bradburn, & Schwarz, 1996; Tanur, 1992; Hippler, Schwarz, & Sudman, 1987; Jabine, Straf, Tanur, & Tourangeau, 1984). Identifying evidence of the use of heuristics and heuristic-based bias provides a cognitive perspective that can introduce insights and valuable information on the judgment and decision-making process of practitioners and researchers who conduct clinical and survey interviews.

This study is an exploratory, secondary analysis of a primary study data set comprised of respondent answers recorded in 30 structured interviews. The study seeks to identify evidence of judgmental heuristics and heuristic-based bias and examines contextual influences that may affect interview outcomes.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	iii
ABSTRACT	iv
LIST OF ILLUSTRATIONS.....	x
LIST OF TABLES.....	xi
Chapter	
1. INTRODUCTION.....	1
Research Problem.....	2
Implications for Social Work.....	3
Chapter Summary.....	5
2. THEORETICAL FOUNDATION.....	6
Theoretical Concepts.....	10
Memory and Information Processing.....	16
Judgment and Decision Making.....	20
Judgment Heuristics.....	21
Chapter Summary.....	25
3. LITERATURE REVIEW	27
Cognitive and Survey Research Methodological Issues.....	31
Interviewers as Information Processors.....	35

Heuristic Reasoning and Clinical Decision Making.....	38
Heuristics and Biases.....	42
Chapter Summary.....	49
4. METHODOLOGY.....	51
Research Questions.....	51
Theoretical Assumptions and Hypotheses.....	51
Theoretical Assumption 1	53
Hypothesis 1.....	53
Hypothesis 2	53
Theoretical Assumption 2	53
Hypothesis 3.....	53
Hypothesis 4	53
Operational Definition of Variables.....	54
Study Design.....	54
Independent MSW Reviewers.....	54
College Student Reviewers.....	57
Strategy for Hypothesis Testing.....	59
Primary Study Background Information.....	60
Sample.....	60
Participants.....	60

Patient Selection Procedure.....	61
Patient Demographics.....	62
Interview Process.....	62
Measurement Instrument.....	64
Instrument Scoring.....	66
Chapter Summary.....	67
5. DATA ANALYSIS.....	69
Hypothesis 1 Testing.....	69
Hypothesis 2 Testing.....	70
Hypothesis 3 Testing.....	71
Hypothesis 4 Testing.....	71
Discussion.....	72
Chapter Summary.....	79
6. SUMMARY, IMPLICATIONS, AND CONCLUSION.....	81
Limitations.....	83
Dependent Variable Measures.....	83
Interviewer Effect.....	84
Secondary Analysis.....	85
Implications for Social Work.....	86
Future Research.....	88

Conclusion.....	89
Appendix	
A. PATIENT CONSENT FORM.....	91
B. PATIENT RECORD INFORMATION FORM.....	94
C. PATIENT NEEDS ASSESSMENT TOOL.....	96
D. PATIENT NEEDS ASSESSMENT TOOL SCORING GUIDE	101
E. INSTRUCTION ON IDENTIFYING VIVID WORDS.....	107
F. PATIENT NEEDS ASSESSMENT TOOL INDEPENDENT REVIEWER SCORING FORM.....	109
REFERENCES	116
BIOGRAPHICAL INFORMATION.....	127

LIST OF ILLUSTRATIONS

Figure		Page
1.	An information processing system.....	10
2.	A simple propositional representation illustrating an associative network derived from a single propositional input	12
3.	An undifferentiated associative network representation of a respondent's ideas about the topic of cancer.....	14
4.	Interlinking processes of the structural components of independent memories.....	19
5.	Three stages involved in the anchoring process.....	23
6.	Information processing model of a survey situation	29
7.	Interviewers as information processors.....	37

LIST OF TABLES

Table	Page
1. Words Identified as Having Vivid Imagery	58
2. Psychosocial Dimension Level of Need and Mean Word Distribution	72

CHAPTER 1

INTRODUCTION

The survey interview has been recognized as the most frequently used data collection procedure in the social sciences (Dijkstra & van der Zouwen, 1987). Although the survey interview is an essential methodological tool in social science research, it is fraught with problems of validity and reliability. Problems such as interviewer effect, respondent effect, and faulty question design are inherent in survey interviews (Fowler & Mangione, 1990). Efforts to control these methodological errors include the use of standardized questionnaires, standardization of the interview format (e.g., structured interview), and interviewer training to assure consistency in the interviewing format.

Cognitive psychology offers a perspective to further explore the methodological facets of the survey interview. Research in the underlying cognitive processes involved in information processing over the past two decades has enhanced the understanding and utility of the survey interview in survey methodology (Tourangeau, Couper, & Conrad, 2004; Tourangeau, Rips, & Rasinski, 2000; Sudman, Bradburn, & Schwarz, 1996; Tanur, 1992; Hippler, Schwarz, & Sudman, 1987; Jabine, Straf, Tanur, & Tourangeau, 1984). Throughout the course of an interview, an interviewer processes information and makes judgments and decisions that often require the use of judgment

heuristics. Judgment heuristics are informal cognitive strategies that are used to make assessments, predictions, or decisions. Unfortunately, judgment heuristics are not without bias, therefore, exploring how heuristic bias is manifested in information processing in a survey interview can lead to ways to enhance the scientific utility of the survey interview.

This study is an exploratory, secondary analysis of respondent answers recorded in 30 structured interviews that utilized standardized questionnaires. Guided by information processing theory, this study identifies information processing (i.e., judgment and decision making) patterns that document the use of judgment heuristics and explores manifestations of heuristic-based bias. The study also examines contextual influences within the structured interviews that may influence the use of judgment heuristics.

Research Problem

The ways in which people make judgments are far from understood and inferential processes are subject to significant error. Cognitive researchers recognize that more attention is needed to demonstrate the validity of heuristic processes, that is, identifying how, when, and where inferential tools are employed to the benefit or detriment of the judgment task at hand (Gilovich, & Griffin, 2002). In the survey interview, determining the inferential processes involved in the interview process is outside the aims of the survey interview and is thus not tracked and recorded. The cognitive mechanisms that lead a respondent to withhold certain information or that lead an interviewer to make a judgment about a response are not documented. The

various catalysts for memory structure activation or knowledge structure access, for example, are not recorded. To determine how inferential tools used in a survey interview can be used successfully relative to the times they prove to be problematic, identifying evidence of the use of judgment heuristics is a needed step in the exploration of cognitive processes.

The research problem of interest is the identification of the use of heuristics in the judgment and decision-making evident in a structured survey interview and exploring evidence of heuristic-based bias. One way to determine the use of heuristics is to examine the presence of vivid information, typically used in availability heuristics. Higher levels of vivid information are more likely to enter inferential processes and have more impact on judgments than low levels of vivid information (Nisbett & Ross, 1980). Identifying how vivid information is more heavily weighted is important due to its susceptibility to judgment error because "... the vividness of information is normally related only obliquely at best to its true value as evidence" (Nisbett & Ross, 1980, p. 8).

Implications for Social Work

Understanding the cognitive factors that influence clinical judgment and decision making is important to social work practitioners and researchers. As practitioners, assessing the client's multi-system environment, identifying priority needs, and formulating optimal intervention strategies, demand the use of judgmental heuristics. In addition to utilizing judgment heuristics to help clients function as optimally as possible, social workers must deal with their own work environment which is often plagued with shrinking resources and high caseloads. Social workers in health-

related settings for example, make decisions governed by managed care policies aimed to contain the costs of health care. A hospital discharge dictated by HMO policy may be perceived by the social worker to be unsatisfactory or detrimental to the patient. Does the social worker petition for a longer hospitalization stay? How does the social worker arrange a discharge plan with less than adequate community-based resources? A social worker is faced with an array of challenges at the micro, mezzo, and macro level that require the use of judgment and decision-making skills in their everyday practice.

Social work practitioners who rely on standardized interviews for assessment purposes and social work researchers engaged in survey methodology would benefit from knowing the underlying cognitive processes involved in survey interview information processing. Reducing interviewer effects in interviews is an important consideration but one must also understand what types of cognitive effects exist and how they can be identified. Examining the cognitive processes involved in a structured interview may provide social workers with helpful information on the use of judgment heuristics and heuristic-based biases.

The social work profession can gain by expanding existing theoretical repertoire to include scientific knowledge from the field of cognitive psychology. Since social work judgments are influenced by cognitive factors, professional ethics and standards of practice dictate that social workers strive to know and understand these factors.

Collaboration with cognitive psychologists on information processing theory can introduce insights and valuable information on the judgment and decision-making processes of practitioners and researchers who conduct clinical and survey interviews.

New directions in social work research could develop as a result of this interdisciplinary collaboration.

Chapter Summary

This chapter begins with the statement that the survey interview is the most frequently used data collection procedure in social sciences and states that cognitive psychology has a role in enhancing the survey interview in survey methodology. An exploratory, secondary analysis of respondent answers recorded in 30 structured interviews is introduced. Cognitive information processing and use of judgment heuristics and heuristic-based bias were identified as a focus of the research problem of interest in that incorporating knowledge about information processing into research methodology can lead to ways to enhance the scientific utility of the survey interview. Implications to social work were presented in this chapter that addressed the importance to social work practitioners and researchers to know and understand the cognitive factors that influence clinical judgment and decision making.

The following chapter introduces information processing theory and presents the theoretical framework that articulates the cognitive processes involved in a survey interview. Theoretical concepts are defined and information on memory and information processing, judgment and decision-making and common judgment heuristics are discussed.

CHAPTER 2

THEORETICAL FOUNDATION

The theoretical framework guiding this study is information processing theory which evolved in the field of cognitive psychology. The interface between cognitive psychology and survey research over the past twenty years has produced a new liaison between cognitive psychologists and survey researchers. The disciplines have joined to develop a theoretical framework that articulates the cognitive processes that underlies survey interviews ((Tourangeau, Couper, & Conrad, 2004; Tourangeau, Rips, & Rasinski, 2000; Sudman, Bradburn, & Schwarz, 1996; Tanur, 1992; Hastie, 1987; Hippler, Schwarz, & Sudman, 1987; Jabine, Straf, Tanur, & Tourangeau, 1984). Researchers in this field recognize that survey interviews can be influenced by more than the wording of the questions, the context of the question and the situational domain. Situational domain refers to the context or location of the interview, such as a “web” interview, telephone interview, home-based interview, etc... While these non-sampling variations are important considerations in survey methodology, the exploration of the cognitive processes that involve heuristics and biases is an important development for cognitive psychologists and survey researchers.

The benefit to survey research of this merging of disciplines is that by incorporating knowledge about how humans process social information into research methodology, the quality of data collection may be improved, thus enhancing the scientific utility of the survey interview. Having an understanding of how respondents interpret certain types of questions, for example, can lead to designing questions that leave little or no room for ambiguity. On the other hand, understanding how the interviewer processes respondent answers can aid in identifying the role of cognition in interviewer effect.

Cognitive psychology can be broadly defined as the study of higher mental processes, including language, memory, perception, and reasoning. It is concerned with how people mentally process and transform information in their environment. A chain reaction of cognitive functions takes place when a person is asked a question or sets out to perform a certain task. The main objective of information-processing psychologists is to identify the cognitive linkages that exist and interact between the information people receive (input) and the response people generate (output) (Bodenhausen & Wyer, 1987). These cognitive linkages involve the registering of “input” variables such as type of information, source of information, and context of information, followed by the computation of “output” variables such as one’s attitudes, beliefs, and judgments (Bodenhausen & Wyer, 1987).

The work of cognitive psychologists over the years to identify and understand the cognitive processes involving people’s interactions with the outside world was advanced by information processing research referred to as “cognitive architecture”

(Kieras & Meyer, 1997; Newell, 1994; Laird, Rosenbloom, & Newell, 1986; Card, Moran, & Newell, 1984; Anderson, 1983). Cognitive architecture refers to theoretical structures that model how information is processed for a variety of task performances. The EPIC (Executive Process- Interactive Control) is a particular information processing model which addresses the sensory-motor processors such as auditory input and visual input that come into play when one processes information (Kieras & Meyer, 1997). The EPIC is different from other models that emphasize purely cognitive aspects of human information processing in that it takes into account how the human perceives the environment.

A dominant cognitive information processing paradigm is a model of thinking operating under conditions of “bounded rationality” (Simon, 1982; Simon, 1979; and Newell & Simon, 1972). Bounded rationality, a concept credited to Simon (1982) refers to thinking models that reflect the limited properties of the mind and environment. Bounded rationality models take into account the realistic conditions of limited time and knowledge under which humans make inferences. The concept of bounded rational thinking has been attributed as guiding research on inference and probability thinking (i.e., judgment heuristics) which is discussed further in this chapter (Gigerenzer, Czerlinski, & Martignon, 2002).

Information processing theory accounts for people’s ability to accomplish higher order thinking tasks. When a person is faced with a decision to make or a problem to solve, mental processing of available data is initiated to accomplish the required task. For example, faced with a problem of how to open a locked door without a key, mental

operations begin to explore options that would expedite the goal of entry. Can a foreign object be used to force the lock open? Should a locksmith be called? Understanding which and how variables are involved in these thought processes are complex and difficult, but computers have helped give cognitive psychologists a grounded conception of the working system.

Information processing theory has its conceptual origin in mathematical logic and in the discovery of computer information-processing. In the 1930's, an abstract system called the "universal machine" or "Turing machine" by a mathematician named Turing, revolutionized the field of mathematics by analyzing the properties that lead to the solution of solvable logical problems (Lachman, Lachman, & Butterfield, 1979). The processes involved in symbol manipulation were made concrete. Years later, and after computing machinery was in widespread use, researchers conceived that the human mind might also be viewed as a symbol-manipulating system. This insight is credited to Allen Newell and Herbert Simon (1972) who conceptualized aspects of the human mind and the computer as separate frameworks of the same kind of information processing system. Basically, a method was created not only to represent things symbolically, but also to manipulate the symbolic representation. At a very basic level, the information-processing system proposed by Newell and Simon (1972) is diagrammed in figure 1.

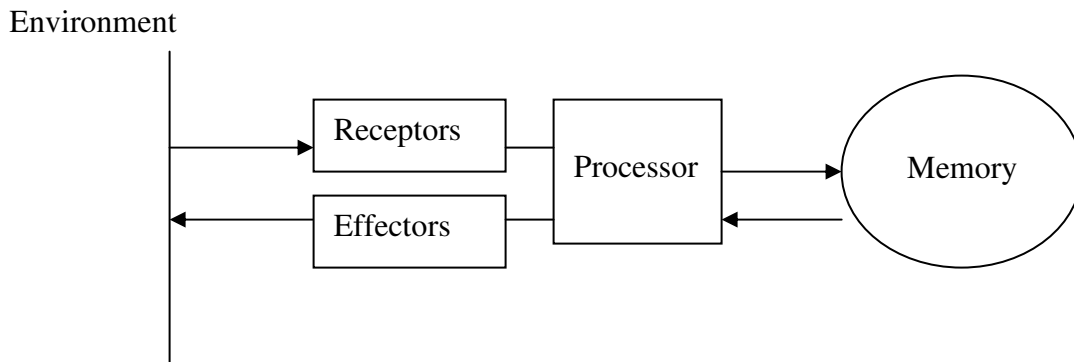


Fig. 1. An information-processing system (From Newell & Simon, 1972).

The model depicted in figure 1 is remarkably simple, but information processing models have led to far reaching changes in how cognitive psychologists conduct research. These advances "... generated an effusion of new research techniques suited for the exploration of cognitive activities more complex and more representative of the uses of language and thought outside the laboratory than might have been considered open to investigation with the framework of earlier theories" (Estes, 1975, p. 19).

Theoretical Concepts

Information processing theory describes a person's general knowledge of objects, people, and events, and their relationship to each other as a form of knowledge structure (Nisbett & Ross, 1980). Beliefs about certain individuals such as Yale graduates, or professional groups such as mechanical engineers, or theories about the origin of personality deficits, for example, represent a form of propositional knowledge structure used to make decisions or to form opinions. Propositional knowledge structure usually involves the relationship between symbols and is considered an abstract

interpretation of an event (Anderson, 1983). Schematic cognitive structures are another way our knowledge is organized. It includes a person's awareness of what takes place in certain settings and can include descriptions of certain pictorial scenes (Mandler, 1980). For example, we all have a schematic knowledge structure, or rather, a script, of what takes place when we go out to eat at a restaurant, attend a live music concert, or visit a museum. Both the terms "schema" and "propositions" are used in the cognitive psychology literature to describe structured and relational patterns of knowledge.

Knowledge structures at their most basic level are represented by symbols and symbol structures and represent the basic elements of memory (Lachman, Lachman, & Butterfield, 1979). Symbol structures are constructions of single, connected symbols. The letter "P" for example, can be considered a single symbol, but when connected with other single symbols, such as "A" and "T", the information processing system recognizes the configuration to be the symbol structure "PAT." Depending on the context of the information processing, the symbol structure "PAT" could represent an action or the name of a person.

In addition to receiving the incoming symbols, the information processing system must be able to recognize the symbols. For example, the symbol structure "PATELLA" would have to be recorded in memory to be recognized and discriminated from other familiar symbol structures such as plate or platter. Thus, only after a symbol structure is recognized can it be appropriately processed. Receptors act as a sensory register that take in the information from the outside world. Other terms that have been used to describe this function in cognitive psychology are "input," "encoding," and

“stimulus.” Effectors represent the end result of the information processing. Effectors are the final product that follows the filtering of input by our attitudes, judgments, and other forms of knowledge structures. Other terms used to describe this function include “output” and “response.”

Symbols and symbol structures are necessary components of propositional structures. As described earlier, propositional representations suggest a relational structure in which symbols denoting descriptive information form a network or type of associative pattern (Anderson, 1983). An important function of propositional representations is that it represents a more direct and efficient way of organizing information stored in memory. Figure 2 illustrates an associative propositional representation about the symbol structure “PATELLA.” Upon hearing the word “patella,” a person who is currently recovering from orthopedic surgery may experience an immediate recall of the nature and consequence of an accident that led to the injured patella, as well as a working memory of the details of any current level of pain and rehabilitation regimen.

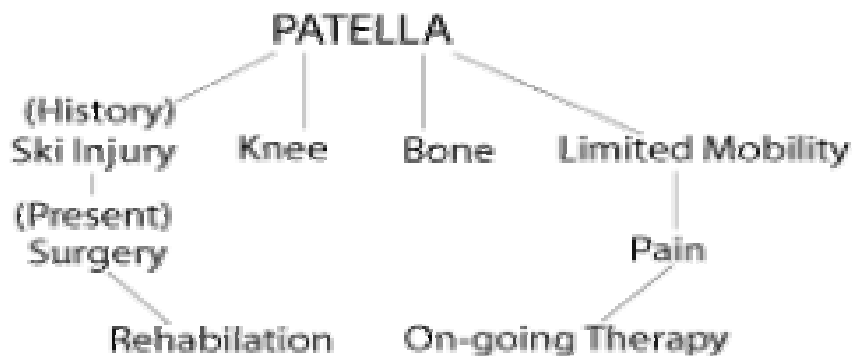


Fig. 2. A simple propositional representation illustrating an associative network derived from a single propositional input (based on Rumelhart & Norman, 1985).

The terms “symbols,” “propositions,” and “schemas” are common descriptors of knowledge representation. Other types of knowledge representation are noted in the cognitive psychology literature that convey memory structure functions, such as the concepts of temporal string and spatial image (Anderson, 1983). Temporal string refers to the order of a set of items (e.g., 1, 2, 3). Spatial image refers to something occupying space (e.g. a geometric pattern). Spatial images and temporal strings, together with symbols, propositions, and schemas, represent an interesting range of basic types of knowledge structure concepts used in information processing.

A more complex type of knowledge structure is represented in figure 3. This type of schematic cognitive structure is referred to as an undifferentiated network. An undifferentiated network represents the organization of mental information where orderly constraints concerning specific responses to questions are not imposed on the respondent (Hastie, 1987). Figure 3 represents the possible knowledge structures and inferences one may begin thinking about when asked to respond to the topic of cancer. This relational pattern structure characterizes the hypothesized organization of information in memory concerning a single ideation or concept. The diagram depicts a plausible structure for some of the ideas elicited from a respondent using the cue word “cancer.” Notice that the structure does not demonstrate any hierarchical pattern. In addition, the words denoting emotional state in the diagram are not directly linked to particular concepts, and the role of the concepts is not defined. Family support, for example, is part of the associative network yet it is not defined. It is not possible to

determine from the illustration what kind of family support is available nor is it possible to determine from the diagram when family support comes into play.

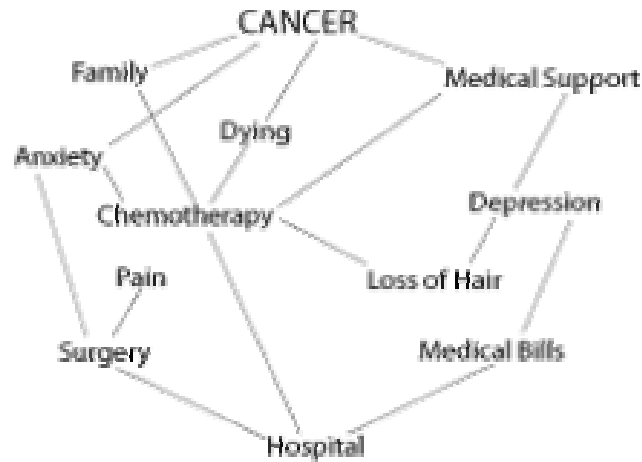


Fig. 3. An undifferentiated associative network representation of a respondent's ideas about the topic of cancer (based on Hastie, 1987).

Information is the primary substance of information processing theory. The aforementioned concepts of basic knowledge structures (i.e., symbols, symbol structures) and the relational patterns of knowledge (i.e., propositional knowledge structures, schematic cognitive structures), describe how information can be represented. Other concepts define how information is stored and processed. The following are central concepts in information processing theory as defined by Hastie (1987):

1. Information: Symbols that are represented qualitatively as lists of features that define a concept, language words, phrases, sentences, or geometric diagrams.

2. Memory Structures: Hierarchical cognitive diagrams that act as a storehouse of information. A major role played by knowledge structures in the information processing theory is to store and maintain the patterns of information activation.
3. Spreading Activation: Information in memory is accessed according to availability for use. An assumption is that individuals are aware of only a few ideas at a time without accessing (activating) knowledge structures in various locations by linking key ideas.
4. Transforming Symbolic Information: A basic process of thinking that involves changing data from one representation to another that requires data comprehension and judgment skills. For example, physical signals in the environment can be translated (transformed) to sensory information, and then to semantic data (e.g., wind → goosebumps on skin → cold temperature).
5. The Executive Monitor: An operant that is comprised of a series of goals and organized plans and continually directs the information processing system. An analogy to the executive monitor is the computer's central processing unit.
6. Independent Memories: A complex system of stored information hypothesized to be associated with separate physical structures of the brain. These separate information processing structures are referred to as sensory registers, short-term memory, long-term memory, and working memory.
7. Limited Resources: Factors that describe the performance of the information processing system in terms of utilization of mental energy and representational capacity. One principle of limited resources is the general tendency for the

information processing system to operate efficiently to accomplish its goals by expending a minimum amount of time processing information and reducing strain on its memory system.

Memory and Information Processing

In the field of cognitive psychology, memory concepts refer to some property or state of the individual which is assumed to have resulted from some experience (Bower, 1975). Our world experiences are mentally imprinted within a cognitive framework that organizes and stores the information in one or more of several memory structures (i.e., working memory, short-term memory, long-term memory). But the way in which memories are established and maintained is different from the way in which an individual retrieves memories on particular occasions. The storage of information in memory is recognized as an abstract concept, while the retrieval of information, such as when a person is asked to answer questions in a survey situation, is a specific type of performance. The retrieval of information to answer questions depends upon the particular cognitive demands of the situation and the particular cognitive functioning of the individual (Estes, 1975). However, prior to discussing how a respondent processes information during a survey interview, an understanding of memory structures and data retrieval is necessary.

Working memory refers to those cognitive structures which maintain information about our immediate environment. It holds an active, on-going account of our immediate surroundings. It contains our noted awareness of the sight, sound, smell, and feel of the “here and now.” One of the primary functions of working memory is to

build up and maintain an internal model of our immediate environment and what has been happening in our world over the past minute or two. For example, someone standing in her front yard near a pet dog would not be startled to hear a bark a few seconds later. The bark would immediately be acknowledged as originating from the pet, as opposed to some unknown dog in the neighborhood. The framework provided by the woman's working memory serves as a context for the perception of the sound of a barking dog. Working memory is a dynamic framework that is continually recording changes. Processed information is discarded, visual stimuli recorded, or new symbols or propositions are added as we actively interact with the world around us.

Long-term memory (LTM) is defined as the storage site of our permanent knowledge and skills. It contains vast amounts of information stored in memory that are not currently being used. Bodenhausen and Wyer (1987) postulated that information is more likely to be retained in long-term memory if it has been processed more extensively. The reading, writing, and arithmetic skills learned long ago in elementary school will remain intact and available thanks to long-term memory. Bower (1975) classified various types of information structures in LTM to include:

1. Our spatial model of the world surrounding us—symbol structures corresponding to images of our house, city, country and planet, and information about where significant objects are located in that cognitive map.
2. Our knowledge of physical laws, cosmology, of the properties of objects and things.

3. Our beliefs about people, about ourselves, about how to behave in various social situations. Our values and the social goals that we seek.
4. Our motor skills for physical tasks such as driving, bicycling, or shooting pool. Our problem-solving skills for various domains. Our plans for how to achieve various goals.
5. Our perceptual skills in understanding language or interpreting paintings or music (p. 56)

Long-term memory is obviously a discriminating, expansive structure that accumulates and stores what is seen, heard, and thought throughout life.

Short-term memory (STM) has a much smaller capacity for retaining information than working memory or long-term memory structures. It has a limited capacity in terms of the small number of “things” we are able to keep in mind all at once. It has been stated that STM has the capacity of holding onto four to seven symbols or cognitive units (knowledge bits) based on memory span (Estes, 1975; Miller, 1956), and is thus not considered a site where information remains permanently stored. STM is viewed as the active part of information processing that holds those symbols that are the current “focus of attention and conscious processing” (Estes, 1975, p. 43). The focus is on the bits of information that are momentarily active. The information can be utilized in working memory, retained in LTM, or discarded (i.e., forgotten). Memory retrieval of information in STM is fast in comparison to retrieval of information located in LTM. For example, a person can recall what was eaten for breakfast this morning more rapidly than what was eaten for breakfast a week ago today.

Figure 4 illustrates a framework of independent memories, one of the main concepts in information processing theory. Note that working memory has the functional capacity to call upon information stored in long-term memory as well as active information being used in short-term memory (Bower, 1975; Anderson, 1983). For example, a person knows what to expect when she or he activates their computer to access the World Wide Web. Repeated computer operations involving Internet surfing enables the user to predict information acquisition results. Bower (1975) suggested this to be an example of how working memory can serve to predict the results of one's interaction with the environment.

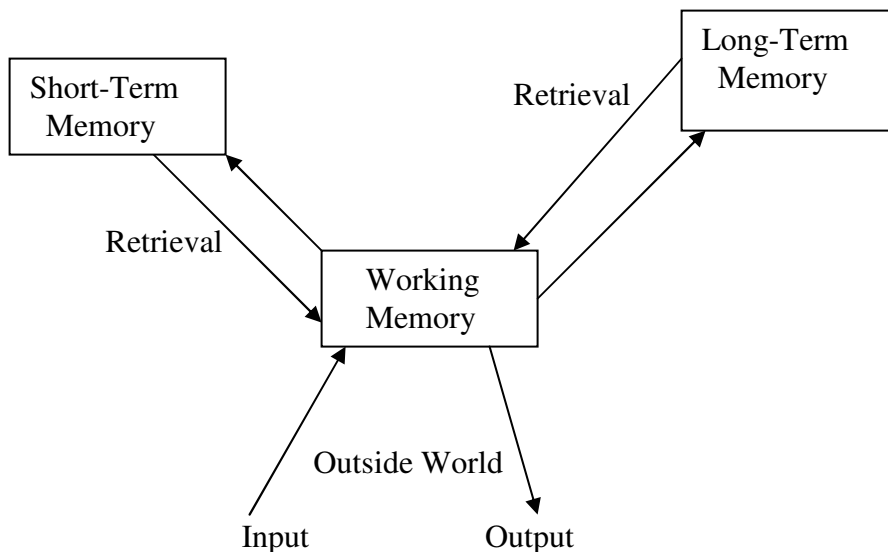


Fig. 4. Interlinking processes of the structural components of independent memories.

As illustrated in figure 4, working memory is the active memory structure interlinking all sources of information. Input processes deposit information about the

outside world into working memory. At this stage, the registered event/information is interpreted and processed. For example, if a patient is asked to describe the back pain he has experienced within the past two weeks (input), the working memory begins to process relevant factors necessary to respond to the question, such as the role of the person asking the question or the manner in which to describe the pain. This processed information resulting from the interpretation of input activates the short-term memory (STM) or long-term memory (LTM) storage processes for purposes of information retrieval. If active information is needed (e.g., I was in pain all morning), STM storage is tapped. If information stored in permanent holding is required (e.g., I was in pain for four days last week), then LTM storage is accessed. The output process represents the action taken to respond to the input.

Judgment and Decision Making

Functions ascribed to working memory suggest that judgment and decision-making processes are involved and are a part of human information-processing strategies. The working memory has to discriminate among the multiple bits of active information and stored knowledge to determine not only what is relevant, but how that knowledge will be used to process the information registered from the outside world. For example, if someone is asked how to operate a microwave oven, the answer would depend on who is asking the question and to whom the question is asked. If the question is posed by a four-year old to an adult, the adult might assume that the child has observed others using the microwave oven and wants to use this appliance. The adult might judge that it could be dangerous to attempt to teach the child how to use the

microwave oven. Rarely would the adult retrieve all information that may bear on the judgment process, such as exploring why the child wants to know, determining if the child has the requisite cognitive and fine motor skills, or assessing the risk factors involved. Two types of intuitive tools are involved in answering the child's inquiry: Knowledge structures and judgmental heuristics. Knowledge structures include stored systems of information and abstracted knowledge such as propositions, schemas, opinions, beliefs, and theories (Nisbett & Ross, 1980). Knowledge structures allow the individual to define and interpret information about the physical and social world, while judgmental heuristics rapidly enable one to reduce complex inferential tasks to simple, judgmental operations (Nisbett & Ross, 1980).

Judgment Heuristics

The study of human judgment was transformed in the 1970's when Kahneman and Tversky challenged the classical model of rational choice by introducing their "heuristics and biases" approach (Gilovich, Griffin, and Kahneman, 2002). Their work promoted the theory that judgment and decision making, under uncertainty, are the result of use of heuristics, rather than a mathematical or rational model. A frequently cited 1969 survey conducted by Tversky and Kahneman at a professional gathering of the Mathematical Psychology Society and the American Psychological Association marks the early theoretical development of judgmental heuristics. The study involved asking the conference participants questions about the robustness of certain statistical estimates, which led to the observation that respondents made conclusions based on quick and easy intuitive mental operations, that is, judgmental heuristics.

In essence, judgmental heuristics are cognitive strategies used to solve a variety of inferential tasks that produce estimation or prediction. Judgmental heuristics are based on informal assessments, as opposed to a mathematical formula or scientific protocol, "...that are routinely carried out as part of the perception of events and the comprehension of messages" (Tversky & Kahneman, 2002, p. 20). When deliberate, deductive reasoning is not demanded, intuitive mental processes offer an easily assessable, rapid, and effortless way to process information.

Three well-known and commonly used judgmental heuristics described by Tversky and Kahneman are "anchoring and adjustment," representativeness, and availability heuristics (1972, 1973, 1974). The anchoring and adjustment heuristic involves the cognitive process of focusing or "anchoring" on an estimate or value for a particular event and then making necessary adjustments that take into account other similar events before arriving at a final estimate. For example, if one were to answer the question, "How many household pets are in your neighborhood?" One would begin by anchoring their own observations of dogs and cats in the neighborhood and then make an adjustment that would include the probable number of pets that are in the area. Tversky and Kahneman (1974, p.1128) define anchoring as a process in which "people make estimates by starting from an initial value that is adjusted to yield a final answer..." Chapman and Johnson (2002) stated that the anchoring process occurs in three stages (Figure 5). First, information about the target value must be cognitively processed through the appropriate memory structures. The necessary information must exist in memory with which to form an anchor. Second, if the information is available,

it must be judged to represent a certain weight in accordance to the target value. Finally, the anchor must be represented in a measurable form that is “expressed on an external scale (e.g., dollars, meters)” (p.126).

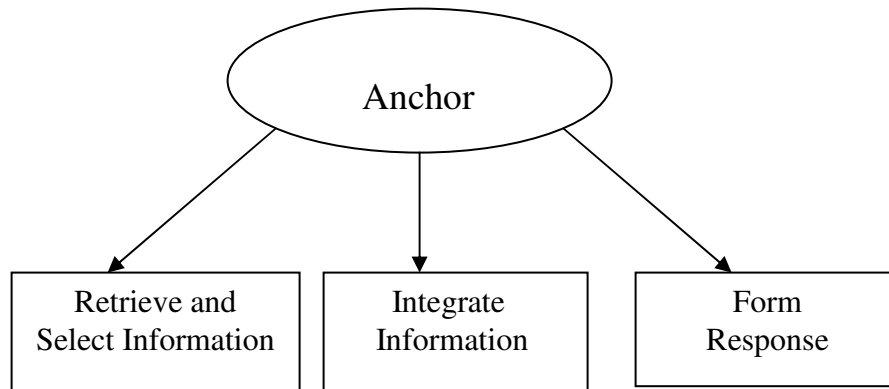


Fig. 5. Three stages involved in the anchoring process (Chapman and Johnson, 2002).

Representativeness heuristics is a strategy that allows an individual to derive a conclusion from several propositions or features based on factors of similarity. A person relying on representativeness heuristics evaluates the probability of an uncertain event by the degree to which it is: a) “... similar in essential properties to its parent population,” and b) “...reflects the salient features of the process by which it is generated” (Kahneman & Tversky, 1972, p. 431). In other words, an event X is judged more probable than event Y whenever X appears more similar to some criteria or theory. Thus, representativeness establishes an intuitive judgment of probability. In addition, to be representative, the event must also appear random. The evidence for the representativeness heuristic was obtained in several probability studies. Participants in

one study believed that the sequence of coin tosses “heads-tails-tails-heads-tails heads” is more probable than either “heads-heads-heads-heads-tails-heads” or “heads-heads-heads-tails-tails-tails”, even though all three sequences are reported to be equally likely (Tversky & Kahneman, 1973). If the uncertain process were to be eliminated, that is, if the participants were introduced to alternating sequences of heads and tails which did not appear random, such as “heads, tails, heads, tails, heads, tails” verses “heads-heads-heads-heads-tails-heads” it would be unlikely that the representativeness heuristic would be utilized.

Representativeness plays an important role in many varieties of probability judgments, such as clinical judgment (Kahneman & Tversky, 1972). In a clinical interview, for example, a person complaining of lethargy, ruminating thoughts, sadness and tearfulness would suggest to a psychotherapist that the person is depressed. From a clinical standpoint, these symptoms more likely suggest the presence of depression rather than symptoms of fatigue. In a social work practice example, a social worker might infer that a certain neighborhood she is visiting is of low-income status because of its similarity to several other low-income neighborhoods in which she has worked. The unpainted houses are small and in dire need of maintenance. The yards are littered with trash or discarded furniture. The social worker thus uses the representativeness heuristics to judge that she is visiting an economically impoverished neighborhood.

Tversky and Kahneman (1973) described availability heuristic as a strategy whereby the frequency of an event or the likelihood of its occurrence is judged according to the extent that they are readily available in memory. In a frequently cited

study, Tversky and Kahneman (1973) observed that participants overestimated the number of words that begin with the letter *r*, but underestimated the number of words that have *r* as the third letter. Participants presumably had difficulty with the latter because words that begin with a certain letter can be brought to mind more easily than words that have a certain letter in the third position. When a person is asked to form a judgment that produces estimation or prediction, availability heuristics dictate cognitive processes to search for relevant information, and the resulting judgment is usually based on the information most accessible at the time. Thus, the availability heuristic is used when objects such as the volume of cars in downtown streets during the 5 o'clock rush hour, or events such as rain showers during the month of April, are judged as frequent or probable to the extent that they are readily available in memory. According to Tversky and Kahneman (1973), availability is "...an ecologically valid clue for the judgment of frequency because in general, frequent events are easier to recall or imagine than infrequent ones" (p. 209).

Chapter Summary

This chapter discussed information processing theory and presented theoretical concepts relating to memory, information processing, judgment, and decision-making. A conceptualization of how information from the environment is mentally processed and transformed was presented and included a discussion of the cognitive strategies that are employed when one is asked a question. Three of the most commonly used judgment heuristics (i.e., anchoring and adjustment, availability and representativeness) were identified and discussed. Judgmental heuristics were defined as cognitive

strategies used to solve a variety of inferential tasks used to produce an estimation or prediction. The following chapter presents literature on the use of survey interviews in research, and survey interview methodological issues particularly relating to cognitive information processing. Current literature is presented on heuristics and decision-making, and heuristic-based biases.

CHAPTER 3

LITERATURE REVIEW

Methodological research on the survey process calls attention to the interview structure as not only a social situation in which the interviewer asks questions and the respondent provides answers, but also as a social encounter in which people engage in conversation. The survey interview can be viewed as having characteristics that are assumed to guide casual conversation between two people. Grice (1975) proposes that conversations are guided by a spirit of cooperativeness that can be described in 4 maxims that aid the conversational process:

1. Maxim of Quality: Speakers do not say anything they believe to be false.
2. Maxim of Relation: Speakers make relevant contributions to the aims of the conversation.
3. Maxim of Quantity: Speakers make their contributions as informative as necessary, but not more informative than is required.
4. Maxim of Manner: Speakers dialogue is clear and understandable as opposed to obscure and ambiguous.

The implication that these maxims have for survey research is that dialogue in a scientific or social context requires a considerable degree of inference. Recognizing that

the interviewer and respondent are involved in continually assessing information and formulating judgment has led to close attention being paid to the individual thought processes involved in social conversation (Clark & Schober, 1992, Schwarz, 1994, and Strack & Schwarz, 1992).

When a survey respondent answers interview questions, several cognitive tasks are initiated (Fig. 6.) The process involves four distinct stages that reflect major concepts identified in information processing theory. These stages involve the information processing operations of text comprehension and interpretation (transforming symbolic information), formulating an opinion, accessing knowledge structures through various memory channels (spreading activation), and use of judgment in providing the response (limited resources) (Strack & Martin, 1987). Note that the information processing that occurs in all stages is subject to cognitive biases due to the fact that inferential processes are necessary throughout the survey interview.

The cognitive tasks that are involved when a respondent is asked a survey question are represented in figure 6. First, the respondent has to interpret the posed question to understand what is meant. Assuming that the question is clear and unambiguous, the respondent must determine the kind of information the interviewer seeks, which involves making inferences about the interviewer's intention. Once the respondent achieves some understanding of the posed question, an opinion is formulated. At this stage, the respondent may need to recall relevant information from memory. Use of judgment is required particularly if the question is subjective in nature, such as in the asking of attitude questions. In addition, if a subject matter is of personal

relevance to the respondent, the more likely that the respondent will formulate judgments requiring more thoughtful evaluation. For example, a Florida state resident asked to provide an opinion on the 2000 U. S. Presidential elections may have an easier time forming a response than if asked to provide an opinion on earlier U. S. Presidential elections due to the election results controversy that involved the 2000 election vote counting in Florida.

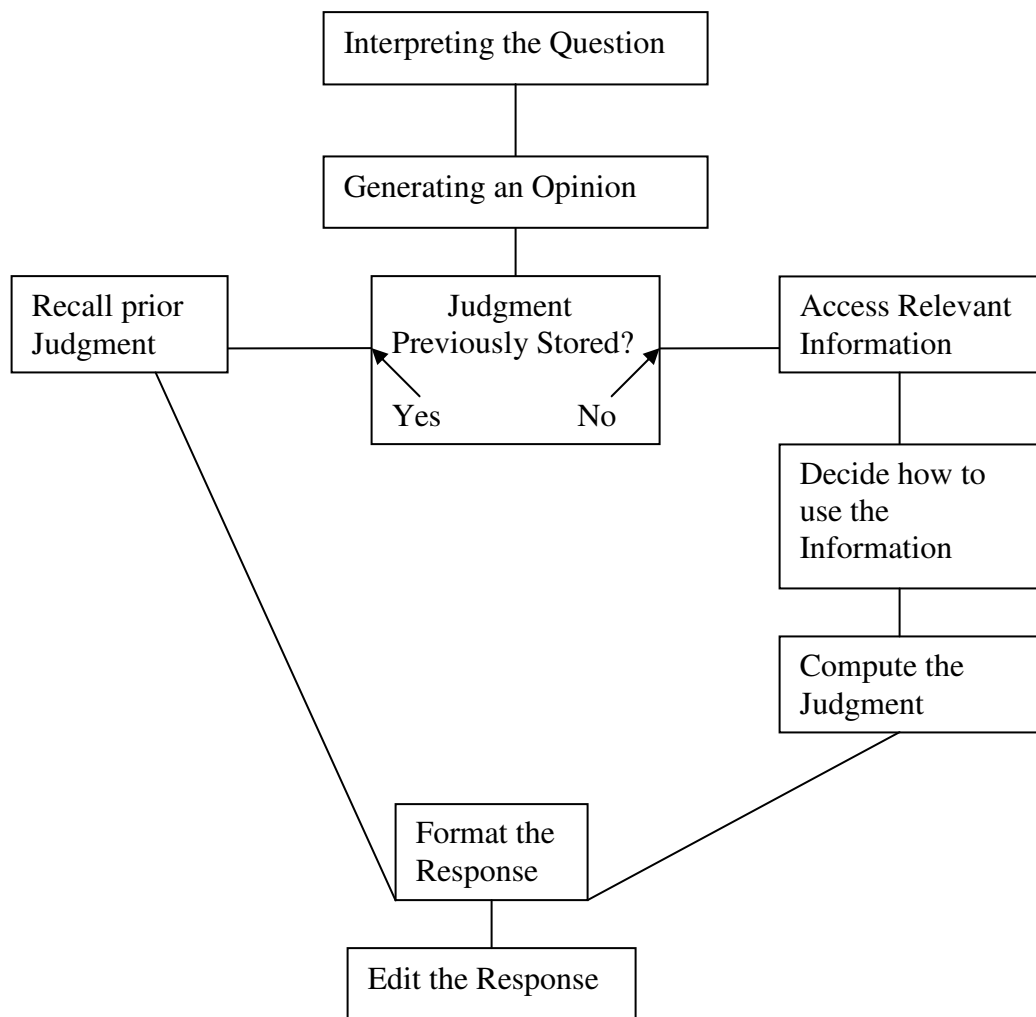


Fig. 6. Information processing model of a survey situation (Strack & Martin, 1987).

Memory is a key factor in forming judgment. It is reported, however that even under conditions where respondents can retrieve an opinion on the subject matter from memory, the opinion may not match the issue the question is designed to evaluate because most answers are “context-dependent,” that is, the answers reflect judgments that are highly influenced by the context of the specific interview (Sudman, Bradburn, & Schwarz, 1996, p.70). Thus, the Florida resident who is asked to provide a comment on the 2000 Presidential elections may provide differing answers depending on when the question was asked, where the question was asked, and who asked the question.

Following judgment formation, respondents must formulate a response that fits with the requested response format. Using Grice’s maxim of quantity, the respondent must determine if the answers require a yes/no response, a personal commentary, or a brief answer. In a structured interview, a respondent must provide a response in line with the provided options. However, a restricted response alternative may affect survey results. In a study on questions and answers in attitude surveys, respondents were unlikely to convey their judgments if the given response categories did not reflect their personal perspectives on the issues (Schuman & Presser, 1981). In addition, the types of response formats available to respondents may influence all steps of the information processing model in a survey situation (Sudman, Bradburn, & Schwarz, 1996).

The last stage of the survey interview information processing model is editing the response. Respondents typically edit their answers depending on various contextual factors present in the survey situation. Respondents may decide not to reveal intimate information that is considered private. They may select to disclose information they

perceive the interviewer desires, bypassing critical judgment processes. Respondents may choose to edit information based on the characteristics of the interviewer. The phenomenon called the “halo effect,” refers to the unconscious tendency that people have to attribute certain attributes to people based on global assessments (Nisbett & Wilson, 1977; Thorndike, 1920). For example, an attractive school teacher may obtain higher evaluation ratings than an unattractive school teacher due to the positive traits that are globally assigned to beauty in the western culture. Face-to-face interviews reportedly influence the response editing of respondents more than in self-administered questionnaires (Sudman, Bradburn, & Schwarz, 1996).

In addition to the cognitive bias that can affect the inferential processing aspects of an interview, the four stages of information processing are also susceptible to contextual influences that contribute to error. The design of a question and the ability of the respondent to interpret and respond to the question in the manner intended by the researcher are common sources of potential error. However, cognitive researchers want to identify and examine these types of response effects and will therefore “systematically vary these influences to study the resulting cognitive processes” (Strack & Martin, 1987, p. 143).

Cognitive and Survey Research Methodological Issues

Cognitive research methodology differs significantly from the methodological tenets of traditional survey research. Social science survey research seeks to describe and analyze human behavior and attitudes. Survey researchers are mainly interested in knowledge obtained through asking people research questions. Cognitive scientists are

typically interested in knowledge about thinking processes. The cognitive scientist is interested in knowing what mental information processing takes place to arrive at an answer. This difference has important methodological implications for researchers concerned with sources of variation such as standard deviations and error variance. For the survey researcher, the error variance is generated by response effects such as variations of the question form, context, and mode of administration, which are largely independent of content (Strack & Martin, 1987). To illustrate the influence of response effect, Schuman and Presser (1981) reported a study that found contrasting responses toward abortion were due to the presence or absence of a particular question before the target question. To avoid such response effects, and thereby reducing the error variance, survey researchers try to keep these features constant when making comparisons between contents. Cognitive researchers, on the other hand, search for all possible response effects and will systematically vary these influences to study the resulting cognitive processes (Strack & Martin, 1987).

Research on response effects among the interviewer, the respondent, and the questionnaire and context within which it's perceived, indicates that the highest source of error comes from the questionnaire and the context of the interview (Sudman, Bradburn, & Schwarz, 1996). Questionnaires used in a survey interview are designed to obtain reliable information, although the dialogue between the interviewer and interviewee is not a sterile exchange of spoken words. The conversation occurs in various physical, social, and cognitive contexts that influence respondent answers in undesired ways (Schuman & Presser, 1981). Interview participants have been known,

for example, to respond to questions with the tendency to be agreeable rather than forthright, and to respond to answers in a way that will present them in a favorable light. The amount of relevant information is positively related to “judgmental favorability” (Motowidlo, Carter, Dunnette, & Tippins, 1992, p. 586). That is, when interviewees have more positive experiences to relate, they are more willing to discuss them. Subsequently, interviewees who have more flattering experiences reveal more about themselves than interviewees who recall dispassionate or uncomfortable experiences.

Physical, social, and cognitive contextual factors can also affect interviewer judgment of respondent answers (Motowidlo, Carter, Dunnette, Tippins, Werner, Burnett, & Vaughan, 1992). The interviewer’s potential for manipulating or distorting responses could be attributed to reasons such as the interviewer’s clinical bias of the aims of the interview, and the influence the interviewee may have on the interviewer’s judgment of the respondent answers. The role of context may not only affect the way questions are interpreted and answered by respondents, it may also influence how the interviewer judges the content of the answers, posing a potential threat to the validity of survey data. Increased knowledge about potential sources of error can guide the researcher toward enhancing the reliability of the survey interview.

In regard to the research sample, cognitive research strategies violate a central methodological norm of survey research, namely the representativeness of the sample, which is typically realized along sociodemographic dimensions (Strack & Martin, 1987). Social science researchers aim to study sample groups representative of the population of interest. To assure the sample is representative of the population, various probability

sampling procedures and sample size must be taken into consideration. From a psychological perspective however, no substantiated reason exists to expect that different cognitive mechanisms depend on sociodemographic variables such as social class or income (Strack & Martin, 1987). People use the same information processing methods whether they are black or brown, rich or poor. Rather, these processes may be influenced by variables like the respondents' prior knowledge and the accessibility of the cognitive schemata they have formed (Strack & Martin, 1987). The heterogeneous sample obtained through probability sampling will therefore add variance from sources that are out of the cognitive researchers' focus of interest. According to Strack and Martin (1987):

Failure in reducing this type of variation has the consequence that a given mechanism can only be reliably tested if the number of respondents is substantially increased, which makes methodological research more expensive than necessary as a comparison of surveys and experiments indicates. Thus, the possibility seems worth considering that controlled experiments with a smaller but more homogeneous group of participants are perhaps a more promising route to insights about response effects than large, but heterogeneous, split-ballot surveys (p. 144).

Cognitive researchers thus seem to favor systematic variation (e.g., variation due to the specific method of measurement used) over variation in the sample. The more evidence cognitive researchers have concerning how the mind processes information given varied conditions, the more light is shed upon the peculiarities of information processing.

Greater understanding of information processing in social communication aids in the advancement of survey methodology.

Interviewers as Information Processors

The information processing model shown in figure 6 can be adapted to convey how an interviewer interprets respondent answers, thus shifting attention to the information processes of the interviewer. Figure 7 illustrates the information processing that occurs after a respondent answers a question in a survey situation. Inferential processing is required to determine not only if the respondent is interpreting the question correctly, but also if the respondent is providing enough information to sufficiently answer the posed question. Further cognitive processing of respondent answers requires the interviewer to make determinations about what information to record in addition to how much information to document. A couple's response to why they are seeking marital counseling, for example, requires the interviewer to key in on central facts and issues surrounding marital discord, disregarding cursory explanations.

Determining how to use the information may involve assessing how the information fits a pre-determined response category such ranked options (e.g., low level of pain versus moderate or severe level of pain). Following this determination, the interviewer must formulate some judgment concerning the significance of the information. For example, in a suicide assessment interview, after asking a series of questions designed to assess the risk of suicide, the interviewer processes the answers to ultimately judge the suicide risk level of the person. In a standardized interview, the interviewer follows pre-established guidelines which dictate how to ask questions and

when to probe responses. In an interview that involves the asking of open-ended questions, however, the interviewer must determine the validity of respondent answers and decide what information is pertinent to record. Inferential processes are more likely to be required in interviews that use open-ended questions.

The information processing model (Figure 7) ends with the interviewer formulating a response to the respondent's answer. In some interviews, such as the structured interview, the interviewer is instructed never to agree or disagree with an answer, nor provide the respondent with any idea of one's personal views on the topic of the question or survey (Fontana & Frey, 1994). Comments by the interviewer are highly restricted even when response clarification or response probing is necessary. Interviews that involve open-ended questions, such as oral history interviews or the open-ended ethnographic (in-depth) interview allow the interviewer more liberty in engaging in social conversation that will allow the interviewer to affirm responses and encourage further commentary from the respondents.

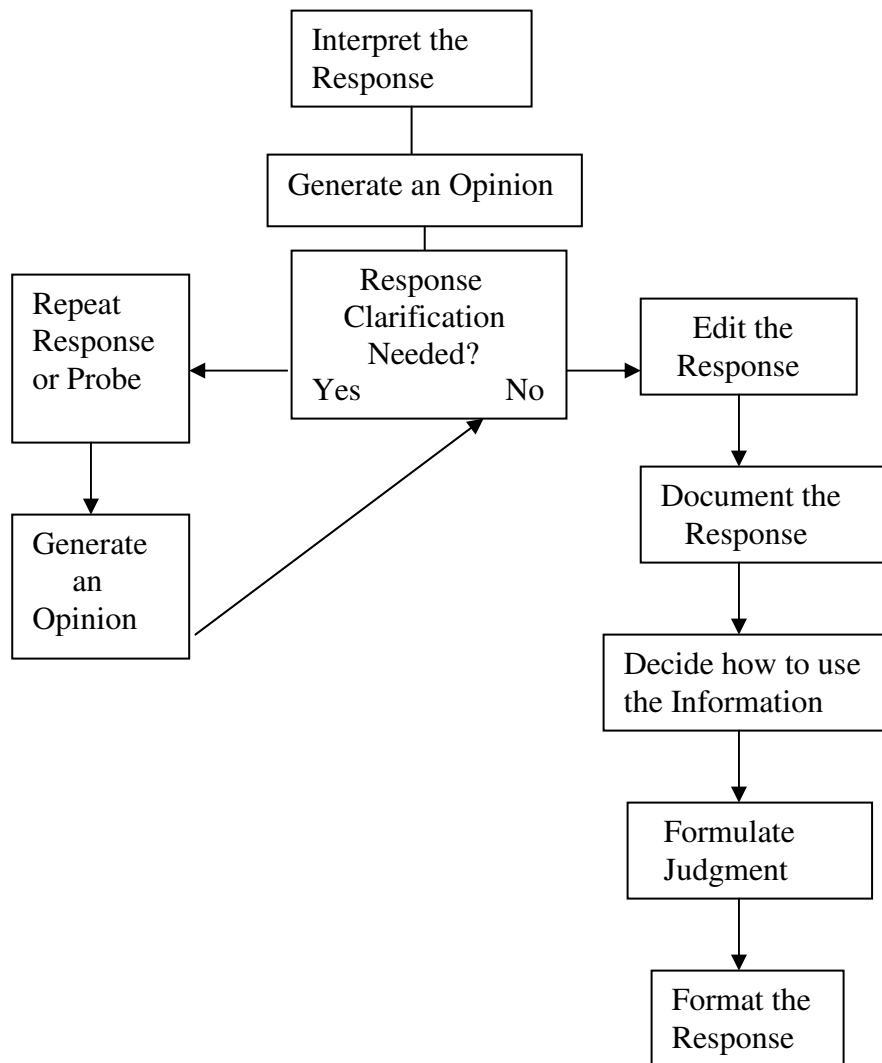


Fig. 7. Interviewers as information processors. Adaptation of the information processing model of a survey situation (Strack & Martin, 1987).

It is suggested that higher levels of error exist at judgment formation stages (i.e., deciding how to use the information and formulating judgment) than in the other stages of the question-answer information processing model (Sudman, Bradburn, & Schwarz, 1996). In a study demonstrating how rating scales can affect judged outcomes,

Schwarz, Knauper, Hippler, Noelle-Neumann, and Clark (1991) observed use of numeric values designated as part of a rating scale used by judges. Judges were asked to estimate how often a student had failed an exam by using an 11 point rating scale within which a rating of -4 and 2 were equivalent. When the student checked a -4 rating, judges estimated that the student failed twice as often than when the student checked a 2 rating. Grayson, Schwarz, and Hippler (1995) extended this area of study using rating scales ranging from “rarely” to “frequently” and found that respondents provided higher frequency ratings when “rarely” was coded a 0 rather than a 1. These study results indicate that identically worded questions may acquire different meanings depending on the response choices provided. The studies also suggest that both the interviewer and respondent are subject to error due to judgment formation throughout the interview process.

Heuristic Reasoning and Clinical Decision Making

Along with formal clinical decision making tools such as the use of standardized assessments, practitioners of various disciplines use heuristics to facilitate their work. Studies on the use of heuristics have examined how clinicians use informal judgment strategies in hospital settings, mental health facilities, law enforcement agencies, and other business and professional work settings. Koehler, Brenner, and Griffin (2002) explored five domains of expertise (i.e., medicine, weather forecasting, law, business, and sports) to see how experts in these fields made probabilistic predictions and to assess how well the heuristics and biases perspective on judgment under uncertainty could account for their findings. Although predictions of the heuristics and biases

perspective are typically qualitative in nature, the authors used a calibration model that included measures of the judge's "discrimination ability", measures of the "extremity" of the judge's responses, and measures of the "differential support" concerning the target hypothesis (Koehler, Brenner, & Griffin, p. 688). The measures involved examining the strength and weight of the expert confidence levels. The findings demonstrated a prevalence of overprediction and overconfidence. Reportedly, when expert discrimination is high and base rates are moderate, fair or "good" predictions can be made. When base rates are low, a tendency exists to overpredict results and when base rates are high, underprediction is found. Differences among the domains were noted. The judgments of expert with the greatest training and statistical technical assistance (i.e. meteorologists and economists) were found to have the least bias. Judgments of experts such as physicians, stockbrokers, and sports commentators tended to be more case-based in their approach to making predictions.

Research into nurse and doctor decision making has examined factors such as use of clinical perceptions versus access to research-based information. In a qualitative research study that examined literature on nurse decision making, it was reported that poor quality of research studies exist in this area and a lack of studies exist that examine the causal impact of variables on decision making (Thompson, 1999). A reason provided for the poor quality of the studies is that the methodology consisted of using a survey method with a self-report questionnaire as the primary tool for data gathering. In addition, small nonrandom samples in many of the studies yielded limited generalizability. The findings did seem to suggest that the information-seeking

behaviors of health care professionals seem to over report use of published research resources in decision making practices and under report the use of information garnered by informal collegial collaborations. The over reporting of the use of published research sources may also suggest that the use of heuristics played a role in the decision making. A study by White, Nativio, Kobert, and Engburg (1992) examined processes of reasoning among specialist and nonspecialist nurses and found that decision making processes differed when the practitioners interpreted the significance of the data. It was suggested that knowledge schematas played a role in these differences, but the role of experience could not be determined. These studies address the need for an examination of heuristics and bias in the role of clinical decision making.

In a look at heuristics and personality traits, one study (Moore, Smith and Gonzalez, 1997) tested the hypothesis that personality differences affect susceptibility to heuristic reasoning processes in a study involving 210 undergraduate women. Use of the representativeness heuristic in social judgment was a focus in study. The Sociable Scale of the Personality Adjective Checklist was used to measure social traits of the subjects asked to form judgments. Study results showed significant differences between sociability groups only in a situation in which the judgment problem dealt with a theme of rejection and abandonment.

One study examined decision making that results from an interview (Ganzach, Kluger, Klayman, 2002). The authors attempted to measure decisions based on qualitative impressions aided by a weighted average of the impressions (e.g., use of quantitative assessment tool) and compared the accuracy of this “mechanical

combination” in a structured interview to the accuracy of clinical judgment. The authors cited an earlier finding in behavioral decision making by Goldberg, (1965) that the weighted average of 11 Minnesota Multiphase Personality Inventory (MMPI) scales outperforms the clinical judgments that are based on these scales in predicting the likelihood of psychosis among mental patients. The authors also stated that direct evidence of the superiority of expert judgment coupled with quantitative measures over expert judgment is rare. Ganzach, Kluger, and Klayman’s study (2000) showed that in a structured interview, clinical expert measurement and mechanical combination is more accurate than use of clinical judgment alone. It was found that combining the two methods increases accuracy over each of them separately.

Although social work practice literature and research reflect attention to the cognitive dimensions of social work decision making (Gibbs & Gambrill, 1999; Nurius, Kemp, & Gibson, 1999; Murdach, 1995; Nurius & Gibson, 1990), discussion of heuristic reasoning in social work is scant and it has been reported that a gap exists between professional social work reasoning and decision-making skills and the environment in which reasoning takes place (Nurius, Kemp, Gibson, 1999). In one study, decisions made by staff on a psychiatric ward were observed to assess the use of heuristics that aided clinical reasoning (Murdach, 1995), however, this study did not address classical judgment heuristics (e.g., representativeness, availability, anchoring and adjustment). The author’s area of interest centered on several decision-making strategies related to research conducted on multiattribute decision making related to the management of patient care.

Consensus exists in the literature of the importance to understand and enhance professional reasoning skills given the fields of human services practices that are beset by chronic case overloads, and limited resources. Great demands are placed on human service workers to make critical decisions under less than optimal conditions. Workers determine when an elderly client can no longer live independently at home; when a child can safely return home to parents accused of child abuse; or when a person is at risk of taking his own life. One recommendation to raise awareness of the judgment and decision-making skills in social work is to develop a team approach to problem-solving that involves talking about one's decision-making processes (Nurius, Kemp, Gibson, 1999). Gibbs and Gambrill (1999) provide workbook exercises to actively involve the reader in making micro, mezzo, and macro level practice decisions. The literature also suggests a continued dialogue and working relationship among practitioners, researchers and educators concerning use of judgment in social work direct practice.

Heuristics and Biases

A common approach to studying the use of heuristics involves a two-level decision design, whereby subjects are asked to make one of two choices. These are usually designed with general knowledge questions as the object of judgment (Koehler, Brenner, and Griffin, 2002) and the aim is to determine use of heuristics. The use of heuristics is a much studied phenomenon not only because judgment heuristics reflect bias, but because decision-making is greatly affected by heuristics. Various types of biases associated with the use of heuristics have been examined in the decision making literature: Overconfidence (Koehler, Brenner, & Griffin, 2002; Griffin & Tversky,

1992; Lichtenstein, Fischhoff, & Phillips, 1982; Wallsten & Budescu, 1983), confirmatory bias (Chapman & Johnson, 2002; Koriat, Lichtenstein, & Fischhoff, 1980), base-rate fallacy (Hamill, Wilson, & Nisbett, 1980; Nisbett & Ross, 1980; Tversky & Kahneman, 1974), hindsight bias (Hertwig, Fanselow, & Hoffrage, 2003; Fischhoff, 1982), “ease of recall” bias (Tversky & Kahneman 1973), and insufficient anchor adjustment (Chapman & Johnson, 2002; Tversky & Kahneman, 1974); Lichtenstein & Slovic, 1971). Research findings concerning these types of biases have determined that use of heuristics is not without error. Overuse and misapplication of heuristics can lead to information distortion, errors in decision making, as well as systematic bias (Kahneman and Tversky, 1984). Systematic biases are non-random and thus recur upon repeated measurements whereas unsystematic (random) are ones that vary in unpredictable ways upon repeated measurements (Pedhazur & Schmelkin, 1991).

The reliance on common heuristics such as anchoring and adjustment, availability, and representativeness heuristics is susceptible to bias in ways demonstrated in a series of studies that examined memory recall, frequency of repetitions and frequency of occurrences Tversky and Kahneman (1973). In one study, the subjects were first exposed to a list of names and later asked to judge the frequency of times a given name was included on the list. Those names that were readily recalled were judged more numerous than the names that were not easily remembered, although both sets of names appeared with the same frequency. Thus, events that are readily recalled are judged more numerous than events of the same size whose instances are inaccessible to memory.

Overconfidence is a common heuristic bias and has been referred to as “the poster child of judgmental biases” (Koehler, Brenner, & Griffin, 2002). Overconfidence occurs when individuals are in complete and irrevocable belief of the correctness of their answers even though factual information exists that could render their answers false. The matter of evaluating evidence and assessing confidence has been studied by various disciplines and major findings have shown that people are often more confident in their judgments than is warranted by the facts (Griffin & Tversky, 1992). This phenomenon seems to occur when people are faced with making judgments or providing answers to questions of moderate to extreme difficulty as opposed to those judgments or tasks of relative ease (Bazerman, 2002; Lichtenstein, Fischhoff, & Phillips, 1982). An attempt to quantify the definition of overconfidence suggests that it is the average subjective probability minus overall outcome relative frequency (Wallsten & Budescu, 1983). In confirmation bias, decision makers only examine evidence expected to confirm and support the target event as opposed to gathering evidence that could disconfirm the target event (Chapman & Johnson, 2002). Thus, confirmatory bias is the tendency toward only seeking information that is similar to the target event, which results in overlooking other information that could negatively interfere with the aim of the question or judgment determination. According to the confirmatory bias model of Koriat, Lichtenstein, and Fischhoff (1980), overconfidence concerning the collection and interpretation of the information arises from the inclination to recruit reasons from memory that confirm the target question or hypothesis.

Base-rate fallacy, which is typically associated with the use of the representativeness heuristic, occurs when individuals are assessing the likelihood of events and ignore base-rates, or information about the prior probability of an event (Nisbett & Ross, 1980; Tversky & Kahneman, 1974). The observation has been made that people tend to ignore characteristics of the larger set of events to which the specific case at hand relates to, such as base rates (Kahneman & Tversky, 1973). For example, stock market rates steadily dropping over a 12 month period may not deter someone from investing in large amounts of money into technology stocks because they believe the technology field to be a booming market.

Hindsight bias has been described as tainted recollection or re-evaluation of past events as a result of what has happened since the occurrence of those events (Hertwig, Faselow, & Hoffrage, 2003). In other words, our perceptions or judgments of past events can be influenced by on-going occurrences. The attempt to reconstruct one's original judgment can be affected by an event that took place long after the original judgment was formed. Someone asked to describe a former neighbor may use the anchoring and adjustment heuristic and recall past pleasant neighborhood gatherings with the former neighbor and judge the person to have been a good neighbor. However, if the former neighbor was later publicly identified as a dangerous arsonist, this new knowledge of the former neighbor could likely yield a different judgment.

The reliance of the availability heuristic to form judgment can be hampered by the bias known as "ease of recall." Judgments based on the use of the availability heuristic are dependent on the ease or difficulty of information recall (Tversky &

Kahneman 1973). Ease of recall bias involves the ability to remember target information. For example, a social worker might deem it likely that a particular client is going to be late for a pending appointment, because the worker remembers that the client either no-showed or was thirty minutes late for three of her previously scheduled appointments. If the client, however, is one that the social worker does not remember, the social worker does not form judgment based on availability heuristics. Events that are easy to recall or imagine are dependent upon the information that is subjectively selected to be stored in memory. The factors that determine which information is retained and stored and which information is discarded are varied and complex, and represent systematic biases inherent in the use of heuristics (Tversky & Kahneman, 1973).

Use of the anchoring and adjustment heuristic may result in a bias referred to as insufficient anchor adjustment. Insufficient anchor adjustment occurs when individuals estimate values based on an initial value, from which various adjustments have been conducted to arrive at a final value (Chapman & Johnson, 2002). The adjustments, which lead to the anchor insufficiency, are the result of lack of effort, not having adequate resources or information to make necessary adjustments, or not having enough time to form a legitimate anchor.

The problem with judgmental heuristics is that they are based on one's intuitive estimation. The heuristic of choice depends on how the problem presents itself and how the problem is perceived. If the issue is such that it prompts the lay scientist to search for similarities to a standard case, then representativeness heuristics is likely to be

employed. If the issue requires estimation of frequency and the likelihood of events, then availability heuristics is used. The intuitive factors affecting heuristic effectiveness involve determining how many similar characteristics must be present for the event to be judged probable or determining how many easily recalled similar events are needed to support a probable estimation. Nisbett and Ross (1980) contend that the same judgmental strategies used to successfully deal with a wide range of problems only hinder the ability to arrive at effective solutions when the same strategies are applied to problems requiring more formal inferential principles. For example, the basic inferential techniques social workers may use to assess the needs of a homeless person may not be effective in assessing the housing needs of a community.

The value one assigns to the relevance of the information is an important aspect of the intuitive process and represents another form of systematic bias known as weighting bias. Weighting bias occurs when information used to form judgments is given either too much or too little weight (Kahneman & Frederick, 2002). Assessing weight bias in subjective matters, such as an individual's psychological well-being, is not exact but it is commonly performed. Weight bias requires normative standards that assign a measure of weight to those attributes that describe the construct of interest. Nisbett and Ross (1980) proposed that people assign inferential weight to data in proportion to the information's level of importance and vividness. The more vivid the information is, the more likely it will be remembered and thus more likely used in inferential processes, because memory for vivid information is better than memory for neutral data (Rubin & Friendly, 1986; Talmi & Moscovitch, 2004). Vivid words are

considered more distinct than neutral words due to the unique physiological responses they evoke in the receiver (Ochsner, 2000). (Nisbett and Ross (1980) described vivid information as: “...likely to attract and hold our attention and to excite the imagination to the extent that it is (a) emotionally interesting, (b) concrete and imagery-provoking, and (c) proximate in a sensory, temporal, or spatial way” (p. 45). A lengthy example may illustrate these points. If an employee were to relay to his co-workers a newspaper account of a woman who, while talking on a cell phone, was involved in a three-car collision, he might get some mild reaction, and perhaps some comments about people who drive while talking on their cell phones. The reaction from the co-workers might differ, however, if they were told their supervisor was involved in the accident and was taken to the hospital with a broken neck. The co-workers might infer that people who drive while talking on cell phones are dangerous. The co-workers might even begin to argue for the need to legislate some criminal penalty for talking on a cellular phone while operating an automobile. Once people are engaged in discussions that arouse emotions, evoke images, and involve some personal interest, the vivid information is soundly recorded in memory for future recall. The weight assigned to the information due to the level of vividness not only influences what information is remembered, but also influences how the information is interpreted.

As many studies on the use of heuristics point toward the problem of heuristic bias, one recent study argues that focus on the negative consequences of heuristics can prove problematic (Shepperd, & Koch, 2005). The study involving the representativeness heuristic examined how examples given to subjects influence the

understanding of the heuristic. Three groups of students were given the definition of representativeness heuristic, a definition plus examples of the heuristic leading to poor judgment, or a definition plus examples of the heuristic leading to both good and poor judgments. The results indicated that providing examples of heuristics leading only to poor judgments undermined comprehension.

The aforementioned discussion on heuristic-based biases confirms that the use of heuristics is not without error. Overconfidence bias leads us to hold on to certain beliefs even in the face of discrediting evidence. Confirmatory biases lead us to search for evidence in ways that can only confirm our views. Base-rate fallacy bias causes us to make generalizations from small or biased samples. Heuristic-based biases can cause us to make false or extreme judgments and predictions, and impair our abilities to make sound decisions. Although this list would seem to discredit the ability to make good judgments under uncertainty, the use of heuristics often leads to accurate results and it is always better than guessing.

Chapter Summary

This chapter introduced literature on the survey process including cognitive and survey research methodological issues. Published work on how cognitive research methodology differs from survey research methodology was presented, particularly concerning the issue of systematic variation. Discussion included the link between cognitive research and social survey research that recognizes social conversation involves key inferential processes. Studies on the application of cognitive processes to survey methodology were presented and included information on how a respondent and

interviewer process information during an interview. Collaborative work between cognitive and social survey researchers suggests that greater understanding of information processing in social communication aids the advancement of survey methodology (Tourangeau, Rips, & Rasinski, 2000).

Literature on heuristics and clinical decision making among various disciplines, including social work, was presented. Discussion of heuristic reasoning in social work is scant and a gap exists between professional social work judgment and decision-making skills and the environment in which reasoning takes place. This chapter ended with a presentation on studies addressing heuristic-based biases.

The following chapter presents study design methodology of an exploratory secondary analysis of respondent answers recorded in 30 structured interviews that utilized standardized questionnaires. Included are research questions, theoretical assumptions, operational definitions of variables, and hypotheses.

CHAPTER 4

METHODOLOGY

This exploratory study is a secondary analysis of data from written patient responses recorded by an interviewer in 30 structured interviews conducted in 1999 and 2000. Data include respondent answers to questions on the Patient Needs Assessment Tool (PNAT) questionnaire. Re-visiting the data from a cognitive theoretical perspective allows exploration of documentation obtained in face-to-face interviews and strives to identify evidence of the use of judgment heuristics and heuristic-based biases.

Presented in this chapter are the research questions, theoretical assumptions, hypotheses, operational definitions of variables, strategy for data analysis, and relevant components of an exploratory design. This chapter also includes a section on the primary study that presents background information, the sample, the interview process, and the PNAT, the study's measurement tool.

Research Questions

The research questions in this study address the use of judgment heuristics as manifested in the written recordings and decision-making patterns in 30 structured interviews to reveal evidence of judgment heuristics and heuristic-based biases. Identifying how inferential weight has been discriminatingly assigned to respondent

data provides clues as to the use of heuristics and decision-making patterns that suggest the presence of cognitive processing and perhaps, bias. Cognitive biases are judgment errors made on the basis of misapplied heuristics. The exploration of the use of heuristics in a structured interview raises the following questions: How is the interviewer's use of judgment heuristics manifested in the written recordings of a structured interview? Can evidence of heuristic-based bias be identified in written recordings of structured interviews? How is inferential weight assigned to respondent data that is used for decision making? What contextual influences affect the use of heuristics in a structured interview? The research inquiry focuses on identifying evidence of judgment heuristics and heuristic-based biases as opposed to how well judgmental heuristics assist in making judgment determinations.

Theoretical Assumptions and Hypotheses

The hypotheses in this study are guided in part by information processing theory and the psychology of human judgment. Literature on the cognitive aspects of survey methodology provided a framework within which to examine the use of judgment heuristics in a survey interview. Secondary analysis and the exploratory nature of this study propose that the hypotheses are framed to guide retrospective interpretation of post-interview documentation. The hypotheses encompass two primary concepts inherent in availability heuristics: vividness and salience. Vividness is considered a part of the availability heuristic in that the vivid nature of information makes it more "available" and therefore perceived as more relevant to judgment processing. Salience refers to important, essential information selected for application in judgment processes.

Judgments are based on the salient quality of information as well as information that is easily recalled (Schwarz & Vaughn, 2002). For example, judgments made in clinical practice are based on selected information considered most important to clinical decision making.

Theoretical Assumption 1

Inferential weight is assigned to data in proportion to the information's level of vividness and salience (i.e., importance). Theoretical Assumption 1 underlies the formation of Hypothesis 1 and Hypothesis 2.

Hypothesis 1. Patient records judged to have moderate to profound levels of need will contain more vivid imagery than patient records reflecting no or mild levels of need.

Hypothesis 2. Patient records judged to have moderate to profound levels of need will contain more salient data elements than patient records reflecting no or mild levels of need.

Theoretical Assumption 2

Contextual factors influence information processing of respondent answers in a survey interview. Theoretical Assumption 2 underlies the formation of Hypothesis 3 and Hypothesis 4.

Hypothesis 3. Patient records from the home-based interviews will contain more vivid imagery than patient records from the clinic-based interviews.

Hypothesis 4. Patient records from the home-based interviews will contain more salient data elements than patient records from the clinic-based interviews.

Operational Definitions of Variables

Contextual Factors: Fifteen structured interviews conducted in a cancer clinic setting and fifteen structured interviews conducted in a cancer patient's home.

Level of Need: The ranked score in the Patient Needs Assessment Tool reflecting the presence or absence of physical, social, or psychological dysfunction. A moderate to profound level of need is a score below 20. No or mild level of need is a score of 20 or above.

Salient Data: A word count of respondent answers documented in the 30 structured interviews. All information recorded during the interviews was considered important and relevant and assumed to have been cognitively processed to determine level of need. All conjunctions, articles of prepositions, and personal pronouns were excluded.

Vivid Imagery: As recorded in the respondent answers documented in the 30 structured interviews, the nouns, verbs, adverbs and adjectives conveying action (e.g., gardening, reading), emotional states of being (e.g., anxious, depressed), physical distress (e.g., pain, nausea), and/or cognitive descriptors relating to illness experiences (e.g., challenging, uncertain).

Study Design

This exploratory study is a secondary analysis of a primary study data set comprised of respondent answers recorded in 30 structured interviews. A function of secondary analysis involves the use of an existing data set to find answers to research questions that differ from the questions asked in the primary study (Heaton, 2004;

Hinds, Vogel, & Clarke-Steffen, 1997). The specific type of secondary analysis used is referred to as supra analysis, which "...transcends the focus of the primary study and examines new empirical, theoretical, or methodological questions" (Heaton, 2004, p.38). This type of analysis is similar to a secondary analysis called armchair induction, identified by Thorne (1994) but supra analysis differs in that "it may be conducted by the same researchers who carried out the primary research, and is not necessarily restricted to theoreticians" (Heaton, 2004, p. 39).

Data preparation began with copying and de-identifying each patient record. Names and other identifiable information, such as location of interview, were deleted to protect patient confidentiality and to assure cases were unidentifiable during data analysis. The copied records were numbered to correspond with the original record and given to a transcriber. The transcriber typed all written words and sentences and created a separate, computerized word document file for each patient record. The transcribed records were examined by independent MSW reviewers who determined the presence of need. The transcribed records were also examined by college students who identified evidence of vivid imagery symbols.

Independent MSW Reviewers

The independent variable representing the level of need was derived from ranked scores obtained from reviewers who examined the transcribed patient records and made a judgment determination on the presence or absence of need. Three independent MSW reviewers were asked to examine all respondent answers in the 30 interviews. One MSW is head of a social work department at an out-patient cancer

treatment facility in Amarillo, Texas. The second MSW is a clinical therapist in an adolescent mental health treatment facility in Kansas. The third MSW is a recently retired social work practitioner and regional director of the Texas State Health Department Critically Ill and Dependent Children's program in West Texas. The reviewers were provided written instruction to judge whether or not need was evident based on the transcribed respondent answers provided (Appendix F). Instructions also included asking the reviewers to assign scores ranging from 1 to 5 for each of the 5 subscales within the three psychosocial dimensions. The reviewers used the actual PNAT scoring form (Appendix F) and they were advised that if they could not determine a level of need, they did not have to assign a score. The reviewers were also asked to indicate a reason for their inability to make a judgment of need. One reviewer chose not to assign a mobility subscale score in the Physical Dimension in 4 cases and he did not assign a prior psychological adjustment subscale score in 3 cases in the Psychological Dimension because he believed that he did not have enough information to form a judgment. This did not prevent the assignment of overall dimension scores.

The ranked score results of all three reviewers were compared with the ranked score results of the primary study interviewer using an SPSS Wilcoxon signed-rank test. The Wilcoxon tested the hypothesis that the ranked scores of the independent reviewers and the primary study interviewer had the same distribution. The Wilcoxon test makes no assumptions about the shape of the distributions and the test takes into account information about the magnitude of differences within pairs and gives more weight to pairs that show small differences. For example, if one reviewer assigned a score of 5

and the paired score of comparison was a 1, less importance is assigned to the distribution compared to a score of 1 and a comparison paired score of 2, which would result in significance attached to this particular pairing.

The Wilcoxon tests were separately conducted for the Physical Dimension scores, the Social Dimension scores, and the Psychological Dimension scores. All three dimensions were statistically significant at the .05 level of significance. The Wilcoxon tests of significance indicated that the ranked scores of the interviewer in the primary study and the ranked scores of the MSW reviewers demonstrated the same distribution. The importance of the same distribution is that secondary analysis of pre-existing data relies on the integrity of the study from which the data originates.

After the MSW reviewers assigned ranked scores for each psychosocial dimension, their scores were compared for similarities in scoring. When two or more reviewers assigned a dimension score- below 20, the patient record was assigned to the category of moderate to profound level of need. When two or more reviewers assigned a dimension score of 20 or above, the patient record was assigned to the category of no or mild level of need (See Instrument Scoring subsection under the Primary Study Background section in this chapter).

College Student Reviewers

The dependent variable identified as vivid imagery was developed by asking three college students to independently review the transcribed records. Two students attend Texas universities and one student attends Boston College. The students met as a group and were given verbal and written instruction (Appendix E) to review the

transcribed respondent answers and mark those words they considered to demonstrate a level of vividness. The students were then instructed to review the words they identified as demonstrating vividness and rank the words according to low level, moderate level, or high level of vividness. Each student had his or her own copy of transcribed records and worked separately. The student's average number of high level vivid words for each case record (n=30) comprised the vivid imagery score. As a measure of selecting words that met stringent criteria for vivid imagery, only those words identified as having high levels of vivid imagery were used in the hypothesis testing. Table 1 presents randomly selected words identified by the college students as containing vivid imagery:

Table 1. Words Identified as Having Vivid Imagery

Low Level of Vivid Imagery	Moderate Level of Vivid Imagery	High Level of Vivid Imagery
Desserts	Sleep	Frustrated
Drives	Family	Surprised
TV	Helpful	Cancer
Horses	Church	Diarrhea
Active	Companions	Cry
Treatment	Strong	Money
Work	Energy	Blood
Bills	Good	Widow
Activities	Bowling	Chemotherapy

Strategy for Hypothesis Testing

The Mann-Whitney nonparametric test was used to test the hypotheses in this study. The Mann-Whitney is a two-independent-samples rank test for the difference between two population medians, although it is also a test of both location and shape (Hart, 2001). The Mann-Whitney test statistic, U , is based on ranks rather than on parameters of normal distribution, such as mean or variance (Gibbons, 1993). The Mann-Whitney test of significance supports the null hypothesis when the population medians are close to being equal and thus determines that two independent samples come from the same population (Gibbons, 1993).

In this study, patient records judged to have moderate to profound levels of need (X) were compared to patient records judged to have no or mild levels of need (Y). The Mann-Whitney statistic counts the number of times an observation from the group with the smaller sample size (X or Y) precedes an observation from the larger group (X or Y) and ranks the combined sample of both groups, from smallest to largest, and tests the null hypothesis that these unknown medians are equal (Gibbons, 1993).

As a nonparametric procedure, the Mann-Whitney assumes that the data represent counts or frequencies with different types of outcomes and that the data are measured on at least an ordinal scale (Gibbons, 1993). Nonparametric procedures are also appropriate when the distribution assumption is unknown, the sample size is small, and the measurements are imprecise (Gibbons, 1993).

Primary Study Background Information

The primary study was conducted at the Hendrick Cancer Center, an outpatient cancer treatment center in Abilene, Texas. Abilene is a rural community of approximately 100,000 citizens in West Texas. The Cancer Center provides oncology care to patients residing in a twenty-two rural county service area. The Cancer Center staff included two medical oncologists, two radiation oncologists, an administrator, three oncology nurses, a nurse manager, and one oncology social worker.

Sample

The primary study participants were newly registered cancer patients receiving medical oncology treatment services at the Hendrick Cancer Center. The subjects in this study were obtained through a non-randomized sampling procedure, namely, availability sampling. Thirty patients were randomly assigned to a group that received a structured interview in the patient's home or to a group that would be interviewed in the cancer clinic.

Participants. Newly registered cancer patients with no prior cancer diagnosis and no prior record of having received cancer treatment were considered for participation in the study. Selection of participants considered the classification of malignant tumors in the patients. All patients medically designated as having a cancer stage classification of I, II, or III, were deemed eligible for the study. According to the TNM Classification of Malignant Tumours (Sobin & Wittekind, 1997), cancer is classified by pathological stage groupings. Generally speaking, stages 0 through IV reflect a continuum between a carcinoma in situ (stage 0) whereby abnormal cell

growth suggests a pre-cancerous condition, to the extensive spread of disease (stage IV) whereby cancer cells have migrated to various systems and sites distant from the location of the cancer origin.

No restrictions were designated concerning the patient's gender, ethnicity, marital status, medical insurance coverage, availability of a caregiver, and income. Only adult patients over the age of eighteen were included in the study. Patients receiving home health care or hospice care were not eligible to participate in the study, as these patients were already receiving home visit intervention, which was a variable of interest in this study.

Patient Selection Procedure. The researcher identified all newly registered patients who visited the Hendrick Cancer Center during the period of November, 1999 through April, 2000. Patients who qualified for the primary study and who were willing to participate in the study were advised of the informed consent requirement. The researcher reviewed the patient consent form (Appendix A) with all patients, item by item. After reviewing the form, the willing patients signed the consent form to participate in the study. The consent form (Appendix A) gave permission to access patient medical records maintained at the Hendrick Cancer Center. Patient records were accessed to obtain demographic information such as age, gender, sex, religion, marital status, availability of a caregiver, income, and medical insurance information. Patient records were also reviewed to verify the cancer diagnosis, staging, and treatment.

Patient Demographics. Twenty females and ten males participated in the study. Twelve females and three males were randomly assigned to the home visit group. Eight females and seven males were assigned to the clinic visit group. Twenty-five patients were Anglo and five patients were Hispanic. All of the patients assigned to the clinic visit group had medical insurance. In the home visit group, twelve had medical insurance, and three did not. Twenty patients reported incomes of less than \$50,000 and ten patients reported incomes of more than \$50,000. Ten patients in the home visit group reported having a caregiver present in the home. In the clinic visit group, twelve patients reported having a caregiver in the home.

Interview Process

After random assignment to the home visit group or the clinic visit group, the researcher contacted patients to schedule appointments for face to face meetings to conduct a patient needs assessment interview. The researcher reviewed the purpose of the study and obtained demographic information not previously recorded in patient medical records (Appendix B). After obtaining the demographic information, the researcher administered the Patient Needs Assessment Tool (PNAT) (Appendix C).

The PNAT was administered through a simple structured interview. Although the majority of the questions on the PNAT are closed-ended, it is designed to allow for open expression of the patient's perception of need. Fontana & Frey (1994) defined structured interviewing as "...a situation in which an interviewer asks each respondent a series of pre-established questions with a limited set of response categories" (p. 363). In a structured interview, little room exists for variation in participant response, except

where an open-ended question is posed. In the combined subscales of the Physical Dimension of the PNAT, for example, a total of twenty-one questions are presented. Of these twenty-one questions, various questions are posed in such a way as to elicit a limited response, beyond a yes or no answer:

1. How do you spend your day at home?
2. How much help, if any, do you need to eat; to get dressed; to bathe?
3. How much time do you spend out of bed?
4. How would you rate your overall level of general discomfort at this time, apart from any pain you may be feeling? (By discomfort we mean any symptom that may be troubling you, such as nausea, constipation, or itch. Is your discomfort: Intolerable, severe, moderate, mild, or none at all?)

These questions are designed to elicit information that broadens the scope of the question. Patients may conceivably view this as an opportunity to ventilate their feelings or to discuss at length an issue of concern.

In this study, the following interview guidelines were adapted from methods developed by Fontana and Frey (1994) on how to perform structured interviews:

1. Researcher will provide a brief introduction explaining the study prior to the asking of any demographic questions or questions on the Patient Needs Assessment Tool.
2. Researcher will not deviate from the study introduction, sequence of questions, or question wording.
3. Researcher will not permit long or digressive responses or allow another

person to answer for the respondent. If this cannot be controlled during the interview, the patient will be dropped from the study.

4. Researcher will not suggest an answer or agree or disagree with a response. Personal views of the researcher regarding the topic or question will not be provided.
5. Researcher will not interpret the meaning of the question to the patient. If necessary, the question will be repeated.
6. Researcher will not record on the assessment tool those needs identified through observations made during home or office visits. Only those needs identified through the use of the PNAT during the course of the interview are included in the measurement instrument scoring procedure.

Measurement Instrument

The Patient Needs Assessment Tool (PNAT) is an interviewer-rated screening instrument that provides measurements of psychosocial distress in the physical, psychological, and social functioning of cancer patients (Appendix C). The PNAT was primarily developed as a screening tool to enable early intervention in areas affecting a patient's quality of life, i.e., physical, psychological, and social status (Coyle, Goldstein, Passik, Fishman, & Portenoy, 1996). The development of the PNAT was based on existing cancer patient quality of life literature which "...repeatedly affirms the multidimensional nature of health-related quality of life and indicates that physical, psychological, and social dimensions are fundamental components" (Coyle et al, 1996, p. 87). The ordinal measures in the PNAT are used to estimate a need requiring

remediation, that is, unmet need. Unmet need has been a central concept in several studies on the utilization of social work services and is a recognized method for determining needed assistance (Cwikel & Behar, 1999; Williams, Lyons, & Rowland, 1997; Leon & Lair, 1990).

The PNAT consists of a series of interview questions used in a structured, standardized format, and includes a corresponding ordinal scoring system used to help clarify the degree of intervention needed to alleviate the identified areas of dysfunction (Appendix D). An identified area of dysfunction within the Physical, Social, or Psychological Dimensions suggests a determination of need. For example, a response to the question “How much time do you spend in bed?” may suggest mobility dysfunction if the patient reports spending 20 hours a day in bed. The scoring method utilizes an interviewer-rated approach that requires the interviewer’s use of judgment in deciding how to rank an identified psychosocial need. This aspect of the instrument scoring method provides evidence of the decision-making process utilized by the interviewer to assess the level of the identified need.

The PNAT is a validated patient needs assessment tool. Specifically, the PNAT validly measures physical, social, and psychological areas of dysfunction substantiated by psychooncology research to be prevalent among cancer patients. It was tested using in-patient and outpatient adult oncology patients at Memorial Sloan-Kettering Cancer Center in New York, and has been found to have criterion and construct validity in addition to good interrater reliability and internal consistency. The subscale scores for the physical, psychological, and social dimensions demonstrated good interrater

reliability and internal consistency (intraclass correlation coefficients of 0.71-0.97) (Coyle et al, 1996). Social workers were included with nurses and physicians in the reliability assessment of the instrument. Criterion and construct validity were evident through high correlations of each subscale with the evaluation of expert raters (correlation coefficients of 0.85-0.95) and with scores on nine validated patient-rated instruments such as the Beck Depression Inventory, the Karnofsky Performance Scale, the Functional Living Index-Cancer (FLIC), and the Brief Symptom Inventory (BSI) (Coyle et al, 1996). These instruments are widely recognized in the field of psychosocial oncology as valid measures in determining cancer patients' functional responses to their illness and cancer treatment and encompass the assessment of social, psychological, and physical well-being. Concurrent validity using Spearman rank order correlation demonstrated highly significant correlation with these assessment tools. The strongest associations were noted with those instruments that assessed the same dimensions.

Instrument Scoring. The patient responses on the PNAT were scored using the interview guide's corresponding ordinal scoring scale (Appendix D). Each of the three dimensions (i.e., physical, social, and psychological) contained five subscales. The Physical Dimension contained the following subscales: Mobility, communication, activities of daily living, bowel and bladder function, and discomfort. The Social Dimension contained the following subscales: Practical support, individual support network, non-medical support network, medical support network, and financial security. The Psychological Dimension contained the following subscales: Prior psychological adjustment, depression, anxiety, attitude toward disease, and attitude toward treatment.

Ordinal scoring of each of the fifteen subscales included a range of 1 to 5. A score of 1 represents the highest level of need and a score of 5 reflects no need. For example, within the Physical Dimension, the subscale of mobility identifies being bed bound as having a ranked score of 1, and being independent and fully mobile without assistance has a ranked score of 5. Thus, responses with a score between 1 and 4 represent a need that may require remediation. The sum of the subscale ordinal scores resulted in a total dimension score. Each of the physical, psychological, and social dimensions produced a separate dimension score ranging from 5 to 25. A total dimension score of 5 would indicate a profound level of need. A total dimension score of 10 would indicate a severe level of need. A total dimension score of 20 would indicate a mild level of need, and a total dimension score of 25 would indicate no present need.

Chapter Summary

This chapter presented methodology for an exploratory, secondary analysis of a data set comprised of respondent answers recorded in 30 structured interviews obtained in a primary study. Secondary analysis was defined as the use of an existing data set to find answers to research questions that differ from the questions asked in the primary study. Research questions addressing the exploration of the use of judgment heuristics in a structured interview were presented. Theoretical assumptions and hypotheses were presented along with strategies for hypothesis testing which included discussion on the Mann-Whitney nonparametric test. Operational definitions of the variables used in the

hypotheses were presented. Presented in this chapter were the relevant components of this exploratory design study.

The description and methodology of the primary study were presented, because the study served as the data source for the secondary analysis. Of particular emphasis was the PNAT, the study's measurement tool, which was used by the MSW reviewers in the secondary analysis of the data. The following chapter presents data analysis findings, and discussion of the Mann-Whitney U test results.

CHAPTER 5

DATA ANALYSIS

The following hypotheses were tested with Mann-Whitney nonparametric analysis at the .1 level of significance, a less rigorous statistical standard for rejecting the null hypothesis commonly used in exploratory studies (Cohen, 1992) as the emphasis is on exploring clinically relevant differences and relationships in a small sample size (Rubin & Babbie, 1993). The focus of interest was in determining substantively significant relationships among the variables under study, particularly within the Physical, Social, and Psychological Dimensions to reveal evidence of use of heuristics (i.e., vivid imagery and saliency) and heuristic-based bias. Presented in this chapter are test results and discussion of the findings.

Hypothesis 1 Testing

Hypothesis 1 stated that patient records judged to have moderate to profound levels of need will contain more vivid imagery symbols than patient records reflecting no or mild levels of need. The variable representing the two levels of need groups served as the independent variable. The dependent variable was the vivid imagery mean score assigned to each case record. The Mann-Whitney test examined the median values of the two groups based on the vivid imagery scores.

Testing was conducted for each of the psychosocial dimensions and the results were not statistically significant: Physical Dimension ($U = 70.50$; $\text{sig.} = .28$); Social Dimension ($U = 93.00$; $\text{sig.} = .64$); and the Psychological Dimension ($U = 98.00$; $\text{sig.} = .80$). The results supported the null hypothesis that patient records judged to have moderate to profound levels of need do not contain more vivid imagery symbols than patient records reflecting no or mild levels of need.

Hypothesis 2 Testing

Hypothesis 2 stated that patient records reflecting moderate to profound levels of need will contain higher levels of salient data than patient records reflecting no or mild levels of need. The variable representing the two levels of need groups served as the independent variable. The dependent variable was the saliency variable which represents the word count of the relevant data recorded in each of the 30 structured interviews. The Mann-Whitney test examined the median values of the two groups based on the salient word count.

Statistical significance was found in both the Physical Dimension ($U = 59.00$; $\text{sig.} = .10$) and the Psychological Dimension ($U = 41.50$; $\text{sig.} = .05$). Results were not statistically significant in the Social Dimension ($U = 98.00$; $\text{sig.} = .80$). The findings indicate an association between the Physical and Psychological Dimension levels of need and their overall rank with respect to the saliency word count in these patient case interviews. That is, higher word frequency scores were associated with cases within the Physical and Psychological Dimension with ranked levels of moderate to profound levels of need.

Hypothesis 3 Testing

Hypothesis 3 stated that patient records of the home-based interviews will contain higher levels of vivid imagery symbols than patient records of the clinic-based interviews. The variable representing the location of the interviews served as the independent variable. The dependent variable was the vivid imagery score assigned to each case record (N = 30). The Mann-Whitney test determined that home-based interviews vs. clinic-based interviews demonstrated median differences of vivid imagery (U = 54.00; sig. =.02). The statistical finding supported the hypothesis that a statistically significant difference exists between the home-based interviews and the clinic-based interviews in regard to the presence of vivid imagery symbols recorded in the case records.

Hypothesis 4 Testing

Hypothesis 4 stated that patient records of the home-based interviews will contain more salient data elements than patient records of the clinic-based interviews. The variable representing the location of the interviews served as the independent variable. The dependent variable was the saliency variable which represents the word count of the relevant data recorded in each of the 30 structured interviews. The Mann-Whitney tested the group medians of the home-based interviews and the clinic-based interviews based on the saliency word count (U = 99.50; sig. =.60). The findings supported the null hypothesis that patient records of the home-based interviews do not differ from patient records of the clinic-based interviews with respect to the saliency word counts identified in each case record.

Discussion

Hypothesis 1 was not supported, therefore confirming the null hypothesis that patient records judged to have moderate to profound levels of need do not contain more vivid imagery symbols than patient records reflecting no or mild levels of need. The Mann-Whitney test results showed that statistical significance could not be established between levels of need and vivid imagery symbols identified in recorded interview data. The search for evidence of heuristics in the use of vivid imagery symbols is supported by the theoretical assumption that inferential weight is assigned to data in proportion to the information's level of vividness. However, evidence of judgment processes, namely, the use of availability heuristics in the determination of need levels, did not provide clues that vividness played a significant role.

In Hypothesis 2, a statistically significant association between moderate and profound levels of need and high levels of salient data was established in the Physical Dimension and Psychological Dimensions. Table 2 shows the mean distribution of the salient word count for each of the psychosocial dimensions.

Table 2. Psychosocial Dimension Level of Need and Mean Word Distribution

Psychosocial Dimensions	Mean Word Distribution of Cases ranked Moderate to High Levels of Need	Mean Word Distribution of Cases ranked No or Low Levels of Need
Physical	382	343
Social	351	557
Psychological	380	340

The mean word distribution identified in Table 2 prompted an examination of the open-ended questions in the PNAT questionnaire. More open-ended questions were counted in the Psychological Dimension (12) than in the other dimensions. This fact would suggest that the measurement instrument influenced the use of availability heuristics in the interview; however, the Physical Dimension had the lowest number of open-ended questions (4). The number of salient words seemed to be more of an indication of the high need levels in these two domains. The higher number of open-ended questions in the Psychological Dimension played a role in establishing criterion and construct validity for the questionnaire.

When judgment is required, availability heuristics dictate cognitive processes to search for relevant and available information necessary to complete judgment (Tversky and Kahneman, 1973). As more information was available to process in the Physical and Psychological Dimensions than in the Social Dimension, the risk of judgment bias occurring in these two dimensions must be acknowledged. The judgment of MSW reviewers may have been influenced by overconfidence, a common heuristic bias that occurs when individuals are in total belief of the correctness of their perceptions of certain evidence (Koehler, Brenner, & Griffin, 2002). Once the MSW reviewers started reading responses related to personality disturbance, depression, anxiety, attitude towards disease and/or attitude toward treatment (i.e., psychological dimension factors), they might have believed that the cancer patients had some level of need. Once their impressions had been formed, they were sensitive to subsequent respondent data that would confirm their impressions. This would suggest the influence of confirmatory

bias, which is a heuristic-based bias that leads a search for evidence in ways that can only confirm our views. The following are patient responses randomly selected from some of the cases that reflected moderate to high levels of psychological need:

Question: Do you have fears about your disease? What worries you the most?

Respondent Answers: “Yes, worries more about wife and mother. Mother lives in a nearby town and is very demanding. He drives several times a week to visit her.”

“Yes. Both parents died of cancer.”

“Yes. Is anxious about chemotherapy affecting quality of life. Wonders if second opinion is necessary. Is unsure of diagnosis and prognosis.”

The responses indicate that the patients do admit to having worries, but the statements do not reflect any particular level of distress. The reviewers formed their own judgments on the level of need. The reviewers may have also held pre-conceived beliefs or clinical judgments that someone diagnosed with cancer is likely to experience high degrees of psychological disturbance. In addition, the reviewers may have deemed psychological information more relevant to the purposes of the interview and thus recorded more information.

Since the Psychological Dimension contained more open-ended questions than the Social or Physical Dimensions, the sensitive nature of the topic and the opportunity to say more might have influenced patients to be more emotionally engaged and

verbally expressive. To be asked to share emotional concerns and worries concerning a life threatening illness may have been a welcomed opportunity for ventilation.

Statistical significance found in the Physical Dimension prompted an examination of responses taken from some of the cases that reflected moderate to high levels of psychological need:

Question: How would you rate your overall level of general discomfort at this time apart from any pain you may be feeling?

Respondent Answers: “The only thing bothering patient now is muscle weakness.

During chemotherapy did not drive, but husband helped until he required hospitalization for a pace maker.”

“Doing OK. Just ignore the pain and ‘just go on.’ Is on morphine. Has body pain and low energy level. Is bothered by gas acid reflux, hiccups.”

“Severe. Diarrhea is chronic. Has stiff neck due to white blood counts. Has headaches and loss of appetite. Energy levels are inconsistent. Has to take things day by day depending on the blood count levels. Sometimes getting a blood transfusion makes her “feel bad.”

The Physical Dimension only had 4 open-ended questions. This is the least number of open-ended questions compared to the other two dimensions. In comparison to the respondent answers in the Psychological Dimension, these answers reflect more concrete evidence of distress. The high number of salient words may be related to the

patient's need to talk about current concerns related to physical deterioration and side effects resulting from the patient's cancer diagnosis and treatment.

The Hypothesis 2 findings concerning the saliency word counts provide evidence of availability heuristics used in the information processing of respondent answers in the Physical and Psychological Dimensions of the PNAT questionnaire. The findings also suggest that the judgment of MSW reviewers were influenced by heuristic-based biases commonly associated with availability heuristics such as overconfidence and confirmatory bias.

Statistical significance was established for Hypothesis 3 supporting the hypothesis that patient records of the home-based interviews contain higher levels of vivid imagery symbols than patient records of clinic-based interviews. These findings suggest that interviews conducted in the home may set the stage for vividness to surface during the interview process. A mean comparison of the vivid imagery data showed that the home-based interviews had a group mean score of 80, and the clinic-based interviews had a group mean score of 60. The MSW reviewers were thus cognitively processing data that contained significant levels of vivid imagery when making judgment determinations on the home-based interview case records.

Vivid imagery is often used in judgment heuristics. The higher levels of vivid imagery found in the home interviews suggest use of heuristics such as the anchoring and adjustment heuristic. For example, if an interviewer observes that several people are in the home during the time of the interview, the interviewer could assume that the

client has available and adequate social support. The interviewer “anchors” on this observation and later judges that the client has available friend and family support.

Use of the anchoring and adjustment heuristic, however, may result in judgment error. The result of misjudging, or misapplying the anchor and adjustment heuristic is the bias of insufficient anchor adjustment, which occurs when an individual makes an initial determination or estimation based on some insufficient value point (i.e., anchor). Due to an inadequate starting point, the resulting adjustments that follow are rendered inadequate or insufficient. In the example provided, the people seen in the home may themselves be dependent on the client for financial and emotional support. Thus, the interviewer may incorrectly assume that the client has an available and dependable daily social support system if the assumption is solely based on the individuals seen in the home on that particular day. The insufficient anchor adjustment is based on the anchoring and adjustment heuristic that estimation often begins with an initial starting point, which is a value that is convenient or known, and then moves forward through a sequence of adjustments until a final determination is made.

In a home-based interview, the interviewer may be subjected to environmental stimulation not ordinarily present in a clinic setting. The room in which the interview is conducted may be stark or lavishly appointed. The respondent may live with adult children, young children, or grandchildren, who may be present during the interview. How contextual factors affect vivid imagery is elusive. Since the location of the interview affected the level of vividness that was conveyed in the recordings, what remains to be understood is how or why this occurred. Is the raised level of vivid

imagery the result of a type of respondent effect or interviewer effect? Perhaps a patient communicating feelings of depression in a cold and tattered living room results in the interviewer's heightened focus on an assessment of depression.

If the location of the interview is a factor in interviewer bias, does it serve to suppress or enhance the validity of the interview? That is, does it help or hurt the validity of the information obtained during an interview? Advantages concerning the use of home visits are clearly documented in health care and social work literature (Jackson & Sedehi, 1998; Wasik, Bryant, & Lyons, 1990; Cohen & Egen, 1981; Hancock & Pelton, 1989; Currie, Moore, Friedman, & Warshaw, 1981). An often stated advantage in social work literature is that home visits result in better understanding of the home situation and family dynamics and aid in eliminating any preconceived bias of the social worker by providing an opportunity to witness important variables of assessment (e.g. living conditions). The possibility cannot be discounted, that a home-based interview may enhance the validity of the information gathered thus suggesting a positive bias.

In Hypothesis 4, the Mann-Whitney test results supported the null hypothesis that patient records of the home-based interviews do not contain more salient data elements than patient records of the clinic-based interviews. An association between the location of the interview and the saliency word count was not established.

The mixed results of the Hypothesis 3 and 4 prompted a Mann-Whitney analysis of need levels, vivid imagery words, and saliency word counts to determine the effect the location of the interview on these variables. Compared to the clinic-based interview group, the home-based interview group showed that in the moderate to high level of

need cases, vivid imagery was the only variable with statistical significance in all three dimensions: Physical Dimension (U = 54.00; sig. = .02), Social Dimension (U = 54.00; sig. = .02) and Psychological Dimension (U = 54.00; sig. = .02). In this multiple variable analysis, vivid imagery was more significant than saliency. A Mann-Whitney analysis of the 15 cases in the home visit group demonstrated statistical significance in the relation between those cases identified as having moderate to high levels of need (n = 5) and those cases identified as having no or mild levels of need (n = 10) in the Physical Dimension (U = 6.00; sig. = .10) and the Psychological Dimension (U = 11.00; sig. = .09). The findings support vividness as a variable evident in the cognitive processing of the respondent answers in the home-based interviews. It is possible that the MSW reviewers chose to add weight to words that evoked an emotional response. It may also be possible that vivid imagery content triggered a knowledge schema that led to the use of representativeness heuristics in forming judgment on the levels of need.

Chapter Summary

This chapter presented the results of the Mann-Whitney testing conducted on the study hypotheses. The results were mixed, but findings revealed that more salient data existed in the Physical and Psychological Dimensions in relation to the moderate and profound levels of need. Salient data was not a significant factor in the location of interviews. Saliency was a more important factor than vividness in relation to the need levels in the Physical and Psychological Dimensions. Vivid imagery was a significant variable in the interview location. These findings support the premise that salience and vivid imagery are two separate concepts.

The mixed test results of Hypothesis 3 and 4 prompted a Mann-Whitney testing of multiple variables in relation to location of interview. Findings demonstrated that vivid imagery was the only variable with statistical significance in all three dimensions in the home-based interview group manifesting moderate to high levels of need. Saliency was a significant factor in the judgment processes that determined moderate to high need levels, but when compared with vivid imagery, saliency did not surface as a significant variable. The fact that vivid imagery and the home-based interviews were significant variables in the judgment determination of moderate to profound levels of need suggest that these are likely factors to bias judgment.

The following chapter summarizes the study and includes hypotheses testing results. The primary limitations of the study are identified. Implications for social work are presented including considerations for future research and practice.

CHAPTER 6

SUMMARY, IMPLICATIONS, AND CONCLUSION

This exploratory study is a secondary analysis of respondent answers recorded in 30 structured interviews that involved cancer patients. Information processing theory and the psychology of human judgment served as the theoretical framework for this study. The research inquiry focused on identifying evidence of judgment heuristics and heuristic-based biases. The study attempted to identify how inferential weight was discriminately assigned to respondent data to determine patient needs and clues as to the use of heuristics and heuristic-based biases. Searching for evidence of judgment heuristics and heuristic-based biases involved identifying the presence of salient and vivid information.

The results of the Mann-Whitney testing on all four hypotheses were mixed, but interesting evidence was identified to see how factors may contribute to judgment bias. Three college students found different levels of imagery in the 30 case records. MSW reviewers studied the 30 transcripts of the patients and determined each patient's physical, social, and psychological levels of need. The findings from the MSW reviewers were categorized into two groups: No to low level of need group and

moderate to profound level of need group. Statistical analysis determined that the two groups were not different as to the presence of vivid imagery.

The researcher who conducted the original interviews made critical judgments about the salience (importance) of client's information by selecting and recording clients' information in their records. When the word count of salient information was compared between the two groups of patients (no or low level of need versus moderate or profound level of need), more salient words were found in those cases judged to have moderate to profound levels of need in patient's Physical and Psychological Dimensions.

The original interviews were conducted in two different settings. Half of the patients' interviews were conducted in the home and half of the interviews were conducted in the clinic. When the numbers of vivid imagery words in the patients' files were assessed according to the patients' interview settings, the home-based interview records contained significantly more vivid imagery words, but surprisingly, location did not affect the number of salient words in the patients' interviews.

The mixed results prompted a more thorough analysis of need levels, vivid imagery, and saliency in relation to the location of interviews. Vivid imagery data and the home-based interviews together were significant variables in the determination of moderate to profound levels of need ($U = 54.00$; $sig. = .02$). This finding suggests that vivid imagery and home-based interviews influenced judgment heuristics and were potential factors in judgment bias.

Limitations

This study assessed the use of judgment heuristics in data obtained from structured interviews, and it explored how heuristic bias might be determined; however, limitations were present in the study. The limitations may serve as potential explanations for the lack of support for some of the hypothesized relationships. The primary limitations center on the dependent variable measures, interviewer effect, and the use of secondary analysis.

Dependent variable measures

One of the primary limitations of this study concerned the indicators selected to identify the presence of judgment biases, that is, saliency and vividness. Both concepts are recognized and accepted components of judgment heuristics, particularly availability heuristic, but these indicators do not have an objective measurement. Saliency, which is defined in the literature as important, essential information selected for application in judgment processes, was operationalized as the key information selected for documentation during the survey interview. How much and which information to document, however, was at the cognitive discretion of the primary study interviewer.

The established validity of the PNAT questionnaire assured that the information recorded was valid and reliable in determining cancer patient need. More open-ended questions were present in the Psychological Dimension. It may be that more open-ended questions were needed in this particular dimension to establish construct validity. This aspect of the questionnaire would suggest that more salient information would be

documented in the Psychological Dimension; however, the dimension with the least number of open-ended questions, the Physical Dimension, had the highest mean word count in those records reflecting moderate to profound levels of need. This provides evidence that the interviewer in the original study made cognitive choices on which information was considered important and necessary to document.

Vividly presented information is considered to be more persuasive and to have more influence on judgments than information that is not emotionally arousing (Tversky & Kahneman, 1973). This “vividness effect” is identified to subsequently result in judgment heuristic biases (e.g., ease of recall bias). However, while this is a widely recognized and accepted theoretical assumption, no reliable and valid measurement scale exists for this concept. It is the colorful characteristics of vivid language that make it more emotionally interesting than nonvivid information, but the concept of vividness and the “vividness effect” are elusive.

Interviewer Effect

A recognized methodological problem with the survey interview is that it is never without some form of interviewer effect perhaps due to the many cognitive processes used to respond to a survey item, which are related to question and answer comprehension, retrieval of information from memory, judgment, and response formation (Tourangeau, R., Rips, L. J., & Rasinski, K., 2000). The interpretation of qualitative findings is the product of subjective and perhaps unconscious influences of the researcher. In addition, propositional knowledge structures that represent expert

knowledge, values, and beliefs, also come into play when formulating judgment and decisions making.

A Wilcoxon statistical test demonstrated that the ranked scores of the MSW reviewers and the scores of the primary study interviewer had the same distribution. This result confirms that the judgments formed by the MSW reviewers were not hampered by the fact that they used secondary data that had already been cognitively processed. An important point is that the Wilcoxon results indicate that the data transcribed from the records had meaning to the MSW reviewers, thus demonstrating they could utilize their own judgment to determine level of need. Also, the results might serve to perpetuate the bias in the data, as recorded and shaped by the primary study interviewer.

Secondary analysis

To undertake secondary analysis of survey interviews would seem to compound the problem of interviewer effect. In essence, the primary study interviewer cognitively processed information that had already been cognitively filtered by the respondents. The MSW reviewers and the college students processed information that had been filtered by the interviewer. However, the use of a type of secondary analysis known as supra analysis, examined theoretical and methodological questions that are quite different than the primary study. The reconstruction of the primary study data set was guided by a different theoretical perspective which led to an inquiry on heuristics and heuristic-based bias. The research questions and hypothesis in this secondary analysis were guided by the field of cognitive psychology and information processing. Cognitive

research methodology favors variation of measurement. The more evidence cognitive researchers have concerning how the mind processes information given varied conditions, the more light is shed upon the peculiarities of information processing. Greater understanding of information processing in interviews contributes to the advancement of survey methodology.

Implications for Social Work

Understanding the cognitive factors that influence clinical judgment and decision making is of importance to social work practitioners and researchers. Social workers utilize heuristics in their everyday practice settings when faced with decisions related to client or patient care. A child care worker learns to recognize how and when to intervene when a child's life is at risk. A home health care worker can quickly assess the independent living skills of an elderly client that assures the worker that a nursing home placement is or is not necessary. Employing the generalist intervention model of social work practice (i.e., engagement, assessment, planning, intervention, evaluation, and termination) involves cognitive judgment skills which demand the use of judgmental heuristics. Most importantly, not only do social workers rely on cognitive strategies they may not recognize how these strategies affect their judgment and decision making throughout the helping process.

The study's attention to vivid imagery and the location of interviews suggests to social workers that the home intervention can heighten the risk of availability judgment bias that can lead to wrong assessments and misguided interventions. To minimize bias in a home interview resulting from availability heuristics, the social worker can:

1. Take note of the seemingly minor information and observations of the home environment so as not to focus solely on vivid imagery.
2. Assess written information immediately following the home visit so as to avoid relying on salient and vivid information that can result in ease of recall bias.
3. Tape record all home-based interviews to control for environmental variables that may influence judgment outcomes yet not be relevant to the case.

Social workers who have developed expertise in their field over many years of professional practice may tend to rely on representativeness heuristics to aid in their clinical judgment. Obtaining salient information in interviews that suggests profile characteristics similar to other clients may bias the practitioner in judging that the current client has the same problem. Overconfidence, a common heuristic bias, may cause the social worker to believe in the correctness of their judgment even in the face of contradictory information. To avoid biases that result from the use of representativeness heuristics, a social worker can alter interview questions according to the specific needs of the client, in order to avoid recurring questions and foreseeable interview formats. Consulting a colleague to compare judgments on assessment information can also help to avoid judgment bias.

Social work research and practice literature reflect little attention to the cognitive dimensions of social work practice (Gibbs & Gambrill, 1999; Nurius, Kemp, & Gibson, 1999; Murdach, 1995; Nurius & Gibson, 1990). Increased knowledge about

potential sources of judgment error in interviews may guide social work researchers to further determine the possible threats to reliability of survey interviews. The scant literature on the topic of judgment heuristics demonstrates a need for increased awareness among social work practitioners. Knowing the source and ramifications of heuristic-based biases in the helping process can lead to heightened judgment skills.

Identifying evidence of the use of heuristics and heuristic-based bias provides a cognitive perspective that can introduce insights and valuable information on the judgment and decision-making process of practitioners and researchers who conduct clinical and survey interviews. The social work profession can benefit by gaining knowledge in heuristic reasoning utilized in demanding and complex practice environments.

Future Research

Survey interviews continue to be a primary methodological research tool in social science and studies should be encouraged to improve the utility and validity of the survey interviews. Research to advance the study of underlying cognitive processes involved in the survey interview may involve tape recording interviews and comparing the results to the actual written information and therefore identify information that was not judged to be salient. Future research should help assess the role and measurement of vividness. The research might help social workers understand why this concept is such a powerful factor in memory retention, selective information processing, and the resulting disproportionate impact on judgments (Nisbett & Ross, 1980).

Secondary analysis research utilizing a larger sample of independent reviewers is also warranted for a wider exploration of judgment variances among reviewers. Also, secondary analysis methodology may involve a larger sample of non-structured survey interviews.

As noted earlier, knowledge schematas likely played a role in the judgment and decision-making processes. This may be an area for further study as propositional knowledge structures have a likely role in clinical bias, such as in producing a positive bias. Also, pre-existing knowledge structures “influence unduly and often without the individual’s awareness the characterization of a given event” (Nisbett & Ross, 1980, p. 9).

Conclusion

Saliency and vivid imagery are two separate concepts that were identified in the respondent answers of the cancer patient interviews. Although the results of the hypotheses testing were mixed, vividness and saliency provided evidence of the use of heuristics in the decision-making processes of the MSW reviewers. In addition, the significant findings supported the theoretical assumptions underlying the hypotheses. Inferential weight was found to be assigned to data in proportion to the information’s level of vividness and saliency. Also, contextual factors were found to influence information processing of respondent answers in a survey interview. Significant levels of salient data were used to cognitively process the determination of moderate to high levels of need in the Physical and Psychological Dimensions. Significant levels of vivid

imagery data were used in the information processing and judgment formation in the home-based interviews.

Heuristic-based biases can be a positive or negative influence in the judgment and decision-making of the interviewer. A positive bias could actually be helpful if the outcome of the interview led to enhanced benefit to the patient. What is important to recognize is that heuristics are commonly used in judgment and that heuristics are never without bias.

APPENDIX A

PATIENT CONSENT FORM

**Consent to Participate in a Research Study to
Assess the Effectiveness of Psychosocial Assessments
Conducted during Home Visits**

I, _____, consent to participate in this research study to assess the effectiveness of psychosocial assessments conducted during home visits. This research study is approved by the Hendrick Medical Center Institutional Review Board and is sanctioned by the University of Texas at Arlington School of Social Work.

I have been advised that the patients invited to participate in this research study were among all newly registered cancer patients at the Hendrick Cancer Center. Through a process of random assignment, patients will be selected to receive a psychosocial needs assessment either in the home, or in the office. Each psychosocial assessment involves an interview with the social work graduate researcher in order to obtain psychosocial information pertinent to my emotional, psychological, and physical adjustment to my cancer diagnosis.

I also understand that medical records maintained at the Hendrick Cancer Center reflecting the status of my medical condition, progress notes, number of office visits and hospitalization, will be reviewed and recorded by the researcher to identify a medical care profile. Patient care profiles will be analyzed to determine variation between those patients receiving the home visit psychosocial assessment vs. the office psychosocial assessment. This medical information will also be examined to determine if the needs identified in the psychosocial needs assessment were appropriately followed up by the medical social worker.

The psychosocial needs assessments will be scheduled at my convenience. Needs identified in the assessment will be forwarded to and addressed by the Hendrick Cancer Center medical social worker.

I understand that all information concerning me will be kept strictly confidential. Neither my name nor any identifiable information will be disclosed in the written study.

I understand that I am under no obligation to participate in this study and I have been advised that this study poses no physical, emotional, or psychological threat or discomfort. I may choose to discontinue participating in this study at any time. I will be provided with a copy of this consent form.

Signature of Participant

Date

Researcher

Date

This research study has been reviewed and approved by the Human Research Review Committee at the University of Texas at Arlington. Should you have questions about your rights as a research participant or about a research-related injury, you may call a committee representative at (817) 272-2105

This research is under the supervision of Dr. Peggy Quinn, University of Texas at Arlington School of Social Work. Dr. Quinn may be reached at (817) 272-3937. Please feel free to contact Dr. Quinn or Dian Ruud at (915) 670-4200, if you have any questions.

This research study is a degree requirement for the researcher. However, in the event of an injury or complication resulting from participation in this study, the University of Texas at Arlington will not be held responsible nor will it provide care or compensation.

APPENDIX B

PATIENT RECORD INFORMATION FORM

PATIENT RECORD INFORMATION

REGISTRATION DATE_____

INTERVIEW DATE _____

PATIENT
NAME_____ BIRTHDATE_____

ADDRESS_____

PHONE NUMBER_____

MARITAL STATUS: __Married __Divorced __Single __Widowed

ETHNICITY: __Anglo __African-American __Hispanic __Asian-Pacific __Other

EMPLOYMENT_____

MEDICAL
INSURANCE_____

INCOME: < 10,000
10,000-29,000
30,000-49,000
50,000-69,000
70,000 >

PATIENT CAREGIVER_____

APPENDIX C

PATIENT NEEDS ASSESSMENT TOOL

PATIENT NEEDS ASSESSMENT TOOL

Interview Questions Guide: The following is the format used in the structured, standardized interviews. It is meant to be used as a guide to identify where help may be needed.

PHYSICAL DIMENSION

Communication

- Can you tell me your name?
- What brought you to the hospital?
- How do you spend your day in the hospital? At home?

Activities of Daily Living (e.g., feeding, dressing, bathing)

- How much help, if any, do you need to eat; to get dressed; to bathe?

Mobility

- How much time do you spend out of bed?
- Do you need to use a cane, walker, wheelchair, etc?
- Are you able to go out of your home independent of any assistance?
- If no, are you able to leave you home without the help of another person provided you have a cane/walker/wheelchair?
- If no, are you able to leave your home as long as you have another person with you?
- If no, are you essentially unable to leave your house because of medical symptoms?

Bowel and Bladder Function

- Do you have any problems controlling you bowel or bladder?
- Are you ever incontinent of urine or feces?
- If yes, how frequently?
- Do you have a colostomy or catheter?
- If yes, are you able to manage this without help?
- Do you require someone to help you in going to the bathroom or managing your bowels?

Discomfort

- How would you rate your overall level of general discomfort at this time apart from any pain you may be feeling? By discomfort we mean any symptom that may be troubling to you, such as nausea, constipation, or itch. Is your discomfort: Intolerable, severe, moderate, mild, or none at all?

PSYCHOLOGICAL DIMENSION

Prior Psychological Adjustment

- Have you ever had periods of depression and/or anxiety?
- If yes, were these in response to a specific situation or in general?
- Have you ever sought psychiatric help for a problem?
- What methods do you use to cope with stress?
- Have you ever been hospitalized for a psychiatric problem?
- Do you have any close friends you can confide in?
- Tell me about a problem you had in the past and how you managed it.

Depression

- You have been through a great deal in the last few weeks (or months). To feel depressed would not be unusual. How depressed are you?
- Is this the worst you have ever felt?
- Do you have difficulty in falling asleep?
- Do you wake up early and have problems getting back to sleep?
- Do you cry frequently?
- Are you able to find pleasure in some things?
- Do you remember what it felt like to be well?
- Do you feel helpless? How hopeful are you?
- Do you have any quality of life on your terms?
- Have you thought about harming yourself? If yes, do you have a plan?

Anxiety

- Do you ever feel worried, anxious, nervous, tense, or on edge?
- If yes, do you feel panicky sometimes, do you have frightening thoughts occurring which you cannot control?
- Do you have palpitations, shortness of breath, sudden sweats, inability to concentrate?
- Do you have a strong urge to run away in certain situations? If yes, when?
- Do you wake up at night feeling anxious?
- How long have you been feeling this way?

Attitude Toward Disease

- People respond to being ill in different ways. I wonder how it has affected your life and future plans.
- Do you have any fears about your disease? What worries you the most?
- Do you feel angry or guilty about having cancer? How do you express those feelings?
- Do you feel hopeful?

Attitude Toward Treatment

Could you briefly review what treatment you have undergone for your disease since diagnosis?

What treatment, if any, are you presently undergoing?

How have you responded to the treatment?

What treatment, if any, are you presently undergoing?

What are your future treatment plans and goals for treatment?

Do you have feelings of anger or fear about your treatment? If yes, can you tell me about them?

SOCIAL DIMENSION

Practical Support

Is there help available to you in housekeeping, cooking, and shopping if you would need it?

Is this help, or would this help be consistent and reliable?

How frequently is this help available to you? Once a week? Two to three times a week? Four times a week to daily?

Is there anyone available to help you with banking and bills?

Is this help, or would this help be consistent and reliable?

Do your “helpers” have other commitments which interfere with their ability to help you as much as you would like or need?

Individual Support Network

How helpful you find family and friends at this difficult time can range from being helpful and completely there when you need them, to not being supportive at all, and/or being a drain on you emotionally, or somewhere in between. How helpful do you find your family and friends?

Do you have feelings of anger or guilt towards your family and friends? If yes, can you tell me about them?

Do your family and friends agree on the best medical approach to your care?

Who do you rely on the most to be supportive to you?

Does this person agree with your medical/philosophical plan of care?

Does this person have someone they can talk to during this time of stress outside of the immediate family?

Nonmedical Support Network

Some people benefit from belonging to church groups, social organizations, and clubs. Do you belong to any such groups?

If yes, which ones?

How helpful do you find such groups?

Is religion important to you?

Do you have a philosophy of life that is helpful to you?

Medical Support Group

All of us require the security of medical support in the community. This support can range from being totally adequate, to meeting only some of your needs, to being completely lacking. Do you or your family have a primary physician in the community whom you can contact if you are in need?

Do you have a hospital near your home that you are comfortable going to in case of need?

Have you used community nursing supports in the past? If yes, would you consider using these supports again if indicated?

Are there other support groups available to you and your family in your community?

Do you feel your community medical supports are adequate for all your needs?

Financial Security

People who are ill, and their families, may be financially secure or can be in financial trouble for a variety of reasons. Do you have financial concerns at this time?

Do you have medical insurance? If yes, does this insurance cover home care?

Has there been a change in your income since you became ill?

Are you the sole/primary bread winner in your family?

Are you or were you a two-income family?

Are you on a fixed income?

Do you have commitments incurred when you were more financially secure?

APPENDIX D

PATIENT NEEDS ASSESSMENT TOOL SCORING GUIDE

PATIENT NEEDS ASSESSMENT TOOL

Based on the response to the interview questions, the researcher completes each item of the PNAT. Each subscale score is the sum of the items for each dimension. The total score is the sum of the subscale scores.

Physical Dimension

Mobility

- 1. Bed bound.
- 2. House bound by physical disability, including weakness, shortness of breath, pain, etc.
- 3. Mobile outside home with or without physical aids, with assistance of another person(s).
- 4. Independently mobile inside and outside the home with physical aids, such as wheelchair or walker. No assistance from another person required.
- 5. Independent: fully mobile without assistance.

Communication

- 1. Cannot communicate due to severe deficits in mental functioning or language, articulation, or hearing.
- 2. Severely impaired in the ability to comprehend written or verbal instructions and/or express needs.
- 3. Moderately impaired in the ability to comprehend written or verbal instructions and/or express needs.
- 4. Mildly impaired in the ability to comprehend written or verbal instructions and/or express needs.
- 5. No impairment to communication; deficits, if present are minimal or corrected.

Activities of Daily Living

- 1. Requires full assistance
- 2. Severe impairment; for example, is able to feed self but unable to dress or bathe independently.
- 3. Moderate impairment; for example, can feed self but requires some assistance in bathing and dressing.
- 4. Mild impairment; for example, can feed self, but requires some assistance in bathing and/or dressing.
- 5. Independent in activities of daily living.

Bowel and Bladder Function

- 1. Fully incontinent or unable to assist in management of ostomy or catheter, if present.
- 2. Occasionally incontinent; requires full assistance in managing bathroom or bedpan or ostomy/catheter, if present.
- 3. Rarely incontinent; requiring substantial assistance in managing bathroom or bedpan or ostomy/catheter, if present.
- 4. Not incontinent; but some assistance in managing bathroom or bedpan or ostomy/catheter, if present.
- 5. Independent in bowel and bladder function, with full self-care, including ostomy/catheter, if present.

Discomfort

- 1. Intolerable
- 2. Severe
- 3. Moderate
- 4. Mild
- 5. None

_____ **Physical Dimension Score** (Sum of the scores on each question)

PSYCHOLOGICAL DIMENSION

Prior Psychological Adjustment

- 1. Profound personality disturbances. There may be a history of episodes of significant psychopathology and patient has repeatedly functioned poorly under mild stress.
- 2. Severe personality disturbances. There may be a history of episodes of significant psychopathology and patient has been able to function well under mild stress.
- 3. Moderate personality disturbances. There may be a history of episodes of less severe psychopathology and patient has been able to function under moderate stress in the past.
- 4. Mild personality disturbances. Episodes of psychopathology, if they occurred, were not severe and were associated with substantial concurrent stress.
- 5. There is no indication of significant personality disturbance. A history of psychiatric treatment does not exclude this level of function. Patient has been able to function under substantial stress in the past.

Depression

There is impairment of social interaction or physical function due to an affective disturbance marked by sadness, frequent crying, and inability to experience pleasure, with or without vegetative signs such as sleep disruption, loss of appetite, loss of taste for food, diminished libido, lassitude or constipation. This impairment is:

- 1. Profound
- 2. Severe
- 3. Moderate
- 4. Mild
- 5. No impairment of function due to affective disturbance

Anxiety

- 1. Experiences profound anxiety marked by frequent episodes of nervousness, fear, lack of concentration and restlessness, with or without complaints of sweating, trembling, palpitation, or shortness of breath.
- 2. Experiences episodes of severe anxiety, with or without associated complaints.
- 3. Experiences moderate anxiety, with or without associated complaints.
- 4. Experiences mild anxiety, with or without associated complaints.
- 5. Experiences minimal to no anxiety, without associated complaints.

Attitude Toward Disease

- 1. Demoralized, utterly hopeless; completely overwhelmed by the reality of the illness.
- 2. Very poor coping; frequently hopeless and overwhelmed by the reality of the illness.
- 3. Coping with the reality of the illness, but has frequent periods of despair and hopelessness.
- 4. Usually copes well, but has occasional periods of despair and hopelessness.
- 5. Coping well with rare or no periods of hopelessness.

Attitude Toward Treatment

- 1. Utterly pessimistic that any therapy, either symptomatic or primary, will provide comfort, or prolong life.
- 2. Very pessimistic that any therapy can provide comfort or prolong life.
- 3. At times hopeful, but frequently pessimistic that any therapy can provide comfort or prolong life.
- 4. Frequently hopeful, with episodes of pessimism that any therapy can provide comfort or prolong life.
- 5. Usually hopeful, with rare or no episodes of significant pessimism.

_____ **Psychological Dimension Score** (Sum of the scores on each question)

SOCIAL DIMENSION

Practical Support

- 1. Needed assistance in essential tasks, such as cooking, cleaning and shopping is not available.
- 2. Needed assistance in essential tasks, such as cooking, cleaning and shopping is often unreliable or incomplete.
- 3. Needed assistance in essential tasks, such as cooking, cleaning and shopping is sometimes inadequate or available only for less critical tasks such as banking.
- 4. Needed assistance in essential tasks is usually available. Assistance in less critical tasks is incomplete and unreliable; other responsibilities limit helper availability.
- 5. Assistance is available and adequate for any need.

Individual Support Network

- 1. Completely unsupportive or nonexistent. By description, family or significant other are nonexistent or viewed as hostile, chaotic, exhausted, or in marked conflict over medical goals.
- 2. Offering minimal emotional support. Family or significant other may be viewed as hostile, chaotic, exhausted, or in marked conflict over medical goals.
- 3. Offering moderate or inconsistent emotional support. Family or significant other may not be perceived negatively, but neither are they seen in a positive, supportive way.
- 4. Offering substantial, though not complete emotional support. Family or significant other may be viewed as fundamentally intact and in agreement over medical goals, though a lack of depth, commitment, or availability of support for the patient's supporters may be described.
- 5. Offering complete support. Family or significant other is perceived as intact, in agreement over medical goals, and having access to support networks of their own.

Non-Medical Support Network

- 1. Patient perceives the degree of support obtained from non-medical groups (e.g., religious, occupational, social recreational, political) to be very unsatisfactory.
- 2. Patient perceives the degree of support from these non-medical groups to be inadequate, but not wholly unsatisfactory.
- 3. Patient perceives that the degree of support from these non-medical groups is barely satisfactory.

- 4. Patient perceives the degree of support from these nono-medical groups to be generally, but not fully satisfactory.
- 5. Patient perceives the degree of support from these non-medical groups to be fully satisfactory.

Medical Support Network

- 1. Absent
- 2. Unreliable and incomplete. For example, community nursing is available but no local physician involved.
- 3. At times inadequate. Community nursing and physician care available but there may be inadequate support programs (e.g., hospice, high-tech agencies).
- 4. Generally adequate. Problem in assessing whether medical care can be managed (e.g., through involvement with another hospital nearer to the patient's home).
- 5. Medical care available to meet any needs.

Financial Security

- 1. Overwhelming disparity between current resources and expenses. There is inadequate medical insurance and no independent wealth.
- 2. Severe disparity between current resources and expenses. In-hospital care is at least partially covered, but there is little available for additional expenses including home care.
- 3. Moderate disparity between current resources and expenses. Full inpatient coverage and modest insurance or personal funds available for routine additional expenses including home care. The ill person may be the primary wage earner or a part of a two income family. The family may be on a fixed income.
- 4. Mild disparity between current resources and expenses. Full inpatient coverage and adequate funds for all but unexpected and substantial additional expenses. The patient may be on Medicaid.
- 5. Current and future resources appear adequate to support any need.

_____ **Social Dimension Score** (Sum of the scores on each question)

_____ **Total Score** (Sum of the scores on each dimension)

APPENDIX E

INSTRUCTION ON IDENTIFYING VIVID WORDS

Instruction on Identifying Vivid Words

You are being asked to examine words transcribed in 30 interview cases, and highlight any word that you judge to represent vividness. When finished, review each highlighted word and rank the word as representing low level of vividness (1), moderate level of vividness (2), or high level of vividness (3). Vivid words are likely to attract and hold our attention and to excite the imagination to the extent that it is emotionally interesting, concrete, and imagery-provoking. Vivid words are words that convey:

1. Action (e.g., gardening, reading)
2. Emotional states of being (e.g., anxious, depressed)
3. Physical distress (e.g., pain, nausea), and/or
4. Cognitive descriptors relating to personal experiences (e.g., challenging, uncertain).

Vivid words can be nouns (e.g., laughter), verbs (e.g., laugh), adverbs (e.g., beautifully), and adjectives, (e.g., beautiful). Highlight any word YOU judge to be vivid. Do not highlight the underlined subheadings. Thank you.

APPENDIX F

PATIENT NEEDS ASSESSMENT TOOL
INDEPENDENT REVIEWER SCORING FORM

PATIENT NEEDS ASSESSMENT TOOL
INDEPENDENT REVIEWER SCORING FORM

Based on the responses to the interview questions, the reviewer is asked to judge whether or not a need exists. Circle a score that you judge to best correspond with the overall answers provided. The subscales under each dimension include a scoring range of 1 to 5. A score of 1 represents the highest level of need. A score of 5 reflects no need. The sum of the subscale scores represents the total Dimension score. If a score cannot be determined, please indicate reason.

Physical Dimension

Mobility

- 1. Bed bound.
- 2. House bound by physical disability, including weakness, shortness of breath, pain, etc.
- 3. Mobile outside home with or without physical aids, with assistance of another person(s).
- 4. Independently mobile inside and outside the home with physical aids, such as wheelchair or walker. No assistance from another person required.
- 5. Independent: fully mobile without assistance.

Score not assigned. Reason_____

Communication

- 1. Cannot communicate due to severe deficits in mental functioning or language, articulation, or hearing.
- 2. Severely impaired in the ability to comprehend written or verbal instructions and/or express needs.
- 3. Moderately impaired in the ability to comprehend written or verbal instructions and/or express needs.
- 4. Mildly impaired in the ability to comprehend written or verbal instructions and/or express needs.
- 5. No impairment to communication; deficits, if present are minimal or corrected.

Score not assigned. Reason_____

Activities of Daily Living

- 1. Requires full assistance
- 2. Severe impairment; for example, is able to feed self but unable to dress or bathe independently.
- 3. Moderate impairment; for example, can feed self but requires some assistance in bathing and dressing.
- 4. Mild impairment; for example, can feed self, but requires some assistance in bathing and/or dressing.
- 5. Independent in activities of daily living.

Score not assigned. Reason_____

Bowel and Bladder Function

- 1. Fully incontinent or unable to assist in management of ostomy or catheter, if present.
- 2. Occasionally incontinent; requires full assistance in managing bathroom or bedpan or ostomy/catheter, if present.
- 3. Rarely incontinent; requiring substantial assistance in managing bathroom or bedpan or ostomy/catheter, if present.
- 4. Not incontinent; but some assistance in managing bathroom or bedpan or ostomy/catheter, if present.
- 5. Independent in bowel and bladder function, with full self-care, including ostomy/catheter, if present.

Score not assigned. Reason_____

Discomfort

- 1. Intolerable
- 2. Severe
- 3. Moderate
- 4. Mild
- 5. None

Score not assigned. Reason_____

_____ **Physical Dimension Score** (Sum of the scores on each question)

PSYCHOLOGICAL DIMENSION

Prior Psychological Adjustment

- 1. Profound personality disturbances. There may be a history of episodes of significant psychopathology and patient has repeatedly functioned poorly under mild stress.
- 2. Severe personality disturbances. There may be a history of episodes of significant psychopathology and patient has been able to function well under mild stress.
- 3. Moderate personality disturbances. There may be a history of episodes of less severe psychopathology and patient has been able to function under moderate stress in the past.
- 4. Mild personality disturbances. Episodes of psychopathology, if they occurred, were not severe and were associated with substantial concurrent stress.
- 5. There is no indication of significant personality disturbance. A history of psychiatric treatment does not exclude this level of function. Patient has been able to function under substantial stress in the past.

Score not assigned. Reason _____

Depression

There is impairment of social interaction or physical function due to an affective disturbance marked by sadness, frequent crying, and inability to experience pleasure, with or without vegetative signs such as sleep disruption, loss of appetite, loss of taste for food, diminished libido, lassitude or constipation. This impairment is:

- 1. Profound
- 2. Severe
- 3. Moderate
- 4. Mild
- 5. No impairment of function due to affective disturbance

Score not assigned. Reason _____

Anxiety

-
- 1. Experiences profound anxiety marked by frequent episodes of nervousness, fear, lack of concentration and restlessness, with or without complaints of sweating, trembling, palpitation, or shortness of breath.
- 2. Experiences episodes of severe anxiety, with or without associated complaints.

- 3. Experiences moderate anxiety, with or without associated complaints.
- 4. Experiences mild anxiety, with or without associated complaints.
- 5. Experiences minimal to no anxiety, without associated complaints.

Score not assigned. Reason_____

Attitude Toward Disease

- 1. Demoralized, utterly hopeless; completely overwhelmed by the reality of the illness.
- 2. Very poor coping; frequently hopeless and overwhelmed by the reality of the illness.
- 3. Coping with the reality of the illness, but has frequent periods of despair and hopelessness.
- 4. Usually copes well, but has occasional periods of despair and hopelessness.
- 5. Coping well with rare or no periods of hopelessness.

Score not assigned. Reason_____

Attitude Toward Treatment

- 1. Utterly pessimistic that any therapy, either symptomatic or primary, will provide comfort, or prolong life.
- 2. Very pessimistic that any therapy can provide comfort or prolong life.
- 3. At times hopeful, but frequently pessimistic that any therapy can provide comfort or prolong life.
- 4. Frequently hopeful, with episodes of pessimism that any therapy can provide comfort or prolong life.
- 5. Usually hopeful, with rare or no episodes of significant pessimism.

Score not assigned. Reason_____

_____ **Psychological Dimension Score** (Sum of the scores on each question)

SOCIAL DIMENSION

Practical Support

- 1. Needed assistance in essential tasks, such as cooking, cleaning and shopping is not available.
- 2. Needed assistance in essential tasks, such as cooking, cleaning and shopping is often unreliable or incomplete.
- 3. Needed assistance in essential tasks, such as cooking, cleaning and shopping is sometimes inadequate or available only for less critical tasks such as banking.
- 4. Needed assistance in essential tasks is usually available. Assistance in less critical tasks is incomplete and unreliable; other responsibilities limit helper availability.
- 5. Assistance is available and adequate for any need.

Score not assigned. Reason_____

Individual Support Network

- 1. Completely unsupportive or nonexistent. By description, family or significant other are nonexistent or viewed as hostile, chaotic, exhausted, or in marked conflict over medical goals.
- 2. Offering minimal emotional support. Family or significant other may be viewed as hostile, chaotic, exhausted, or in marked conflict over medical goals.
- 3. Offering moderate or inconsistent emotional support. Family or significant other may not be perceived negatively, but neither are they seen in a positive, supportive way.
- 4. Offering substantial, though not complete emotional support. Family or significant other may be viewed as fundamentally intact and in agreement over medical goals, though a lack of depth, commitment, or availability of support for the patient's supporters may be described.
- 5. Offering complete support. Family or significant other is perceived as intact, in agreement over medical goals, and having access to support networks of their own.

Score not assigned. Reason_____

Non-Medical Support Network

- 1. Patient perceives the degree of support obtained from non-medical groups (e.g., religious, occupational, social recreational, political) to be very unsatisfactory.
- 2. Patient perceives the degree of support from these non-medical groups to be inadequate, but not wholly unsatisfactory.

- 3. Patient perceives that the degree of support from these non-medical groups is barely satisfactory.
- 4. Patient perceives the degree of support from these non-medical groups to be generally, but not fully satisfactory.
- 5. Patient perceives the degree of support from these non-medical groups to be fully satisfactory.

Score not assigned. Reason_____

Medical Support Network

- 1. Absent
- 2. Unreliable and incomplete. For example, community nursing is available but no local physician involved.
- 3. At times inadequate. Community nursing and physician care available but there may be inadequate support programs (e.g., hospice, high-tech agencies).
- 4. Generally adequate. Problem in assessing whether medical care can be managed (e.g., through involvement with another hospital nearer to the patient's home).
- 5. Medical care available to meet any needs.

Score not assigned. Reason_____

Financial Security

- 1. Overwhelming disparity between current resources and expenses. There is inadequate medical insurance and no independent wealth.
- 2. Severe disparity between current resources and expenses. In-hospital care is at least partially covered, but there is little available for additional expenses including home care.
- 3. Moderate disparity between current resources and expenses. Full inpatient coverage and modest insurance or personal funds available for routine additional expenses including home care. The ill person may be the primary wage earner or a part of a two income family. The family may be on a fixed income.
- 4. Mild disparity between current resources and expenses. Full inpatient coverage and adequate funds for all but unexpected and substantial additional expenses. The patient may be on Medicaid.
- 5. Current and future resources appear adequate to support any need.

Score not assigned. Reason_____

_____ **Social Dimension Score** (Sum of the scores on each question)

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BIOGRAPHICAL INFORMATION

Dian Cuellar Ruud is a Licensed Clinical Social Worker in the state of Texas. A graduate from the University of Texas at Arlington School of Social Work, Ms. Cuellar Ruud earned her Master of Science in Social Work degree in May, 1982. She was Assistant Professor at West Texas A&M University from 1993-1997 and taught as adjunct faculty at Baylor University during the 2003-2004 academic year. A member of the National Association of Social Workers since 1983, Dian chairs the Texas Women's Issues Committee and serves on a number of community non-profit boards, including the Board of Directors of the Planned Parenthood of Central Texas in Waco, Texas. She resides in Temple, Texas with her husband Chris, a physician at the Scott and White Medical Center, and has three children, Olivia Freeman, Andrew Ruud, and Cecilia Fierro.