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A DELIBERATIVE MODEL OF THE
COMMUNICATION-BEHAVIOR RELATIONSHIP

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by

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ABSTRACT

A DELIBERATIVE MODEL OF THE
COMMUNICATION-BEHAVIOR RELATIONSHIP

By

B. Thomas Florence

Though conventional communication theories prescribe or assume the relationship between persuasive communication and behavior, research aimed at testing the empirical validity of such prescriptions has been inconclusive. Due to questions surrounding the conceptual and operational adequacy of previous research in this area, it was the purpose of this inquiry to: first, critically examine the existing theory and research on the communication-cognition-behavior relationship; second, reformulate existing theory based on a choice model of cognitive processing; third, test the empirical validity of the reformulation; and finally, discuss the implications of this research for future inquiry.

Utilizing a theory of cognitive processing based on the Subjective Expected Utility model of choice, the research focused on investigating the effects of persuasive communication on cognitive choice and resulting behavior.

The study was conducted in three phases. The first two phases of the research focused on measuring the reliability of the research instrument. Phase three constituted the test of the model using a quasi-experimental design. A total of 202 undergraduate and graduate students at Michigan State University were used as subjects in the research.

B. Thomas Florence

Using multiple correlation procedures, all of the hypothesized relationships within the model were supported by the data.

ACKNOWLEDGMENTS

I wish to express my sincere appreciation and indebtedness to my committee. I would like to thank especially Dr. Gerald Miller, my chairman; Mr. Louie Bender, a retired communication scholar; and Ms. Sheila Campbell, a colleague.

TABLE OF CONTENTS

LIST OF TABLES

FIG

FIG

LIST OF FIGURES

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Chapter 1

INTRODUCTION

The purpose of this chapter is to provide a theoretical perspective for viewing the relationship between persuasive communication and human behavior. The guiding question of this discussion will be, "How does communication affect cognitive states, and how do these cognitive states affect human behavior?"[1]

This problem has been addressed only on a piecemeal basis by the behavioral science community. The traditional approach of the communication researcher has been to investigate the relationship between communication and cognitive states while ignoring or assuming the relationship between cognitive states and human behavior. Likewise, the traditional approach of the psychological researcher has been to investigate the relationship between cognitive states and behavior while ignoring or assuming the relationship between communication and cognitive states. This myopic approach was noted by Festinger in his 1964 review of research relating to communication and behavior in which he indicated, "the absence of research and theoretical thinking about the effect of attitude change (following persuasive communication) on subsequent behavior is indeed astonishing." (404)

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1. For the purpose of this discussion, the construct "cognitive states" will be defined as the general category which includes attitudes, beliefs, and opinions of the individual.

On its surface, this problem appears to be a scientific oversight whose resolution would lie in synthesizing sound research and theory on the communication-cognitions relationship with research and theory on the cognitive states-behavior relationship. However, one need only examine the research literature in these areas to understand the complexity of the problem; i.e., the lack of theoretical or empirical consensus regarding both the attitude-behavior relationship and the communication-attitude relationship (Siebold, 1975). The intent of the present discussion is not to argue that this problem exists, but rather to propose a theoretical framework for addressing the problem. The development of this framework is divided into four parts: (a) a conceptual overview of the communication-cognition-behavior relationship based on a choice model of cognitive processing, (b) an analysis of previous uses of choice models to explain human behavior, (c) a theoretical reformulation of the relationship between communication, cognitions, and behavior, and (d) an empirical test of this reformulation. In order to avoid the controversy regarding the relationship between "true" cognitive states and an individual's verbal reports of these states, the existence of "latent" cognitive states of which verbal reports are manifestations will be assumed. Thorough theoretical and methodological reviews of this issue may be found in Siebold (1975) and Wiggins (1973) respectively.

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Conceptual Overview

In addition to the popular causal or reinforcement conceptions of the relationship between messages and cognitive states, traditional rhetorical theory suggests a class of communication behaviors in which the individual recipient of a persuasive message acts as a judge. Within this context, messages function to provide grounds on which the judgment or decision is based. In other words, communication does not affect persuasion causally, in the sense of manipulation, but rather creates an atmosphere wherein the receiver (judge) makes his own decision about an issue at hand (Grimaldi, 1958). Within this framework, messages may function to formulate, maintain or, change any of the criteria on which the judgment is based (Florence, 1975).

This conception of the persuasion process has strong implications about the nature of the relationship between cognitions and behavior. To view the process of persuasion as grounded in individual judgment suggests a judgmental or choice model of cognitive processing; further, it suggests that human behavior is intentional and involves deliberation or systematic forethought. Mischel (1969) has termed this conception an "action" model of human behavior.

Given such a deliberative conception of persuasion, with its inherent implications for human behavior, the relationship between communication and behavior may be conceptualized as follows: In certain situations, an agent

chooses to act (behave) in a particular manner. The agent's choice is based upon deliberation. The process of deliberation involves, by necessity, the use of criteria. Communication functions to formulate, maintain, or change the agent's criteria for choice.

The preceding discussion does not assume that deliberation is a necessary condition for behavior. In other words, this conception does not rule out the possibility of nondeliberative (e.g., habitual, involuntary, or reflexive) behavior. Although there are certain instances in which the most valid and reliable predictor of how a person will act is information on how he acted in a similar situation the most recent time he was in it, the existence of these instances in no way obviates the existence of nonhabitual, deliberate behavior.

Although few behavioral scientists would argue either that all behavior is habitual or that all of it is deliberate, there has been a temptation to obscure or to ignore this distinction. For example, although Parsons and Shils (1951) distinguish between habitual and deliberate behavior they then emasculate this distinction by declaring decisions to be either explicit or implicit, as well as either conscious or unconscious. Although such a conception may be intuitively appealing, it ultimately creates serious empirical problems. If the antecedent conditions for habitual behavior are assumed to be the same as those for deliberate behavior--and there is no reason to make such an assumption--it will

be impossible to make an empirical distinction between habit and choice.

The distinction between habitual and deliberate behavior has implications for investigating the relationship between communication and behavior. If any behavior may be classified as either habitual or deliberate; when deliberation does not take place, an individual acts as he has before under similar circumstances, without cognitive choice. At any point, all behavior may be categorized as either habitual or deliberate from the point of view of the actor. Within this framework, a behavior which is at one time deliberate may, through repetition, become habitual. Likewise, a behavior that is at one time habitual may, as a result of new information, become deliberate. For example, each evening a man habitually drives home from work using the same route; however, one evening he learns of an accident along the route. Given this information, he chooses an alternative route instead of automatically taking the usual one. This new information has triggered a change from behavior based on habit to behavior based on deliberation.

In the preceding example, information functioned as a necessary condition for deliberation. If it is posited that information[2] is a necessary condition for triggering

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2. Information is taken to mean the discrepancy between data assimilated by an agent and the corresponding cognitive structure of the agent. That is, the information value of a message is equal to the discrepancy between the assimilated message and the corresponding cognitive structure of the receiver prior to the message.

deliberation, then communication, if it is informative, functions to define a particular behavior as nonhabitual, i.e., requiring deliberation. Therefore, in addition to formulating, maintaining, or changing an agent's criteria for choice, communication may serve as a triggering mechanism for deliberation. The antecedent conditions under which information may be viewed as both necessary and sufficient for deliberation will be discussed subsequently.

Choice Models of Cognitive Processing

This conception of the relationship between communication and behavior as one mediated by deliberation calls for the specification of the precise nature of this deliberative process. The literature on human decision making and choice models of cognitive processing provides suggestions about the process of human deliberation. Philosophers, statisticians, psychologists, and game theorists have advanced a variety of decision models, the majority of them based on a conception of man as rational, purposive, and intentional. These models suggest that man bases his decisions to act on his expectations regarding the outcomes of his acts. The differences among these models lie in their specific structure and their function as prescriptions or descriptions[3] of human behavior.

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3. Descriptive models are models which attempt to explain and predict behavior.

Models which derive from game theory, although used as both prescriptions and descriptions, are based on a common structure which assumes one expected outcome or consequence for each of a series of competing behaviors. These models attempt to answer questions regarding which behavior should or will be undertaken by the individual.[4]

Models deriving from philosophy, such as the one proposed by von Wright (1971), attempt to describe human behavior by using a structure which accommodates multiple behaviors, all of which will result in the same consequence or outcome. Models of this type attempt to answer the questions regarding which behavior the individual will undertake.

Models which derive from statistical decision theory and economics have in general been used to prescribe how decisions should be made. The structure of these models can accommodate situations in which multiple, competing, behaviors all have multiple consequences or outcomes. The question these models attempt to answer is, "how should an individual decide among competing behaviors?"

Since the most systematic and complete work on choice models of cognitive processing has been developed within the areas of economics and statistical decision theory, these models are used as the basis for further discussion.

Although the structure of choice models may vary in terms of the number and type of behaviors and/or expected

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4. For a discussion of choice models deriving from game theory, see von Neumann & Morgenstern (1947).

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consequences considered, the majority of these models include two common criteria for choice: (a) the perceived desirability or utility of the expected consequences of the behavior, and (b) the perceived likelihood or probability that the consequences will result from the behavior in question. The following terms are considered equivalent: desirability and utility, likelihood and subjective probability, and consequence and outcome.In other words, associated with each behavior being deliberated are one or more consequences. Associated with each of these consequences is a desirability (utility) and a likelihood of occurrence.

Although the models of rational choice have their foundation in the mathematical theory of games and probability (Bernoulli, 1738; Ramsey, 1926), the most significant advances for the social sciences have been derived from the work of von Neumann and Morganstern (1944, 1947) in economics, and Simon (1959) and Coombs (1950, 1951, 1952, 1954) in psychology.

In general, these models state that the subjective (i.e., perceived) expected utility (SEU) of any particular act is a function of the product of the perceived desirability of a consequence of the act and the perceived likelihood of that consequence, summed across all perceived consequences of the act. This can be stated mathematically as:

$$SEU(A) = \sum_{i=1}^{n} u(C_i)\, P(C_i)$$

where: SEU(A) = subjective expected utility of act (A)

$u(C_i)$ = perceived desirability of consequence i of act A

$P(C_i)$ = perceived likelihood of consequence i resulting from act A

n = number of perceived consequences of act A.

Finally, this model suggests that, given a range of behaviors, an individual chooses to undertake the behavior with the greatest Subjective Expected Utility.

This model has been applied in two very distinct contexts within the social sciences. The first might be termed a prescriptive context. In such a context, the model's application is intended to answer questions concerning how evaluations of actions and decisions to act "should be" made in order to meet some standard of objectivity or rationality. The second, much less prevalent application has been within a descriptive or explanatory context. In this context, the model's application is intended to answer questions concerning the cognitive or organizational processes by which actions are evaluated and decisions are reached. Although the model has been of value in both contexts, its primary role in the field of communication has been one of description and/or explanation.

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When the general SEU model is taken to be a descriptive model of psychological processes, the components of the model must become psychological magnitudes rather than objective mathematical quantities. In other words, an individual makes a decision to act based on his perceptions concerning the consequences of the action.

When used as a psychological description, the SEU model makes certain logical assumptions about human cognition: (1) a set of consequences can be identified for any act; (2) that set of consequences can be evaluated in terms of their desirabilities; and (3) the set of consequences can be evaluated in terms of their likelihoods.

In general, when the model is used to explain and predict behavior, it is additionally assumed that (4) a set of alternative actions are available to the individual, and (5) the act is chosen which has the highest subjective expected utility (SEU).

Choice Models in Communication

Subjective expected utility models have served as heuristic stepping stones for a variety of theories within the social sciences;[5] their most common functions in communication scholarship have been: (1) as a method for defining an individual's attitude toward a particular action; (2) as

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5. The process of evaluating choice alternatives bears logical similarity to exchange theories of interaction (Homans, 1971; Blau, 1967).

a basis for the study of communication within game situations; and (3) as the conceptual framework of a behavioral theory of communication.

Consistent with formulations suggested by other theorists (cf. Peak, 1955; Rosenberg, 1956; Rotter, 1954), Fishbein and Ajzen (1973) proposed that a person's attitude toward an act may be defined in terms of the SEU model. More specifically, they proposed that a person's attitude toward an act be defined as:

$$A_{act} = \sum B_i a_i$$

where:

A_{act} = the behavior under consideration.

B_i = individual's belief about the likelihood that the behavior in question will result in outcome i.

a_i = the person's evaluation of (or attitude toward) outcome i.

n = the number of outcomes considered.

As Ajzen and Fishbein point out:

> Equation 2 (above) is clearly very similar to the subjective expected utility model of behavioral decision theory (cf. Becker & McClintock, 1967; Edwards, 1961). While there are certain differences between these formulations which need not concern us here, both models specify that for any individual, the attractiveness of a given act is a function of the summed products of the subjective probabilities and utilities he assigns to the act's outcomes.(43)

Although the complete Ajzen and Fishbein model[6] is not presented as a model of communication, it has been applied to communication in investigating the impact of message variables on changes in attitudes and behavior (Florence, 1973; Jaccard & King, 1977).

In recent years research has been conducted on the antecedents and consequents of communication in game settings (Steinfatt & Miller, 1974). As demonstrated in the work of von Neumann and Morgenstern (1944), the game situation is merely the operationalization of the SEU model as a design for experimental investigation; i.e., the values for the components of the SEU model are manipulated by the experimenter in a controlled setting. Thus, experiments on communication in game settings (Cheney, Harford & Solomon, 1972; Wallace & Rothaus, 1969; Loomis, 1959; Swingle & Santi, 1972) can be viewed as studies of communication which implicitly assume a Subjective Expected Utility model.

Russell Ackoff (1968), in his article "Toward a Behavioral Theory of Communication," uses the SEU model as the conceptual foundation for a theory of communication concerned with the effects of communication of the decisions of individuals. As well as positing a slightly modified version of the SEU model as a description of individual decision

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6. The present equation represents only a partial statement of the Fishbein model. The complete model includes factors dealing with a person's belief about what significant others think he should do weighted by his motivation to comply with those others.

processes, Ackoff distinguishes among three functions of communication:

> . . .we shall say that a communication which changes the probabilities of choice, informs; one that changes the efficiencies of courses of action, instructs; and one that changes the values of outcomes, motivates. (174)

Ackoff goes on to suggest that communication may be most appropriately studied in terms of its effects on each of the components in the modified SEU model; in other words, in terms of the functions it performs in facilitating and changing the psychological decision process.

Critique of Choice Models of Cognitive Processing and Behavior

Although models of choice based upon the perceived desirabilities and likelihoods of outcomes have been used as descriptions of the relationship between cognitive states and behavior, there have been three major problems with these previous applications: (a) inappropriate assumptions of complete and equally distributed information, (b) inappropriate assumptions of complete mobility, and (c) lack of correspondence between the logic of the phenomenon and the logic of the model.

Assumption of complete and equally distributed information. Theories of cognitive processing based on choice models often assume that each actor has equal and/or complete information concerning outcomes, desirabilities, and likelihoods. Although this assumption is seldom stated explicitly, it has often been implicit in experimental procedures used.

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The most common example of this is the experimenter who assumes that the subject in a game-playing experiment realizes and accepts the fact that the probability of rolling six on a die is equal to one-sixth. In other words, the experimenter assumes that the subject knows and accepts the statistically-determinate objective probability of an outcome. An equally common error of this type occurs when an experimenter assumes that all subjects perceive the same set of outcomes for a particular act.

If a choice model is to be used as a descriptive explanation of human behavior, the assumption of complete and equally distributed information is inappropriate. First, within the field of communication, "information" is viewed as a theoretical concept worthy of investigation. To assume complete and equally distributed information is to assume that the effects of information are equal and constant across receivers. Not only does such an assumption violate the spirit of a descriptive theory but also eliminates "information" as a theoretical construct to be used in explaining and predicting human behavior.

Although this assumption may provide an easy solution to empirical problems relating to the measurement of expected outcomes, desirabilities, and likelihoods, the cost of this solution is the descriptive, predictive, and explanatory value of the model to communication scholarship.

Assumption of complete mobility. The assumption of complete mobility, derived from the field of economics,

implies that there are no factors which make it impossible for the agent to translate a cognitive choice into action. In other words, once a decision is reached to behave in a particular way, there is nothing which would prohibit the actor from behaving in the chosen manner.

Although this assumption is seldom made explicit in tests of choice models of behavior, it has often been an implicit assumption in the methods by which these models are tested. For example, an experimenter presents an audience with a persuasive message advocating blood donation. At the completion of the message, the experimenter questions the subjects concerning their attitudes and intentions toward blood donation. Some weeks later, it is determined whether or not they actually donated blood. Given these data, the experimenter calculates correlations between attitude and intention measures and blood donation behavior. Much to the surprise of the experimenter, the correlations are low; he is forced to question the hypothesized relationship between cognitive states (stated intention to donate blood) and behavior (actual donation of blood).

The preceding example illustrates a common failure of many experimenters adequately to test cognitively-based theories of behavior. The error in this example is not the assumption of complete mobility, but rather, that the assumption has not been made explicit in the theory. When this issue of complete mobility is made explicit, it suggests variables which must be controlled or measured in any acceptable test of the theory.

Natural science theories are replete with analogous "ideal situation" assumptions as illustrated in such theoretical constructs as force-free bodies, rigid levels, frictionless surfaces, and ideal fluids. However, the theories which rest on these assumptions are not discarded when they fail completely to explain observable events. "Ideal situation" assumptions analogous to the assumption of complete mobility serve two functions within the natural sciences: (a) they serve as a stimulus for improving scientific control procedures, and (b) they perform a heuristic function by pointing to additional fruitful areas of study (e.g., the study of friction itself).

This discussion is not intended to suggest that "failure of the perfect mobility assumption" should be used as a post hoc explanation of empirical failures of cognitive-based theories of behavior. It merely suggests that this assumption be made an a priori, theoretically-explicit assumption that must be addressed empirically in any adequate test of choice models of behavior.

Lack of correspondence between the logic of the model and the logic of the phenomenon. Previous empirical tests have failed to assess fully the descriptive utility of choice models; this failure has been due in part to the imposition of the logic of mathematics upon the logic of the phenomenon. Although there are numerous examples of this error in the research literature, some of the more common

are (a) the assumption that statistically-determined objective probabilities are equal to an individual's subjective estimates of the likelihood of consequences, and (b) the assumption that scales such as "monetary amounts" are directly related to individual estimates of the desirability of consequences. Despite the fact that there is a significant body of empirical research that demonstrates the inappropriateness of such assumptions (Galanter, 1962; May, 1954; Cohen, Dearnaley & Hausel, 1956), the assumptions continue to be made.

To facilitate testing, certain assumptions must be made regarding the logic of the deliberative process, as well as an assumption that mathematical logic may be used in modeling this phenomenon. However, the scientist should be sensitive to the fact that all operations within the mathematical system have implication in the phenomenological system and, at a minimum, should avoid making assumptions that lack empirical support merely for the sake of convenience.

Based on the weaknesses of previous research and theory noted above, it is currently impossible to assess fully the usefulness of choice models in explaining and predicting human behavior. Therefore, any attempt to use choice models to explain the relationship between communication and behavior must (a) overcome the problems inherent in previous conceptions of the relationship between cognitive choice and behavior, and (b) specify the nature of the relationship between communication and cognitive choice.

Theoretical Reformulation of the Relationship Between Communication and Behavior

In light of the discussion to this point, when one deliberates:

1. The decision to undertake a particular action is a function of the Subjective Expected Utility of the act.

2. The Subjective Expected Utility of a particular act is a function of the perceived outcomes of the act, the desirabilities of the outcomes of the act, and the likelihoods of the outcomes of the act as perceived by the actor (definition).

In order to expand these propositions into a theoretically useful explanation of the relationship between communication and behavior, three specific questions must be addressed:

1. Under what conditions would we expect this cognitive model to obtain? In other words, what are the antecedent conditions of deliberation?

2. Under what conditions will cognitive choice be translated into overt behavior? In other words, what are the antecedent conditions for a direct relationship between cognitive choice and overt behavior?

3. What is the relationship between communication and cognitive choice?

Antecedent Conditions of Deliberation

There are three antecedent conditions to deliberation. First, the agent must have knowledge of alternatives to his current behavior and of his relationship to those alternatives. In other words, a prior condition to deliberating an action is an awareness that the act exists and how the act would be accomplished. For example, I must know that there is an act of "driving a car," and I must know (however vaguely) what is entailed in driving a car, prior to deliberating "driving a car." Second, the agent must believe (rightly or wrongly) that he is capable of accomplishing the behavior. This merely suggests that an individual does not deliberate actions which are not believed to be within his control. For example, one does not deliberate carrying his disabled automobile to a service station. Third, the agent must believe that some behavior, i.e., response, is called for. Taken together, these are the necessary and sufficient conditions for deliberation.

Antecedent Conditions of Choice-Behavior Relationship

In response to the criticism of the inappropriateness of the complete mobility assumption in previous uses of choice models, it is assumed that cognitive choice will result in overt behavior if, and only if, there are no physical/environmental factors outside the control of the agent which prohibit the agent from undertaking the chosen behavior.

The Communication-Cognitive Choice Relationship

In order to assess the function of communication in this theory, the role of information must first be examined. As indicated above, information plays an important role in triggering the deliberation model. For deliberation to occur, the agent must believe that some behavior is necessary, he must have information regarding alternatives to his current behavior, his relationship to these alternatives, and his ability to undertake the alternative behavior. There are two means by which this information may be obtained. First, the agent may obtain information through direct experience with the action being deliberated (direct information). Second, the agent may obtain information through symbolic interaction with another (symbolic information/ communication). Therefore, communication may function to trigger the deliberative process insofar as communication regarding the action provides the agent with information concerning alternatives to current behavior, his relationship to these alternatives, his ability to perform the behaviors, and the necessity of behaving.

In terms of the deliberation process itself, an agent makes a decision based on three criteria: the expected consequences of an act, the desirability of the consequences, and the likelihood of those consequences. Information regarding these criteria may be obtained either directly through experience with the act or similar acts, or symbolically through communication. Therefore, communication may

function to formulate, maintain, or change the criteria for choice insofar as the communication provides the agent with information regarding these criteria.

The Relationship Between Communication and Behavior

Based upon the discussion to this point, the theoretical model of the relationship between communication and behavior is as follows: When an agent has information concerning alternatives to current behavior and concerning his relationship to those alternatives; when the agent believes (rightly or wrongly) that he is capable of accomplishing the behavior; when there are no physical or environmental factors outside the control of the agent which would prohibit him from undertaking the behavior; and when the agent perceives a necessity to act:

1. A particular behavior is a function of a cognitive decision to so behave.

2. A cognitive decision to act is a function of the expected utility of that act.

3. The expected utility of an act is a function of the expected consequences of the act, the perceived desirability of the expected consequences, and the perceived likelihood of those consequences.

4. The expected consequences, the desirability of those consequences, and the likelihood of those consequences are a function of informative communication.

It should be emphasized that this conceptualization takes the individual agent as the basic unit of analysis. It makes no assumption regarding the degree to which perceived consequences of an act are consensually shared by more than one person. It makes no assumption regarding the degree to which the desirability and likelihood of a consequence are consensually shared by more than one person; therefore, the question of complete and equally distributed information is an empirical question rather than a theoretical assumption.

To overcome the inherent weaknesses of ordinary language, this model may be represented mathematically. Given the antecedent conditions for deliberation and behavior, we may generally state the relationship between communication and behavioral change as follows:

$$\Delta B = f(SEU_A)$$

$$SEU_A = g(d_{Ai}, P_{Ai}, n) \text{ (definition)}$$

$$\Delta n = h(m_i)$$

$$\Delta d_i = k(m_i)$$

$$\Delta P_i = l(m_i)$$

where:

- B = behavior
- SEU_A = expected utility of alternative behavior A
- i = expected outcome i
- d_i = perceived desirability/utility of outcome i
- P_i = perceived likelihood/probability of outcome i

m_i = informative message regarding outcome i

n = number of expected outcomes

The scientific utility of the above representation is limited. In order to improve the usefulness of this conceptualization, it is necessary, where possible, to elaborate upon the specific nature of the posited relationship. Although no direct tests of this conceptualization have been conducted, previous theory and research do suggest certain potentially fruitful starting points for accomplishing this task.

Within the fields of economics and psychology, the question of the relationship between expected utility and human behavior is a highly controversial issue (Tversky, 1972; Uzawa, 1959; von Neumann & Morgenstern, 1947). Despite the controversy surrounding the specific relationship between Subjective Expected Utility and behavioral choice, the majority of theorists agree that the Subjective Expected Utility of a particular behavior is only meaningful in relation to some behavioral alternative. In other words, the explanatory power of Subjective Expected Utility resides in a comparison between Subjective Expected Utility of behavior A and the Subjective Expected Utility of some alternative(s) behavior B. The most basic example of this would be one in which an individual chooses to undertake a new behavior when the Subjective Expected Utility of the behavior exceeds the Subjective Expected Utility of the behavior in which he is currently engaged. The following

relationship between Subjective Expected Utility and behavioral choice is, then, posited:

$$\Delta B = \alpha(SEU_A - SEU_{\tilde{A}})$$

where: SEU_A = expected utility of current behavior.

$SEU_{\tilde{A}}$ = expected utility of alternate behavior.

As noted earlier, the concept of expected utility was introduced into this model to represent the cumulative effect of perceived outcomes, their desirability, and their likelihood. The classical definition of Subjective Expected Utility derived within the field of economics suggests that the Subjective Expected Utility of a behavior is equal to the sum of the expected utilities (normally referred to as expected values) of all outcomes (i.e., $SEU_A = \sum e.u._i$, where $e.u._i$ = expected utility of outcome i). This definition additionally assumes that the expected utility of an outcome ($e.u._i$) is equal to the desirability (d_i) times the likelihood (p_i), (i.e., $e.u._i = p_i d_i$).[7] Since this definition is consistent with our conception of Subjective Expected Utility, and has been demonstrated to covary with human behavior (Fishbein, 1973; Infante, 1973; Ajzen & Fishbein, 1973) we will define Subjective Expected Utility:

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7. An additional constraint that is normally imposed upon this definition is that $\sum p_i = 1$. This constraint is not imposed because the logic of individual likelihood judgments is not assumed to be isomorphic with the logic of mathematical probability.

$$SEU_A = \sum P_{Ai} d_{Ai}$$

$$SEU_A = \sum P_{\tilde{A}i} d_{\tilde{A}i}$$

Perhaps the most interesting relationships for the field of communication are the relationships between communication messages and the components of SEU. However, these relationships are also the most problematic in terms of existing research and theory. Although existing research does not support any single relationship between communication and these components, it does suggest a variety of alternatives worthy of empirical investigation.

1. Taking the component of desirability as an example, the most simple hypothesis of the effect of communication would be one in which changes in the perceived desirability of an outcome are totally a function of informative messages concerning the desirability of that outcome, i.e.,

$$\Delta d_i = \theta(m_{di})$$

where: m_{di} = information derived from messages regarding the desirability of outcome i.

2. A somewhat more complex hypothesis would be one in which changes in the perceived desirability of an outcome are a function of the discrepancy between the perceived desirability prior to communication and the desirability advocated by the message,[8] i.e.,

$$\Delta d_i = \theta(m_{di,T+1} - d_{i,T})$$

where: $d_i = d_{i,T+1} - d_{i,T}$

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8. This relationship is suggested by discrepancy theorists. See Anderson (1971, 1964).

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$d_{i,T}$ = perceived desirability prior to communication

$d_{i,T+1}$ = perceived desirability subsequent to communication.

3. One of the most complex hypotheses concerning the relationship between communication and perceived desirability is one in which changes in perceived desirability are a function of the perceived desirability prior to communication, the amount of information (i.e., number of messages) on which this perception is based, and the desirability suggested by the message. Specifically, changes in perceived desirability are a direct function of the message and the discrepancy between this message and the perceived desirability prior to communication, and an inverse function of the number of messages upon which the previous desirability estimate was based.[9] Stated mathematically:

$$\Delta d_i = \frac{\theta(m_{di,T+1} - d_{i,T})}{N + 1}$$

where: N = number of messages upon which the perceived desirability prior to communication is based.

The least complex of these formulations, in which changes in the components of SEU are a direct function of informative messages will be subjected to empirical scrutiny.

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9. For an empirical and theoretical discussion of this hypothesis, see Woelfel & Saltiel (1975).

Summary

The primary implication of this model for the field of communication is that it provides a framework for explaining inconsistent findings in previous research involving the effects of persuasive communication on behavior. Within this model it is possible for a persuasive message to have a significant effect upon an agent's cognitions regarding an act, while having no observable effect upon the agent's behavior. A persuasive message may be successful in persuading the agent that a particular behavior will result in a positive outcome of which he was previously unaware; however, if the agent also perceives an abundance of highly probable negative outcomes resulting from the behavior, he may not undertake the proposed action. For example, in attempting to persuade an individual to donate blood, we inform him that for each pint of blood donated, he is entitled to one pint of blood at no cost, should he ever require it. The agent has not previously considered this consequence, and the message is successful in causing the agent to expect this consequence. Although the consequence is perceived as highly probable, positive outcome; he may decide not to donate blood due to the fact that the expected negative consequences (e.g., physical pain) far outweigh the expected positive consequences. An alternative possibility might be one in which the agent chooses to donate blood but is prevented from donating because he does not have access to a blood donation center (the antecedent condition of complete

mobility has not been met). These simplified examples, illustrate the explanatory power of this conceptualization.

The remainder of this dissertation will be devoted to an empirical test of this basic theoretical formulation. Therefore, given the antecedent conditions for deliberation and behavior, an empirical test of this model will involve a test of the relationships:

$$\Delta d_i = k(m_{di})$$

$$\Delta p_i = l(m_{pi})$$

$$B = \sum d_i p_i = S.E.U$$

where: B = behavior

S.E.U. = subjective expected utility

d_i = perceived desirability/utility of outcome i

p_i = perceived likelihood/probability of outcome i

n = number of expected outcomes

m_i = informative message regarding outcome i

For the purposes of testing, the relationship between Subjective Expected Utility and the likelihood and desirability of outcomes will be specified as linear and additive.

Chapter 2

PROCEDURES

The purpose of this chapter is to review the past procedures used in operationalizing the components of the Subjective Expected Utility (SEU) model of choice, to propose a methodology for overcoming the shortcomings of past research, and to pretest this new methodology. Finally, this chapter will outline the procedures used in testing the theoretical relationships posited in Chapter 1.

Survey and Critique of SEU Measurement

Peter Caws (1959) has described the concept of measurement as:

> What measurement does is to connect two parts of theoretical knowledge, the mathematical and the conceptual, imparting relevance to the one and precision to the other. . . Measurement thus assigns, in a stipulative fashion, mathematical characteristics to conceptual entities, and enables us to apply what we learn about the organization of the world in one realm to the clarification of the other. (12-14)

When measurement is undertaken for the purpose of supporting or disconfirming a theory, the degree to which the theory is clarified; i.e., supported/disconfirmed, is in large part a function of the quality of the measurement. The quality of measurement is in turn a function of the correspondence between measurement assumptions/rules and theoretical assumptions.

Applying this notion to our previous discussion of the SEU model, it may be seen that the predictive power and explanatory validity of the model as it is tested is a direct function of the measurement assumptions made during the testing process. Previous measurement techniques used for assessing the validity of the SEU model will be examined by analyzing the theoretical assumptions that flow from the measurement assumption.

The following critique is based on a distinction between operationalizations that are imposed by the experimenter and those that are measured by the experimenter. Imposed operationalizations assume that perceptions are invariant across subjects and are isomorphic with a scale external to the subjects. Measured operationalizations assume that perceptions differ among subjects and an attempt is made to measure these perceptions directly.

The most frequent use of the SEU model has been that in which the measurement techniques have imposed both utility and probability values on the subject. Game theory applications have commonly employed this technique. Normally, in these applications the experimenter assumes: (1) there are a fixed number of outcomes for a particular act and the individual perceives all these and only these outcomes; (2) each outcome has an objective probability of occurring and this probability is equal to the perceived subjective probability of the individual; and (3) there is an assigned

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utility to each outcome (usually assigned by the experimenter by using money or an artificial reward system) which forms an objective interval or ratio scale, and this utility is equal to the perceived subjective utility of the individual.

To recommend them, these measurement techniques offer simplicity and experimental convenience, but there is empirical evidence that these assumptions are unrealistic. Experiments conducted by Galanter (1962), which are discussed later in this section, indicate that neither subjective estimates of probabilities nor subjective estimates of the utility of monetary scales are linear transformations of their objective counterparts. Based on this research, tests of the SEU model using imposed utility and probability values should not be viewed as valid tests of the model.

Certain tests of the SEU model have used measurement methods which impose a utility or probability scale and use this imposed scale to derive an estimate of the other SEU component. For example, in an experiment by Preston and Baratta (1948), the experimenters had subjects bid competitively for the privilege of taking a bet. Using play money and assuming that subjective utilities were equal to the money value of the play money, the experimenters derived a subjective probability scale which was assumed to hold for all subjects.

Perhaps the most mathematically sophisticated of these derivational techniques are the methods in which imposed

probabilities have been used to derive Subjective Expected Utility estimates. The best example of this is the initial set of experiments conducted by Mosteller and Nogee (1951) to test the von Neumann-Morgenstern model. The experiments involved betting on poker hands in which the subjects were provided mathematical probability tables stating the "fairness" (i.e., odds) of each bet.

> For each probability used and for each player, the amount of money was found for which that player would accept the bet 50 percent of the time. Then the utility of $0.00 was defined as 0 utiles and the utility of losing a nickel was defined as -1 utile. With these definitions and the probabilities involved, it was easy to calculate the utility corresponding to the amount of money involved in the indifference offer. (Edwards, 1954)

Although these derivational techniques are more mathematically sophisticated than those previously discussed, they suffer from the same problems associated with the assumption of isomorphism between the objective scale and the subjective scale. In addition, these measurement techniques create an empirical relationship between utility and probability that violates the theoretical independence of the constructs.

The measurement techniques discussed to this point have to varying degrees assumed that mathematically or experimenter-established scales of utility and/or probability are isomorphic with the subjective scales used by subjects in an experimental situation. Although the overwhelming majority of research using the SEU model makes this assumption, there have been attempts to measure subjective utility and probability directly.

Building on techniques devised for constructing subjective scales of sensory phenomena, Galanter (1962) designed an experiment to measure utility and subjective probability directly. First, using money as the stimulus-continuum, Galanter attempted to scale the valuation effect that the receipt of money produces. In other words, subjects were asked to estimate the happiness that money brings.

In this experiment subjects were given the following instructions:

> "Suppose I were to give you, as an outright gift, $10.00. This $10.00 does not come from me, but comes from a foundation whose resources are limitless. You will be taking nothing away from me when I give you this $10.00. Presumably, this will make you happy to a certain degree. Now, I want you to think about how much money you would want in order to feel twice as happy as the $10.00 would make you feel."

This same procedure was repeated with two additional groups of subjects using base amounts of money set at $100 and $1,000.

Galanter found that the results of this judgment task could be accurately described by the power function $U = 3.71\ M^{0.43}$ relating money (M) to utility (U). Generally this equation says that to obtain twice the utility subjects require five times the money. In addition, the equation produces intuitively appealing results which conform to the principle of decreasing marginal utility.

In the second phase of the study, Galanter attempted to measure subjective probability directly using three alternative methods: (1) paired comparisons; (2) individual estimate

on a 100 point rating scale; and (3) unbounded magnitude estimates where the subject assigned any number to indicate likelihood as long as "if one event was twice as likely as another it would have a number twice as large." The subjects in each condition were asked to estimate the likelihood of ten uncertain events ranging from, "It will not rain in Philadelphia for the entire month of April" to "You can break a raw egg with a hammer."

The results of this experiment indicated a linearity between scales and led Galanter to conclude that the direct assessment of the likelihood of events was a feasible procedure and that the procedure did not require an assumption of an underlying objective continuum.

Although the results of Galanter's work reveal that it is possible to assess directly the utility of money and to scale the likelihood of uncertain events, it leaves a number of important questions unanswered. For example, is it possible to assess utility directly without imposing an objective stimulus-continuum such as money? If not, the direct measurement of utility is limited to those events whose outcome can be realistically represented on a monetary or a money-like scale. Additionally, is it possible to obtain direct measurements which are stable over time? If these direct measures are to be empirically useful to the field of communication research, they must be relatively stable (i.e., reliable) over time.

Critical Overview

The preceding critique, for the sake of simplicity, has dealt only with the individual measures of utility and subjective probability. However, the theoretical purpose of these measures, which is to obtain a reliable and valid direct estimate of the subjective expected utility of an act, must not be overlooked. The Subjective Expected Utility model posits that the Subjective Expected Utility (SEU) of an act is the product of the subjective utility and subjective probability of the consequences of the act summed across all perceived consequences of the act. In other words, the measures of subjective utility and subjective probability are necessary elements in the measurement of SEU and the measurement of these elements for all perceived consequences of an act is a sufficient condition for the specification of the SEU of the act.

Given this, one additional criticism of previous measurement of SEU should be noted. Without exception, previous research has implicitly assumed that the consequences specified by the experimenter constitute an exhaustive set of the consequences perceived by the subject. If this were true, in those instances where an individual subject did not perceive an experimenter-imposed consequence, the subject should evaluate the probability of that consequence as zero, which would mean that the utility of that consequence would have no effect on the magnitude of the SEU of the act. However, if the set of experimenter-imposed consequences are

not exhaustive, a subject may perceive an additional consequence which is left unmeasured. In this instance, the measurement of SEU would be incomplete and therefore an invalid indicator of the theoretical construct of subjective expected utility.

Although the imposition of consequences by an experimenter may be tenable in certain cases, it seems that the magnitude of the problems created by the failure of this assumption requires that extreme care be exercised to ensure that all perceived consequences--both positive and negative--are measured in the experimental setting.

Given the shortcomings of previous research designed to measure subjective expected utility of an act, a pilot study was designed to investigate the feasibility of developing reliable direct measures of subjective expected utility prior to the test of the proposed model.

Pilot Study to Develop a Reliable Operational Definition of Subjective Expected Utility

The pilot study was designed to be conducted in two phases. The goal of the first phase was to generate an exhaustive set of consequences for a particular behavior as perceived by a selected population. Using this exhaustive set of consequences, the goal of the second phase was to measure the likelihoods and desirabilities of these consequences in order to determine their Subjective Expected Utility. To ensure that the measurements obtained in Phase

Two were not contaminated by the subjects' experiences in Phase One, separate samples were used in each phase.

Phase One. The purpose of Phase One was to identify an exhaustive set of potential consequences of undertaking a particular action. The behavior selected for this study was the donation of a pint of blood to the Red Cross. Subjects were 31 volunteer students from an undergraduate communication research course at Michigan State University.

The subjects were informed that the Department of Communication at Michigan State was undertaking research on behavioral consequences. The subjects were asked to assist in this research by completing a brief questionnaire concerning their perceptions as to why people choose to participate or not to participate in certain types of behavior. The subjects were then given a questionnaire to complete.

The questionnaire comprised seven questions relating to blood donation: one question asked whether the subjects had ever donated blood themselves, and six open-ended questions dealt with the perceived consequences of blood donation and of the refusal to donate blood. The latter six questions were designed to elicit a maximal number of perceived positive and negative consequences of blood donation. The instructions emphasized that the subjects should provide as many answers as they could think of for each of the six questions. These questions were:

1. What kinds of consequences, both good and bad, do you think might result from donating a pint of blood to the Red Cross?

2. What are the possible consequences to you of donating a pint of blood to the Red Cross?

3. What reasons would people have, in general, for donating blood?

4. What other arguments can you think of for personally donating a pint of blood to the Lansing Red Cross?

5. What reasons would people have, in general, for not donating blood?

6. What other arguments can you think of for personally not donating a pint of blood to the Lansing Red Cross?

After all 31 subjects had completed the instrument, they were debriefed and the purpose of the study was explained.

Following the data collection, the responses to the six questions were combined and content analyzed by the experimenter and independently by a colleague. These analyses resulted in the generation of eighteen (18) content categories representing all the subject responses. These content categories (i.e., perceived consequences) are:

1. Having free blood for your personal use.
2. Reducing the cost of blood for everyone.
3. Giving an hour of your time.
4. Becoming physically ill.
5. Getting hepatitis.
6. Having free blood for your family.
7. Having free blood for your friends.
8. Feeling the pain from a doctor's needle.

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9. Feeling physically weak.
10. Earning $7.50.
11. Having blood available for people other than family and friends.
12. Lowering your resistance to disease.
13. Harming someone else's health.
14. Saving someone's life.
15. Learning of a personal illness.
18. Feeling satisfaction in helping others.

Finally, the results of the content analysis were compared to previous research on the reasons for donating blood (London & Hemphill, 1965; Boe & Timmens, 1966; Korzekwa, Jordan, & Alsever, 1960; Ford & Wallace, 1972). Based on this comparison, these consequences were judged to be complete and to represent an exhaustive set of consequences of blood donation perceived by the population represented by the sample.

Phase Two. It is axiomatic in the field of psychometrics that the reliability of any scale is approximately proportional to the degree of structure provided in the scale and inversely proportional to the complexity of the judgment task. Realizing the complexity of the judgment task required in assigning likelihood and desirability values to a behavior, those who have previously measured SEU have attempted to resolve the problem of unreliability by assuming an isomorphism between an objective scale and its subjective, psychological counterpart (e.g.; amount of money

= amount of utility, statistical probability = subjective probability).

To reduce the complexity of the judgment task without imposing a scale on the individual, an instrument was constructed which would separate the judgment task into a series of stages of increasing complexity. Specifically, the instrument comprised five stages. Each stage required the subject to make judgments about the eighteen consequences of blood donation identified earlier. Four of the stages required judgments about the desirability of an outcome, and the other required judgments about the likelihood of an outcome. The five stages were designed and organized as follows:

1. Stage One required the subject to evaluate the desirability or the undesirability of each of the eighteen consequences on a five-point Likert-type scale ranging from "very desirable" to "very undesirable."

2. Stage Two required the subject to rank the eighteen consequences from "the most desirable" to "the least desirable."

3. Stage Three required the subject to assign a number to the difference between each pair of adjoining consequences in their ranking in Stage Two; that number to represent the difference in desirability of the two consequences. The subjects were told that an assigned difference of zero (0) represented no difference in desirability and

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that an assigned difference of twenty (20) indicated that two adjoining consequences were "fairly different".

4. Stage Four required the subject to estimate the percentage of times (i.e., likelihood) that each consequence would be expected to occur as a result of donating one pint of blood.

5. Stage Five required the subject to assign a number to each of the eighteen consequences which represented its desirability or undesirability. The subjects were told to use any number they wished; that "fairly desirable" was equal to ten (10), "that neither desirable nor undesirable" was equal to zero (0), and that "undesirable" consequences should be represented by a negative number.

The subjects were instructed not to refer to their answers on previous stages, except that in Stage Three, Stage Two responses should of course be used.

Because of the complexity of the task and the length of time required to complete the instrument, no additional questions, other than name and student number, were asked.

The subjects were 71 student volunteers from two classes of an introductory communication course at Michigan State University. At every administration of the questionnaire, all students present volunteered to participate in the study.

The questionnaire was administered three times to each subject. Exactly one week separated each administration. The procedures were the same for each administration of the

instrument. At the beginning of the regular class period the subjects were asked to volunteer to complete a questionnaire dealing with blood donation and its possible consequences. They were informed that the questionnaire required them to make some rather complex judgments, and that some people found the questions difficult and mentally taxing. Finally, before the questionnaire was distributed they were told that if, for any reason, they did not wish to complete the questionnaire and to expend the energy necessary to do a good job, they should not participate. No reference was made to previous or subsequent administrations. The subjects were told that they would be debriefed at the end of the study, and all were in fact debriefed after their completion of the third administration of the instrument.

Due to absences and missing responses, the total number of subjects who could be matched and traced across the three time periods was reduced from 71 to 26.

Estimates obtained during Stage Four were designed to measure subjective probabilities of outcomes. The differences assigned during Stage Three were designed to measure desirabilities of outcomes. Finally, as prescribed by the model presented in Chapter 1, the SEU measure was defined as the product of the utility and subjective probability measures for each consequence, summed across all consequences.

As a first step in determining the reliability of the test instrument over time, test-retest correlation coefficients were calculated for each consequence across the three

time periods. Although the responses to Stages 3 and 5 were initially tested as measures of perceived desirability, Stage 5 responses were found to be less reliable than the direct measures obtained in Stage 3. For this reason, Stage 5 measures are not discussed, and this Stage was eliminated during the subsequent test of the proposed model.

The major shortcoming entailed in using test-retest correlations as the sole indicator of reliability is that such correlations are affected by the temporal instability of the variables themselves. Change observed in responses from time 1 to time 2 may be the result of measurement errors (i.e., unreliability) or of actual changes in perceptions about the variables which have occurred between the two measurements.

Heise (1969) has suggested a method of separating reliability and temporal instability in the variable. Heise's method assumes: (a) the relationship between the true variable [X] and its measure [X'] is constant over time, (b) the errors [e] are uncorrelated with true scores, (c) the errors [e] at different times are uncorrelated, and (d) the disturbances [u] in X that develop between times 1 and 2 and between times 2 and 3 are uncorrelated with the initial values of X.

The model described by these assumptions is illustrated in Figure 1.

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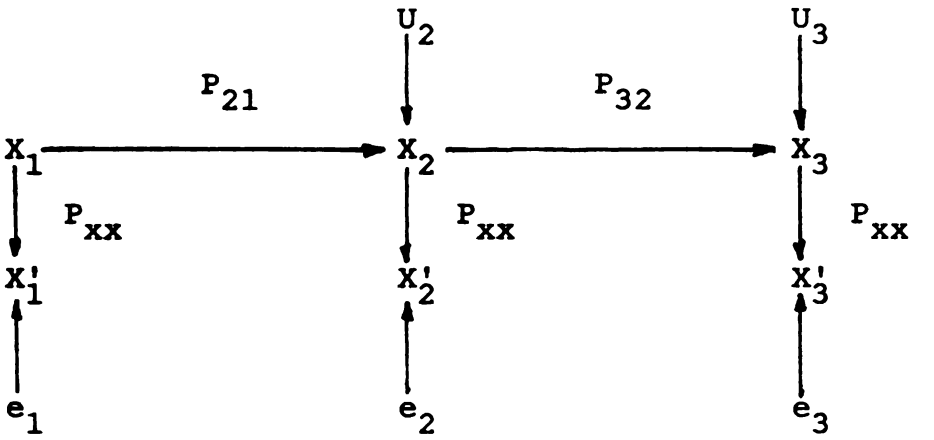

FIGURE 1

Path Diagram for 3-Wave Test

From the diagram it can be seen that the reliability coefficient p_{xx}^2 (i.e., the square of the path coefficients p_{xx}) may be calculated from the correlations among X'_1, X'_2, and X'_3. The computational formula for a reliability coefficient based on test-retest data which is free of temporal change in the variable X is:

$$p^2_{xx} = \frac{r_{12}r_{23}}{r_{13}}$$

To obtain an estimate of the reliability of the overall SEU measure, Heise's technique was applied to the correlations among the measured SEU values between times 1 and 2, 2 and 3, and 1 and 3. Based on this method of analysis, the estimated test-retest reliability coefficient for the proposed SEU measure is $p^2_{xx} = .75$. The reliability coefficients of

the separate desirability and likelihood components are presented in Appendix D.

Although an overall reliability coefficient of .75 is less than ideal, it is comparable to the reliability of many of the more conventional measures currently being used in communication research. A reliability coefficient of .75 demonstrates the feasibility of estimating the Subjective Expected Utility of an act by measuring the perceived likelihoods of consequences of the act and measuring the perceived desirabilities of the act, moreover it yields an operationalization of SEU of known reliability. Therefore, this method was used as the operational definition of SEU in the test of the model.

Test of the Model

Given the operationalization of SEU discussed above other operational definitions and procedures were required for an adequate test of the proposed model. These included operational definitions of the antecedent conditions of the model, behavior, and informative messages.

Antecedent Conditions of Deliberation

As noted in Chapter 1, three antecedent conditions to deliberation have been posited. First, the agent must be aware of alternatives to current behavior and of his relationship to those alternatives. In other words, a prior condition to deliberating an action is an awareness that the

potentiality of the act exists and a notion of how the act might be accomplished.

In this study, the triggering of this antecedent condition was accomplished in a number of ways. First, blood donation was chosen as the behavior to be studied because it was a relatively simple process of which most people were aware. Although blood donation may be a somewhat common activity, it is unlikely to become a habitual, undeliberated activity. In addition, the cover letter to the survey instrument emphasized that blood needs of hospitals and their patients are realized solely through voluntary donations.

The second antecedent condition to deliberation is that the agent must believe (rightly or wrongly) that he would be capable of undertaking the behavior. Since many people cannot donate blood for reasons beyond their control, it is impossible to manipulate this antecedent condition. Therefore, the only means available of accounting for this factor involved measuring whether or not the condition was met. This was accomplished by including a question on the study instrument which measured whether or not the subject believed that he or she was capable of donating blood. Specifically, the subjects were asked, "Do you know of any reason why you would be unable to donate blood?" If the subject responded "yes" to the question, he or she was asked to indicate the reason in an open-ended question. Since the model requires

only that the agent believe that he is capable of undertaking the behavior, no judgment was made by the experimenter as to the validity of the reasons specified for being unable to donate. During the analysis of the study, affirmative responses to the former questions were used to account statistically for the presence or absence of this antecedent condition.

The third and final antecedent for triggering deliberation requires that the agent perceive that it is incumbent upon him to undertake some behavior relating to the persuasive message. This condition was met by including at the end of the study instrument a request that each subject donate blood. Specifically, this request noted that the Lansing Red Cross was constantly looking for blood donors to meet the increasing need for blood. It indicated that a pledge card was attached for the purpose of pledging one pint of blood to be given at a Red Cross Bloodmobile. The request went on to specify that each person pledging would be contacted within the next few weeks to schedule a convenient time for donation.

Taken together, these operationalizations were assumed to establish the necessary and sufficient conditions for deliberation.

Antecedent Conditions of Choice-Behavior Relationship and Operational Definition of Behavior

In response to criticisms of previous attempts to use choice models as descriptive explanations of behavior, it was posited in Chapter 1 that cognitive choice would result in overt behavior if, and only if, there were no physical or environmental factors beyond the control of the agent which would prohibit the agent from undertaking the alternative behavior.

In order to ensure that this condition was met operationally, two procedures were used. The first procedure involved the operational definition of behavior. The physical act of donating blood may be contingent upon a number of factors outside the control of the subject. For example, the subject may not have transportation to the blood bank or may have to attend classes or work during the time when a bloodmobile is available. Since these factors lie outside the control of the subject as well as outside the control or observation of the experimenter, empirical control over or measurement of this antecedent condition would be virtually impossible were withdrawal of a pint of blood from a subject to be the operational definition of blood-donating behavior.

Therefore, blood-donating behavior was operationally defined as the subject's accurate completion of a Red Cross pledge card attached to the study instrument. This pledge card was from the Mid-Michigan Chapter of the American Red Cross. It required the subject to enter his or her name,

address, phone number, and most convenient times for blood donation. The pledge stated, "I hereby pledge to donate one pint of blood at the Red Cross Bloodmobile at M.S.U.," and the subject's signature to the pledge was required." The binding nature of the pledge was emphasized in the introduction by noting that the bloodmobile would be on campus within one month and that if the subject were to choose to sign the pledge card he or she would be contacted subsequently by the Lansing Red Cross.

Although this operationalization of behavior offers greater experimental control than does the measurement of actual blood-donating behavior, it does allow for the accounting of those factors outside the control of the agent which might prohibit him or her from signing the pledge. Therefore, the questionnaire item, "Do you know of any reasons why you would be unable to donate blood?" was also used as a means of identifying and accounting for these factors. For example, if a subject could not pledge to donate blood because he worked during the times he was not in class, this would have been identified in the subject's response and was statistically accounted for in the subsequent analysis.

Operationalization of Informative Messages

As posited earlier, the relationship between communication and behavior is one in which informative messages function to change the perceived desirabilities and/or likelihoods of the expected outcomes of a behavior (i.e.,

Subjective Expected Utility) and the expected utilities of these outcomes determine the behavior. In order to test the relationship between communication and the perceived desirability and likelihood of expected outcomes, it is necessary to provide an operational definition of informative messages. Since the model suggests that messages function to change the desirability of an outcome, the perceived likelihood of an outcome, or both, two separate informative messages were constructed and presented to the subjects: (1) a message designed to change the perceived likelihood of a blood donation outcome, and (2) a message designed to change the perceived desirability of a blood donation outcome.

The message designed to change the perceived likelihood of an outcome of blood donation dealt with the likelihood of the availability of free blood for one's family as a result of donating blood. To ensure that the message was informative, i.e., differed from information held by the subject, the message described a fictitious program which offered free blood to blood donors' families. The message indicated that the Lansing Red Cross has a policy under which student donors are entitled to receive free blood through its program. In addition to this, those students who are donors may have free blood provided for their immediate families regardless of where they live, and this entitlement is equivalent to the number of pints donated while on campus.

The message designed to change the perceived desirability of an outcome of blood donation dealt with the

desirability of saving someone's life as a result of giving blood. To ensure that the message was informative; i.e., differed from information held by the subject, the message emphasized the life-saving value of blood to a fictitious victim of hemophilia. The message described the pain and deformities experienced by a hemophiliac who ultimately died as a result of the unavailability of blood.

Each of the informative messages was of approximately equal length.

Design

The study was an after-only, quasi-experimental design. There were three experimental groups, including a control group, a treatment group which received the desirability message, and a treatment group which received the likelihood message.

Three separate survey instruments were prepared, one for each experimental group. Each instrument had a cover letter, a page of general instructions, a four-page questionnaire, and a final page asking for a blood donation pledge with an attached pledge card. The instruments for the desirability message and likelihood message treatment groups had the appropriate message manipulation inserted between the general instruction page and the first page of the questionnaire. The instruments were sequenced in a random order, using a random numbers table, for distribution to the subjects.

The subjects were members of four undergraduate and graduate classes in the Department of Communication at Michigan State University. They were told they would be asked to read some information and answer some questions regarding blood donation and its possible consequences. They were told that the questions required them to make some rather complex judgments, and that some people found the questions very difficult and mentally taxing and therefore did not wish to expend the energy required to complete the questionnaire. Therefore, if for any reason they did not wish to fill out the questionnaire, they were told they should just not answer the questions. Finally, they were told that if they decided to participate, they should carefully read and consider all the information and questions.

One hundred subjects were asked to participate in the study. The subjects were assigned to treatments by the random distribution to all students of the previously randomly arranged instruments. A total of 96 students completed the questionnaire and returned it. The resulting experimental group sizes were 30 subjects in the control group and 33 subjects in each of the two treatment groups.

At the completion of the questionnaire, all subjects were debriefed as to the purpose and hypotheses of the study.

Chapter 3

RESULTS

The test of the model proposed in Chapter 1 involved tests of three separate relationships: the SEU-behavior relationship, the informative communication-perceived likelihood relationship, and the informative communication-perceived desirability relationship. Whereas the tests of the latter two relationships were based on the differences in message treatments, the test of the relationship between SEU and behavior was expected to obtain regardless of the message treatment.

Of the 96 subjects participating in this study, 18 volunteered to donate blood. Of the subjects that did not volunteer to donate blood, 33 subjects believed that they were unable to donate due to an existing physical condition or malady.

SEU-Behavior Relationship

The primary relationship posited in this model is, given that certain antecedent conditions are met, a decision to undertake a particular behavior is a function of the Subjective Expected Utility (SEU) of that behavior. In this study, SEU has been defined as:

$$SEU = \sum p_i d_i$$

where: SEU = Subjective Expected Utility

p_i = perceived likelihood of outcome i

d_i = perceived desirability of outcome i

n = number of perceived outcomes

An adequate test of this relationship may be seen as a test of the hypotheses

H_0: $r_{12.3} = 0$

H_1: $r_{12.3} \neq 0$

where $r_{12.3}$ is the partial correlation coefficient representing the correlation between blood donation behavior and the Subjective Expected Utility of blood donation controlling for the antecedent conditions. In this test, the antecedent condition requiring statistical control was the subject's belief that he or she was capable of donating blood.

The data yielded a partial correlation coefficient of $r_{12.3} = .29$. Based on a level of significance of .05, H_o was rejected ($t = 2.92$, $df = 93$, $p < .001$). The hypothesized relationship between Subjective Expected Utility and behavior, then, is supported by this research.

Although this result supports the posited relationship between SEU and behavior, it does not rule out the possibility of a simpler explanation: since approximately two-thirds of the subjects received what could be termed "persuasive appeals" regarding blood donation, it may be argued that these messages accounted for the differences in blood donation behavior, and thus, the observed relationship between SEU and behavior is merely an artifact of the experimental design. To test this alternative explanation, the mean frequency of pledging blood donation in the control group

was compared with the mean frequency of pledging blood donation in the treatment groups. The t-statistic for the difference between proportions showed no statistically significant ($\alpha = .05$) differences between the control group and the treatment groups. Thus, there was no empirical support for this alternative hypothesis.

As a final step in assessing the strength of the relationship between behavior and SEU, accounting for the presence or absence of the antecedent conditions, a multiple correlation coefficient was calculated. The calculation of the combined effect of SEU and the antecedent conditions in predicting behavior yielded a multiple correlation coefficient of .44 ($F = 11.29$, $df = 2.93$, $p < .001$).

Communication-Likelihood Relationship

In addition to the primary relationship between SEU and behavior, the model posits that changes in perceived likelihood of an outcome are a function of informative messages concerning the likelihood of that outcome. In other words:

$$p_i = f(m_{pi})$$

where: p_i = perceived likelihood of outcome i

m_{pi} = informative message regarding the likelihood of outcome i

An adequate test of this relationship is a test of the hypotheses:

$$H_0: \; r_{bi} = 0$$

$$H_1: \; r_{bi} \neq 0$$

where r_{bi} is the biserial correlation coefficient representing the correlation between perceived likelihood of outcome i and the exposure to the message dealing with the likelihood of outcome i. As noted earlier, this message dealt with the likelihood of having free blood for one's family as a result of donating blood.

The results yielded a biserial correlation coefficient of .217 for this outcome. Based on a level of significance of .05, H_o was rejected ($t = 2.15$, $df = 94$, $p < .05$).

Although these results provide support for the posited relationship between communication and perceived likelihood, this test alone does not describe the total effect of the message treatment. In order to examine these effects, the biserial correlations of perceived likelihood with the receipt of the likelihood message treatment were calculated for all perceived outcomes. Table 1 presents these correlations ranked according to their absolute magnitude.

TABLE 1

Biserial Correlation of Perceived Likelihood With Likelihood Message Treatment

Outcome	$/r_b/$
Having free blood for your family	.217
Having free blood for your personal use	.212
Having free blood for your friends	.202
Persuading someone else to give blood	.194
Harming someone else's health	.194
Feeling physically weak	.167
Lowering your resistance to disease	.127
Having your friends like you	.127
Having blood available for other than family and friends	.115
Learning of a personal illness	.105
Feeling satisfaction in helping others	.068
Saving someone's life	.061
Feeling the pain from doctor's needle	.045
Earning $7.50	.035
Getting Hepatitis	.020
Giving an hour of your time	.010
Reducing the cost of blood for everyone	.010
Becoming physically ill	.009

As Table 1 indicates, although the strongest relationship between the message treatment and perceived likelihood occurred as hypothesized, the message produced additional effects. Although the primary intent of the likelihood treatment message was to provide information regarding the likelihood of having free blood for one's family, the message also indicated that donation resulted in "free blood for your personal use." The perceived likelihood of this outcome was also significantly different between subjects receiving the likelihood message and those not receiving it.

Communication-Desirability Relationship

The model proposed in Chapter 1 posits that changes in the perceived desirability of an outcome are a function of informative messages concerning the desirability of that outcome. As in the case of changes in perceived likelihood, a test of this relationship may be seen as a test of the hypotheses:

$$H_0: \quad r_{bk} = 0$$

$$H_1: \quad r_{bk} \neq 0$$

where r_{bk} is the biserial correlation coefficient representing the correlation between exposure to the message dealing with the desirability of an outcome K and the perceived desirability of that outcome. In case of this study, the desirability message dealt with the desirability of saving someone's life as a result of donating blood.

The result of this test yielded a statistically significant biserial correlation coefficient of .17 ($t = 1.68$, $df = 94$, $p < .05$).

In order to examine the total effect of the desirability message treatment, the biserial correlations were calculated for all perceived outcomes. Table 2 presents these correlations ranked according to their absolute magnitude.

TABLE 2

Biserial Correlation of Perceived Desirability With Desirability Message Treatment

Outcome	$/r_b/$
Saving someone's life	.171
Having free blood for your personal use	.170
Having free blood for your family	.164
Earning $7.50	.152
Having free blood for your friends	.151
Feeling physically weak	.141
Having blood available for other than family & friends	.132
Harming someone else's health	.120
Having your friends like you	.114
Reducing the cost of blood for everyone	.110
Persuadng someone else to give blood	.110
Feeling satisfaction in helping others	.105
Lowering your resistance to disease	.100
Feeling the paint from a doctor's needle	.083
Giving an hour of your time	.080
Learning of a personal illness	.065
Getting hepatitis	.021
Becoming physically ill	.006

As Table 2 illustrates, the desirability treatment message had its strongest effect on the intended outcome (i.e., the desirability of saving someone's life). Although the perceived desirability of having free blood for one's personal use was also significantly ($\alpha = .05$) different between subjects receiving the desirability message and those not receiving it, there is nothing in the desirability message itself that would offer an explanation of this anomaly.

Chapter 4

DISCUSSION

The original purpose of the model tested in this dissertation was to provide a framework for explaining inconsistent findings in previous research involving the effects of persuasive communication on behavior. This model accommodates a situation in which a persuasive message may have a significant effect upon an agent's cognitions regarding an act, while having no observable effect upon the agent's behavior. A persuasive message may be successful in persuading the agent that a particular behavior will result in a positive outcome of which he was previously unaware; however, if the agent also perceives an abundance of highly probable negative outcomes resulting from the behavior, he may not undertake the proposed action. Consider for example, an attempt to persuade an individual to donate blood: he is informed that for each pint of blood he donates, he is entitled to one pint of blood at no cost, should he or his family ever require it. The agent has not considered this consequence previously, and the message is successful in that it causes the agent to expect this consequence. Although the consequence is perceived as a highly probable, desirable outcome, he may decide not to donate blood due to the fact that the expected negative consequences (e.g., physical pain) outweigh the expected positive consequences. Or the agent may choose to donate blood but is prevented from

donating because he does not have access to a blood donation center (the antecedent condition of complete mobility has not been met). These simplified examples illustrate the explanatory power of this present conceptualization.

In addition to accounting for inconsistent findings in previous research on the communication-behavior relationship, the model provides a framework for systematizing future research and theory in the area of persuasive communication. For example, the model suggests that future research and theory focus on specifying the precise nature of the functional relationships among communication messages and the components of SEU. An equally important question for theorists and researchers is: to what degree are expectations regarding behavioral outcomes, desirabilities of outcomes, and likelihoods of outcomes concensually shared throughout a society or culture?

SEU-Behavior Relationship

The results of the study indicated the combined efficacy of the proposed model of SEU together with its antecedent conditions in predicting behavior. The quantification of this relationship yielded a multiple correlation coefficient of .44. If it is assumed that the measures of behavior and the controls of the antecedent conditions were perfectly reliable, knowledge from the pilot test concerning the reliability of the SEU measure may be used to correct for

attenuation in the observed correlation due to measurement error. This correction, when applied, yields a multiple correlation coefficient of .48, which indicates that the model as tested explains 23% of the observed variance in behavior.

This suggests that the model offers a moderate degree of explanatory power in explaining a class of human behavior. However, this may not reflect the maximum explanatory potential of the model. Given that the operationalization of behavior (i.e., blood donation) implied a dichotomous scale, the limiting values of the calculated correlations would be expected to be less than ±1.0. In fact, based on the proportion of the sample that volunteered to donate blood, the limits of the calculated correlations may be estimated. If the "true" correlation between SEU and behavior were 1.0, the maximum calculable correlation, given behavior measured as a dichotomous variable, would have been approximately .65.[10]

To assess fully the explanatory value of this model, future research must work to develop an operational definition of behavior which permits a more sophisticated level of measurement. This might be accomplished by using operationalizations such as those suggested by Woelfel and Saltiel (1975) which focus on the frequency of behavior over time.

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10. For a discussion of the limiting effects of distributional form on the size of correlations, see J.C. Nunnally, Psychometric Theory (New York: McGraw-Hill, 1967), 128-133.

Communication-SEU Relationship

The second major focus of this study was the relationship between communication and the components of SEU. Although the results indicate a statistically significant relationship ($p < .05$) between communication and perceived likelihood and desirability, the strength of these relationships seems relatively weak. Correcting for attenuation due to measurement error, the message variable explained only 7% of the variance in perceived likelihood and only 5% of the variance in perceived desirability.

If the well-worn caveats concerning the effectiveness of message manipulations are avoided, there are at least three other potential explanations for the weakness of the observed relationships. First, the exact nature of the relationships between communication and perceived likelihood and between communication and perceived desirability could be different from that specified. This study assumed that changes in the perceived desirability and in the perceived likelihood of an outcome were a direct function of informative messages concerning that outcome (i.e., $d_i = f(m_{di})$ and $P_i = f(m_{pi})$). Although the relationship between the components of SEU and communication may include informative messages regarding those components, the relationship may be more complex. For example, discrepancy theorists (Anderson, 1971, 1964) suggest that changes in the perceived desirability of an outcome are a function of the discrepancy between the perceived desirability prior to communication and the

desirability advocated by the message, i.e.,

$$\Delta d_i = g(m_{di,T+1} - d_{i,T})$$

where: $d_i = d_{i,T+1} - d_{i,T}$

$d_{i,T}$ = perceived desirability prior to communication

$d_{i,T+1}$ = perceived desirability subsequent to communication

Second changes in perceived desirability could be functions of the perceived desirability prior to communication, the amount of information (i.e., number of messages) on which this perception is based, and the desirability advocated by the message. Specifically, changes in perceived desirability may be a direct function of the message and the discrepancy between this message and the perceived desirability prior to communication, and an inverse function of the number of messages upon which the previous desirability estimate was based.[11] Stated mathematically:

$$\Delta d_i = \frac{\theta(m_{di,T+1} - d_{i,T})}{N + 1}$$

where: N = number of messages upon which the perceived desirability prior to communication is based.

Future research should focus on investigating these more sophisticated specifications of the relationship between communication and SEU.

A third potential explanation of the relatively weak relationship between communication, perceived likelihood,

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11. For an empirical and theoretical discussion of this hypothesis, see Woelfel & Saltiel (1975).

and perceived desirability deals with issues of measurement. The pilot test showed that some of the individual measures of perceived likelihood and perceived desirability had extremely low levels of reliability (e.g., p^2_{xx} = .06, .20, .21, see Appendix D). Even though some variation in the reliability estimates due to random sampling error associated with small sample sizes would be expected, this is not in itself an adequate explanation.

If we look at the Subjective Expected Utility model, $SEU(A) = \Sigma d_i p_i$, we see that it is a linear model which implies independence among perceived outcomes. Given this implied independence, one explanation for the instability of measurements related to certain outcomes may be that these outcomes were not perceived as conceptually independent. In other words, although the logic of the model may suggest that two outcomes are mathematically independent, they may not be perceived as being conceptually distinct. If this were indeed the case, greater random variation in measures associated with the outcomes would be expected.

The correction for this potential problem as well as the investigation of its effects is a function of the way in which Subjective Expected Utility is conceptualized. If SEU is conceptualized as a latent variable, in which measurements of the perceived desirability and the perceived likelihood of each consequence are indicators of this underlying variable, the logic of the model corresponds to the logic of factor analysis in which SEU is not measured directly but is

identified indirectly from correlations among the indicators. If this is the case, then measures of desirability and likelihood should be factor-analyzed; then transformed to factor scores on empirically distinct factors (Lord & Novick, 1968).

However, in the model proposed in Chapter 1, SEU is more appropriately conceived of as a latent variable, not a determinant of the indicators. In other words, SEU is defined in terms of the indicators as illustrated in Figure 2.

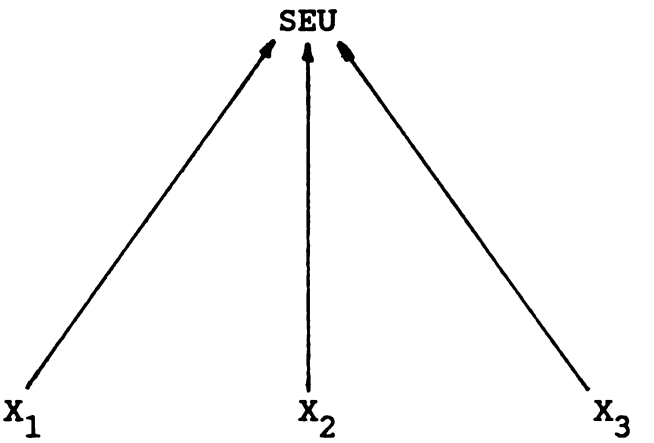

FIGURE 2

Utility and Subjective Probability
As Determinants of Subjective Expected Utility

where: X_i = product of perceived desirability and perceived likelihood of consequence i.

In this context, factor analysis would not be an appropriate technique. Indeed, Heise (1974) suggests that a solution is possible only when dependent variables affected by SEU are included in the analysis. If this is done, canonical analysis of the perceived desirability-perceived

likelihood products is appropriate (Hauser, 1972). Although the design of the present research did not allow the investigation of this potential explanation, future research should allow for the examination of the efficacy of such a solution.

Additional Research Implications

The model proposed and tested in this dissertation is an empirically-supported description of the relationship between communication and human behavior; the model provides a pragmatic structure which may be used in studying persuasive communication strategies. It suggests a methodology for focusing the research on message appeals designed to produce behavioral change. Specifically, the model would suggest that message construction be preceded by two specific types of audience analysis:

1. A test to determine the audience's perceptions regarding the outcomes that may result from a set of proposed behaviors; and

2. A test to determine the audience's perceptions regarding the likelihoods and desirabilities of the potential outcomes of the set of behaviors.

Given this preliminary information, a number of hypotheses are suggested regarding alternative message strategies. For example, messages designed to change the audience's perception of the likelihood of a specific outcome should be most effective for outcomes where the audience's perceptions are the most different from known objective probabilities.

Moveover, it is unlikely that a message can be effective in convincing an audience that an undesirable outcome (i.e., the pain of a doctor's needle) is in fact desirable. Therefore, messages focusing on enhancing the perceived desirability of positive outcomes should be most effective in changing perceptions and subsequent behavior.

APPENDIX A

CONTROL GROUP

AMERICAN RED CROSS
MID-MICHIGAN CHAPTER
1800 EAST GRAND RIVER AVENUE, LANSING, MICHIGAN 48911

May 13, 1974

Dear Student:

Over the past 25 years the Lansing Regional Red Cross Blood Program has helped meet the blood needs of hospitals for their patients. This has been accomplished through the generosity of voluntary donors.

Blood is a life-giving/saving resource of the human body - it cannot be manufactured - there is no substitute. We would all agree that its importance is not a moot question.

However, there are many other questions related to blood, to which you can address yourself with some impact. Some of those questions are outlined in this questionnaire.

We encourage your cooperation in completing the study, because conclusions will be forwarded to our center and will help Red Cross to better understand and adapt our service to the processes at work in the act of blood donation.

Sincerely,

Garson H. Tishkoff MD
Dr. Garson Tishkoff
Medical Director

James R. Sheehan
James Sheehan
Administrator

am

[On Michigan State University letterhead]

MICHIGAN STATE UNIVERSITY

College of Communication Arts
Department of Communication

East Lansing . Michigan . 48824

May 9, 1974

Dear Student:

The following pages contain information and questions concerning blood donation and its possible consequences. The questions ask you to make some rather complex judgments. Some people find the questons very difficult and mentally taxing, and just do not want to expend the energy required to do a good job. If for any reason you do not wish to fill out this questionnaire, just do not answer the questions. If you decide to help us, please read and consider all information and questions carefully.

We feel that this study is very important and, for this reason, we greatly appreciate your time and energy.

Thank you for your assistance.

Sincerely,

B. Thomas Florence
Director of Research

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Recent research has shown us that people see the results of giving blood as desirable or undesirable for them. We are going to ask you to make a number of judgments about the DESIRABILITY or UNDESIRABILITY of particular situations. Your judgments should be based on the desirability or undesirability of a particular situation TO YOU PERSONALLY.

First, we are going to ask you to indicate the general level of desirability or undesirability of a series of situations by placing an "X" above the position that best indicates your PERSONAL FEELING. Remember these should be your PERSONAL judgments of DESIRABILITY or UNDESIRABILITY, NOT judgments of people in general.

Place an "X" above the position that best reflects your personal feeling.

1. Having free blood for you personal use.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

2. Reducing the cost of blood for everyone.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

3. Giving an hour of your time.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

4. Becoming physically ill.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

5. Getting Hepatitis.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

6. Having free blood for your family.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

7. Having free blood for your friends.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

8. Feeling the pain from the doctor's needle.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

9. Feeling physically weak.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

10. Earning $7.50.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

11. Having blood available for people other than family and friends.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

12. Lowering your resistance to disease.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

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13. Harming someone else's health.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

14. Saving someone's life.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

15. Learning of a personal illness.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

16. Persuading someone else to give blood.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

17. Having your friends like you.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

18. Feeling satisfacton in helping others.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

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Now we are going to ask you to be more specific about your personal judgments. Using the letters that are in front of each situation, RANK the situations according to their DESIRABILITY or UNDESIRABILITY to you PERSONALLY. For example, after you have determined the MOST DESIRABLE situation, place the letter of that situation on the first line provided. You should continue the procedure for ALL situations. If a situation is neither desirable nor undesirable, it should be ranked between the desirable and undesirable situations.

A. Having free blood for your personal use as a result of giving blood.
B. Reducing the cost of blood for everyone as a result of giving blood.
C. Giving an hour of your time as a result of giving blood.
D. Becoming physically ill as a result of giving blood.
E. Getting hepatitis as a result of giving blood.
F. Having free blood for your family as a result of giving blood.
G. Having free blood for your friends as a result of giving blood.
H. Feeling the pain from a doctor's needle as a result of giving blood.
I. Feeling physically weak as a result of giving blood.
J. Earning $7.50 as a result of giving blood.
K. Having free blood available for people other than family and friends as a result of giving blood.
L. Lowering your resistance to disease as a result of giving blood.
M. Harming someone else's health as a result of giving blood.
N. Saving someone's life as a result of giving blood.
O. Learning of a personal illness as a result of giving blood.
P. Persuading someone else to give blood as a result of giving blood.
Q. Having your friends like you as a result of giving blood.
R. Feeling satisfaction in helping others as a result of giving blood.

MOST PERSONALLY DESIRABLE

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
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LEAST PERSONALLY DESIRABLE

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Now that you have ranked the situations according to their desirability, we are going to ask you to estimate HOW DIFFERENT the situations are in terms of their desirability. In other words, we are going to ask you to estimate HOW FAR APART the situations are in terms of their desirability. USING THE RANKINGS you provided on the previous page, place a number in the following questions that indicates the difference between ranks in terms of their desirability. If two adjoining ranks are EQUALLY DESIRABLE, place a ZERO (0) in the space provided. If two adjoining ranks are FAIRLY DIFFERENT, write TWENTY (20). For example, if you consider Rank #3 only slightly more desirable than Rank #4, you might write the number ten (10) in the space provided:

EXAMPLE: Rank 3 is __10__ more desirable than Rank 4.

Remember, the greater the difference in desirability, THE HIGHER THE NUMBER YOU SHOULD WRITE.

PLEASE REFER BACK TO YOUR RANKINGS ON THE PREVIOUS PAGE FOR COMPLETING THIS SECTION.

1. Rank 1 is _____ more desirable than Rank 2.
2. Rank 2 is _____ more desirable than Rank 3.
3. Rank 3 is _____ more desirable than Rank 4.
4. Rank 4 is _____ more desirable than Rank 5.
5. Rank 5 is _____ more desirable than Rank 6.
6. Rank 6 is _____ more desirable than Rank 7.
7. Rank 7 is _____ more desirable than Rank 8.
8. Rank 8 is _____ more desirable than Rank 9.
9. Rank 9 is _____ more desirable than Rank 10.
10. Rank 10 is _____ more desirable than Rank 11.
11. Rank 11 is _____ more desirable than Rank 12.
12. Rank 12 is _____ more desirable than Rank 13.
13. Rank 13 is _____ more desirable than Rank 14.
14. Rank 14 is _____ more desirable than Rank 15.
15. Rank 15 is _____ more desirable than Rank 16.
16. Rank 16 is _____ more desirable than Rank 17.
17. Rank 17 is _____ more desirable than Rank 18.

Other people have suggested that the following things MIGHT RESULT from giving blood. We are interested in seeing if YOU feel that these things are LIKELY TO OCCUR. Therefore, we will ask you to tell us what PERCENT of the TIME YOU would EXPECT a particular thing to result from giving one pint of blood.

EXAMPLE: Hitting your finger with a hammer results in pain 100% of the time. What PERCENT OF THE TIME would YOU EXPECT the following things to happen as a result of donating a pint of blood?

20. Giving a pint of blood results in having free blood for your personal use ____% of the time.

21. Giving a pint of blood results in a reduction of the cost of blood for everyone ____% of the time.

22. Giving a pint of blood results in the loss of an hour of time ____% of the time.

23. Giving a pint of blood results in physical illness ____% of the time.

24. Giving a pint of blood results in hepatitis ____% of the time.

25. Giving a pint of blood results in having free blood for your family ____% of the time.

26. Giving a pint of blood results in having free blood for your friends ____% of the time.

27. Giving a pint of blood results in pain from the doctor's needle ____% of the time.

28. Giving a pint of blood results in physical weakness ____% of the time.

29. Giving a pint of blood results in earning $7.50 ____% of the time.

30. Giving a pint of blood results in having free blood available for people other than family and friends ____% of the time.

31. Giving a pint of blood results in a lower resistance to disease ____% of the time.

32. Giving a pint of blood results in harm to some else's health ____% of the time.

33. Giving a pint of blood results in saving someone's life ____% of the time.

34. Giving a pint of blood results in learning of a personal illness ____% of the time.

35. Giving a pint of blood results in persuading someone else to give blood ____% of the time.

36. Giving a pint of blood results in having your friends like you ____% of the time.

37. Giving a pint of blood results in a feeling of satisfaction in helping others ____% of the time.

PLEASE ANSWER APPROPRIATELY

40. Have you ever donated blood? YES____ NO____
(If no, go to Question 41)

How many times have you donated? _____ times

How many of these times were in the past year? _____ times

How long has it been since you last donated? ____weeks ____months ____years

41. Do you know of any reasons why you would be unable to donate blood?

YES____ NO____

If yes, please indicate the reasons:_____

_____

42. Have you or anyone in your immediate family ever received blood (for transfusions, operations, etc.)? YES____ NO____

43. In terms of the information presented at the beginning of this questionnaire, what percentage was new information to you? _____%

44. Male____ Female____

45. Age_____

46. Freshman___ Sophomore___ Junior___ Senior___ Grad.Student___

47. Married___ Single___ Divorced___

THANK YOU VERY MUCH FOR YOUR TIME AND PATIENCE.

As mentioned earlier, the Lansing Red Cross is constantly looking for blood donors to meet the increasing need for blood. Below is a pledge card, pledging one pint of blood to be given at a Red Cross Bloodmobile. A bloodmobile is scheduled to be on campus prior to the end of school and if you choose to sign the pledge card you will be notified of the exact dates and times that the bloodmobile will be available.

Thank you.

MID-MICHIGAN CHAPTER RED CROSS BLOOD PROGRAM
18 E. Grand River
Lansing, Michigan 48911
Phone: 484-7461

In 1973, donors supplied 15,000 units of blood to patients and hospitals in the Mid-Michigan area. These donations helped to save lives; therefore,

I hereby pledge to donate one pint of blood at the Red Cross Bloodmobile at M.S.U.

Name_____

ADDRESS_____

_____

PHONE: _____

MOST CONVENIENT TIMES_____

APPENDIX B

LIKELIHOOD GROUP

AMERICAN RED CROSS
MID-MICHIGAN CHAPTER
1800 EAST GRAND RIVER AVENUE, LANSING, MICHIGAN 48911

May 13, 1974

Dear Student:

Over the past 25 years the Lansing Regional Red Cross Blood Program has helped meet the blood needs of hospitals for their patients. This has been accomplished through the generosity of voluntary donors.

Blood is a life-giving/saving resource of the human body - it cannot be manufactured - there is no substitute. We would all agree that its importance is not a moot question.

However, there are many other questions related to blood, to which you can address yourself with some impact. Some of those questions are outlined in this questionnaire.

We encourage your cooperation in completing the study, because conclusions will be forwarded to our center and will help Red Cross to better understand and adapt our service to the processes at work in the act of blood donation.

Sincerely,

Garson H. Tishkoff MD
Dr. Garson Tishkoff
Medical Director

James R. Sheehan
James Sheehan
Administrator

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[On Michigan State University letterhead]

MICHIGAN STATE UNIVERSITY

College of Communication Arts
Department of Communication

East Lansing . Michigan . 48824

May 9, 1974

Dear Student:

The following pages contain information and questions concerning blood donation and its possible consequences. The questions ask you to make some rather complex judgments. Some people find the questons very difficult and mentally taxing, and just do not want to expend the energy required to do a good job. If for any reason you do not wish to fill out this questionnaire, just do not answer the questions. If you decide to help us, please read and consider all information and questions carefully.

We feel that this study is very important and, for this reason, we greatly appreciate your time and energy.

Thank you for your assistance.

Sincerely,

B. Thomas Florence
Director of Research

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Blood and blood derivatives save lives and relieve suffering. Red Cross community volunteers and staff conduct blood collections on a planned basis throughout the region to assure enough blood to meet hospital needs. This community project is jointly financed by the Red Cross chapter and hospitals in the area. No payment is ever made for blood or blood derivatives in the region.

The demand for blood and blood products has been constantly increasing. Blood is needed to sustain life and when a patient is unable to manufacture blood in sufficient quantity or is suffering from acute blood loss, proper treatment requires that the blood which is lacking be replaced by blood transfusion. More specifically, blood transfusions, blood components, or plasma expanders are necessary for patients undergoing surgery, for severe anemias in patients who cannot adequately rebuild their own blood, in treating shock due to severe hemorrhage or burns, and for certain blood diseases. To meet these needs more than 6 million pints of bood must be collected annually throughout the country - more than ten units per minute. Unfortunately, the amount of blood collected each year does not meet present needs. To compound the problem, the demand for whole blood is steadily increasing, and there has been a dramatic increase in the need for specialized blood products.

Most persons are unaware that in some cases their blood donations may save someone's life that very day. Several persons in the Lansing area have died from injuries sustained in severe auto accidents simply because a certain blood type is unavailable for transfusions. More specifically, many collete sutdents do not realize that in addition to helping the immediate recipient of their donations, they may in fact save their own lives or the life of a loved one. The Lansing Red Cross has a policy under which students enrolled at M.S.U. are considered residents of the Lansing area and are therefore entitled to receive blood through its program. This eligibility is in effect regardless of whether the student is on campus or at home during vacations. In addition to this, those students who are donors may have blood provided for their immediate families while they are in school. If the student blood donor is single his/her father, mother, brothers and sisters living at home are covered, regardless of where they live. If the student donor is married, his/her spouse and children are also covered. If a student wishes to give blood specifically for a person other than a member of his/her family, he may do so merely by telling the Red Cross at the time of donation. If at any time a student donor leaves this region, he will be eligible to receive blood for himself and his/her family for a year from the date of his last donation, up to the number of pints donated while on campus.

Unlike many other commodities, blood is not just something that can be obtained if you have enough money. The amount of blood collected each year does not meet the existing needs. And unlike many other medicines, the supply of blood cannot be increased merely by working overtime. Blood can <u>only</u> be produced by <u>people</u>. And the supply can <u>only</u> be increased through <u>donation</u>."

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Recent research has shown us that people see the results of giving blood as desirable or undesirable for them. We are going to ask you to make a number of judgments about the DESIRABILITY or UNDESIRABILITY of particular situations. Your judgments should be based on the desirability or undesirability of a particular situation TO YOU PERSONALLY.

First, we are going to ask you to indicate the general level of desirability or undesirability of a series of situations by placing an "X" above the position that best indicates your PERSONAL FEELING. Remember these should be your PERSONAL judgments of DESIRABILITY or UNDESIRABILITY, NOT judgments of people in general.

Place an "X" above the position that best reflects your personal feeling.

1. Having free blood for you personal use.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

2. Reducing the cost of blood for everyone.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

3. Giving an hour of your time.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

4. Becoming physically ill.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

5. Getting Hepatitis.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

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6. Having free blood for your family.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

7. Having free blood for your friends.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

8. Feeling the pain from the doctor's needle.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

9. Feeling physically weak.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

10. Earning $7.50.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

11. Having blood available for people other than family and friends.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

12. Lowering your resistance to disease.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

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13. Harming someone else's health.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

14. Saving someone's life.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

15. Learning of a personal illness.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

16. Persuading someone else to give blood.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

17. Having your friends like you.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

18. Feeling satisfacton in helping others.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

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Now we are going to ask you to be more specific about your personal judgments. Using the letters that are in front of each situation, RANK the situations according to their DESIRABILITY or UNDESIRABILITY to you PERSONALLY. For example, after you have determined the MOST DESIRABLE situation, place the letter of that situation on the first line provided. You should continue the procedure for ALL situations. If a situation is neither desirable nor undesirable, it should be ranked between the desirable and undesirable situations.

A. Having free blood for your personal use as a result of giving blood.
B. Reducing the cost of blood for everyone as a result of giving blood.
C. Giving an hour of your time as a result of giving blood.
D. Becoming physically ill as a result of giving blood.
E. Getting hepatitis as a result of giving blood.
F. Having free blood for your family as a result of giving blood.
G. Having free blood for your friends as a result of giving blood.
H. Feeling the pain from a doctor's needle as a result of giving blood.
I. Feeling physically weak as a result of giving blood.
J. Earning $7.50 as a result of giving blood.
K. Having free blood available for people other than family and friends as a result of giving blood.
L. Lowering your resistance to disease as a result of giving blood.
M. Harming someone else's health as a result of giving blood.
N. Saving someone's life as a result of giving blood.
O. Learning of a personal illness as a result of giving blood.
P. Persuading someone else to give blood as a result of giving blood.
Q. Having your friends like you as a result of giving blood.
R. Feeling satisfaction in helping others as a result of giving blood.

MOST PERSONALLY DESIRABLE

1. _____
2. _____
3. _____
4. _____
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6. _____
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8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____

LEAST PERSONALLY DESIRABLE

18. _____

Now that you have ranked the situations according to their desirability, we are going to ask you to estimate HOW DIFFERENT the situations are in terms of their desirability. In other words, we are going to ask you to estimate HOW FAR APART the situations are in terms of their desirability. USING THE RANKINGS you provided on the previous page, place a number in the following questions that indicates the difference between ranks in terms of their desirability. If two adjoining ranks are EQUALLY DESIRABLE, place a ZERO (0) in the space provided. If two adjoining ranks are FAIRLY DIFFERENT, write TWENTY (20). For example, if you consider Rank #3 only slightly more desirable than Rank #4, you might write the number ten (10) in the space provided:

EXAMPLE: Rank 3 is __10__ more desirable than Rank 4.

Remember, the greater the difference in desirability, THE HIGHER THE NUMBER YOU SHOULD WRITE.

PLEASE REFER BACK TO YOUR RANKINGS ON THE PREVIOUS PAGE FOR COMPLETING THIS SECTION.

1. Rank 1 is _____ more desirable than Rank 2.
2. Rank 2 is _____ more desirable than Rank 3.
3. Rank 3 is _____ more desirable than Rank 4.
4. Rank 4 is _____ more desirable than Rank 5.
5. Rank 5 is _____ more desirable than Rank 6.
6. Rank 6 is _____ more desirable than Rank 7.
7. Rank 7 is _____ more desirable than Rank 8.
8. Rank 8 is _____ more desirable than Rank 9.
9. Rank 9 is _____ more desirable than Rank 10.
10. Rank 10 is _____ more desirable than Rank 11.
11. Rank 11 is _____ more desirable than Rank 12.
12. Rank 12 is _____ more desirable than Rank 13.
13. Rank 13 is _____ more desirable than Rank 14.
14. Rank 14 is _____ more desirable than Rank 15.
15. Rank 15 is _____ more desirable than Rank 16.
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Other people have suggested that the following things MIGHT RESULT from giving blood. We are interested in seeing if YOU feel that these things are LIKELY TO OCCUR. Therefore, we will ask you to tell us what PERCENT of the TIME YOU would EXPECT a particular thing to result from giving one pint of blood.

EXAMPLE: Hitting your finger with a hammer results in pain 100% of the time. What PERCENT OF THE TIME would YOU EXPECT the following things to happen as a result of donating a pint of blood?

20. Giving a pint of blood results in having free blood for your personal use ____% of the time.

21. Giving a pint of blood results in a reduction of the cost of blood for everyone ____% of the time.

22. Giving a pint of blood results in the loss of an hour of time ____% of the time.

23. Giving a pint of blood results in physical illness ____% of the time.

24. Giving a pint of blood results in hepatitis ____% of the time.

25. Giving a pint of blood results in having free blood for your family ____% of the time.

26. Giving a pint of blood results in having free blood for your friends ____% of the time.

27. Giving a pint of blood results in pain from the doctor's needle ____% of the time.

28. Giving a pint of blood results in physical weakness ____% of the time.

29. Giving a pint of blood results in earning $7.50 ____% of the time.

30. Giving a pint of blood results in having free blood available for people other than family and friends ____% of the time.

31. Giving a pint of blood results in a lower resistance to disease ____% of the time.

32. Giving a pint of blood results in harm to some else's health ____% of the time.

33. Giving a pint of blood results in saving someone's life ____% of the time.

34. Giving a pint of blood results in learning of a personal illness ____% of the time.

35. Giving a pint of blood results in persuading someone else to give blood ____% of the time.

36. Giving a pint of blood results in having your friends like you ____% of the time.

37. Giving a pint of blood results in a feeling of satisfaction in helping others ____% of the time.

PLEASE ANSWER APPROPRIATELY

40. Have you ever donated blood? YES____ NO____
(If no, go to Question 41)

How many times have you donated? _____ times

How many of these times were in the past year? _____ times

How long has it been since you last donated? ____weeks ____months ____years

41. Do you know of any reasons why you would be unable to donate blood?

YES____ NO____

If yes, please indicate the reasons:_____

_____

42. Have you or anyone in your immediate family ever received blood (for transfusions, operations, etc.)? YES____ NO____

43. In terms of the information presented at the beginning of this questionnaire, what percentage was new information to you? _____%

44. Male____ Female____

45. Age_____

46. Freshman___ Sophomore___ Junior___ Senior___ Grad.Student___

47. Married___ Single___ Divorced___

THANK YOU VERY MUCH FOR YOUR TIME AND PATIENCE.

As mentioned earlier, the Lansing Red Cross is constantly looking for blood donors to meet the increasing need for blood. Below is a pledge card, pledging one pint of blood to be given at a Red Cross Bloodmobile. A bloodmobile is scheduled to be on campus prior to the end of school and if you choose to sign the pledge card you will be notified of the exact dates and times that the bloodmobile will be available.

Thank you.

MID-MICHIGAN CHAPTER RED CROSS BLOOD PROGRAM
18 E. Grand River
Lansing, Michigan 48911
Phone: 484-7461

In 1973, donors supplied 15,000 units of blood to patients and hospitals in the Mid-Michigan area. These donations helped to save lives; therefore,

I hereby pledge to donate one pint of blood at the Red Cross Bloodmobile at M.S.U.

Name_____

ADDRESS_____

_____

PHONE: _____

MOST CONVENIENT TIMES_____

APPENDIX C

DESIRABILITY GROUP

AMERICAN RED CROSS
MID-MICHIGAN CHAPTER
1800 EAST GRAND RIVER AVENUE, LANSING, MICHIGAN 48911

May 13, 1974

Dear Student:

Over the past 25 years the Lansing Regional Red Cross Blood Program has helped meet the blood needs of hospitals for their patients. This has been accomplished through the generosity of voluntary donors.

Blood is a life-giving/saving resource of the human body - it cannot be manufactured - there is no substitute. We would all agree that its importance is not a moot question.

However, there are many other questions related to blood, to which you can address yourself with some impact. Some of those questions are outlined in this questionnaire.

We encourage your cooperation in completing the study, because conclusions will be forwarded to our center and will help Red Cross to better understand and adapt our service to the processes at work in the act of blood donation.

Sincerely,

Garson H. Tishkoff, MD
Dr. Garson Tishkoff
Medical Director

James R. Sheehan
James Sheehan
Administrator

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[On Michigan State University letterhead]

MICHIGAN STATE UNIVERSITY

College of Communication Arts
Department of Communication

East Lansing . Michigan . 48824

May 9, 1974

Dear Student:

The following pages contain information and questions concerning blood donation and its possible consequences. The questions ask you to make some rather complex judgments. Some people find the questons very difficult and mentally taxing, and just do not want to expend the energy required to do a good job. If for any reason you do not wish to fill out this questionnaire, just do not answer the questions. If you decide to help us, please read and consider all information and questions carefully.

We feel that this study is very important and, for this reason, we greatly appreciate your time and energy.

Thank you for your assistance.

Sincerely,

B. Thomas Florence
Director of Research

The demand for blood and blood derivatives has been steadily increasing in recent years. Red Cross volunteers and staff conduct blood collections throughout this region in an attempt to satisfy current needs. Unfortunately, the amount of blood collected each year falls short of demand.

The effects of this short supply are devastating, and perhaps can best be illustrated in terms of a small segment of the population - the hemophiliacs. Webster defines hemophilia as "a tendency, usually, hereditary, to profuse bleeding even from slight wounds." The first indication comes in early childhood when a small scratch may bleed for hours. By the time the hemophiliac reaches school age, he begins t suffer from internal bleeding into muscles, joints, the stomach, the kidneys. This latter type is far more serious, for external wounds can usually be stopped in minutes wth topical thromboplastin or a pressure bandage. But internal bleeding can be checked only by changes in the blood by means of transfusion or plasma injections. If internal bleeding into muscles or joints goes unchecked repeatedly, muscle contractions and bone deformities inevitably result.

Childhood and early adolescence are the danger periods of a hemophiliac's life. As recently as November, 1970, The Science Digest reported that 75% of all hemophiliacs die during that period. While the figure is exaggerated, it tends to indicate this salient point: if society can keep a hemophiliac alive until after adolescence, society has saved a member. During those years, society is given a responsibility it too often refuses to accept.

A college student (who died one year after making his plea to Americans on behalf of the National Hemophilia Foundation) underscroed the importance of blood to young hemophiliacs: "Because medical science had not advanced far enough, and fresh blood not given often enough, my memories of childhood and adolescence are memories of pain and heartbreak. I remember missing school for weeks and months at a stretch - of being very proud because I attended school once for four whole weeks without missing a day. I remember the three long years when I couldn't even walk because repeated hemorrhages had twisted by ankles and knees to pretzel-like forms. I remember being pulled to school in a wagon while other boys rode their bikes, and being pushed to my table. I remember sitting in the dark empty classroom by myself during recess while the others went out in the sun to run and to play. And I remember the first terrible day at the big high school when I came on crutches and built-up shoes carrying my books in a sack around my neck."

This description, though admittedly emotional, underscores the unlimited value of blood. In addition, unlike many other commodities, blood is not just something that can be obtained if you have enough money. The amount of blood collected each year does not meet the existing needs. And unlike many other medicines, the supply of blood cannot be increased merely by working overtime. Blood can only be produced by people. And the supply can only be increased through donation.

Recent research has shown us that people see the results of giving blood as desirable or undesirable for them. We are going to ask you to make a number of judgments about the DESIRABILITY or UNDESIRABILITY of particular situations. Your judgments should be based on the desirability or undesirability of a particular situation TO YOU PERSONALLY.

First, we are going to ask you to indicate the general level of desirability or undesirability of a series of situations by placing an "X" above the position that best indicates your PERSONAL FEELING. Remember these should be your PERSONAL judgments of DESIRABILITY or UNDESIRABILITY, NOT judgments of people in general.

Place an "X" above the position that best reflects your personal feeling.

1. Having free blood for you personal use.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

2. Reducing the cost of blood for everyone.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

3. Giving an hour of your time.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

4. Becoming physically ill.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

5. Getting Hepatitis.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

6. Having free blood for your family.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

7. Having free blood for your friends.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

8. Feeling the pain from the doctor's needle.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

9. Feeling physically weak.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

10. Earning $7.50.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

11. Having blood available for people other than family and friends.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

12. Lowering your resistance to disease.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

13. Harming someone else's health.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

14. Saving someone's life.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

15. Learning of a personal illness.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

16. Persuading someone else to give blood.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

17. Having your friends like you.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

18. Feeling satisfacton in helping others.

Very Desirable	Fairly Desirable	Neither Desirable or Undesirable	Fairly Undesirable	Very Undesirable

Now we are going to ask you to be more specific about your personal judgments. Using the letters that are in front of each situation, RANK the situations according to their DESIRABILITY or UNDESIRABILITY to you PERSONALLY. For example, after you have determined the MOST DESIRABLE situation, place the letter of that situation on the first line provided. You should continue the procedure for ALL situations. If a situation is neither desirable nor undesirable, it should be ranked between the desirable and undesirable situations.

A. Having free blood for your personal use as a result of giving blood.
B. Reducing the cost of blood for everyone as a result of giving blood.
C. Giving an hour of your time as a result of giving blood.
D. Becoming physically ill as a result of giving blood.
E. Getting hepatitis as a result of giving blood.
F. Having free blood for your family as a result of giving blood.
G. Having free blood for your friends as a result of giving blood.
H. Feeling the pain from a doctor's needle as a result of giving blood.
I. Feeling physically weak as a result of giving blood.
J. Earning $7.50 as a result of giving blood.
K. Having free blood available for people other than family and friends as a result of giving blood.
L. Lowering your resistance to disease as a result of giving blood.
M. Harming someone else's health as a result of giving blood.
N. Saving someone's life as a result of giving blood.
O. Learning of a personal illness as a result of giving blood.
P. Persuading someone else to give blood as a result of giving blood.
Q. Having your friends like you as a result of giving blood.
R. Feeling satisfaction in helping others as a result of giving blood.

MOST PERSONALLY DESIRABLE

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8. _____
9. _____
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15. _____
16. _____
17. _____

LEAST PERSONALLY DESIRABLE

18. _____

Now that you have ranked the situations according to their desirability, we are going to ask you to estimate HOW DIFFERENT the situations are in terms of their desirability. In other words, we are going to ask you to estimate HOW FAR APART the situations are in terms of their desirability. USING THE RANKINGS you provided on the previous page, place a number in the following questions that indicates the difference between ranks in terms of their desirability. If two adjoining ranks are EQUALLY DESIRABLE, place a ZERO (0) in the space provided. If two adjoining ranks are FAIRLY DIFFERENT, write TWENTY (20). For example, if you consider Rank #3 only slightly more desirable than Rank #4, you might write the number ten (10) in the space provided:

EXAMPLE: Rank 3 is __10__ more desirable than Rank 4.

Remember, the greater the difference in desirability, THE HIGHER THE NUMBER YOU SHOULD WRITE.

PLEASE REFER BACK TO YOUR RANKINGS ON THE PREVIOUS PAGE FOR COMPLETING THIS SECTION.

1. Rank 1 is _____ more desirable than Rank 2.
2. Rank 2 is _____ more desirable than Rank 3.
3. Rank 3 is _____ more desirable than Rank 4.
4. Rank 4 is _____ more desirable than Rank 5.
5. Rank 5 is _____ more desirable than Rank 6.
6. Rank 6 is _____ more desirable than Rank 7.
7. Rank 7 is _____ more desirable than Rank 8.
8. Rank 8 is _____ more desirable than Rank 9.
9. Rank 9 is _____ more desirable than Rank 10.
10. Rank 10 is _____ more desirable than Rank 11.
11. Rank 11 is _____ more desirable than Rank 12.
12. Rank 12 is _____ more desirable than Rank 13.
13. Rank 13 is _____ more desirable than Rank 14.
14. Rank 14 is _____ more desirable than Rank 15.
15. Rank 15 is _____ more desirable than Rank 16.
16. Rank 16 is _____ more desirable than Rank 17.
17. Rank 17 is _____ more desirable than Rank 18.

Other people have suggested that the following things MIGHT RESULT from giving blood. We are interested in seeing if YOU feel that these things are LIKELY TO OCCUR. Therefore, we will ask you to tell us what PERCENT of the TIME YOU would EXPECT a particular thing to result from giving one pint of blood.

EXAMPLE: Hitting your finger with a hammer results in pain 100% of the time. What PERCENT OF THE TIME would YOU EXPECT the following things to happen as a result of donating a pint of blood?

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21. Giving a pint of blood results in a reduction of the cost of blood for everyone ____% of the time.

22. Giving a pint of blood results in the loss of an hour of time ____% of the time.

23. Giving a pint of blood results in physical illness ____% of the time.

24. Giving a pint of blood results in hepatitis ____% of the time.

25. Giving a pint of blood results in having free blood for your family ____% of the time.

26. Giving a pint of blood results in having free blood for your friends ____% of the time.

27. Giving a pint of blood results in pain from the doctor's needle ____% of the time.

28. Giving a pint of blood results in physical weakness ____% of the time.

29. Giving a pint of blood results in earning $7.50 ____% of the time.

30. Giving a pint of blood results in having free blood available for people other than family and friends ____% of the time.

31. Giving a pint of blood results in a lower resistance to disease ____% of the time.

32. Giving a pint of blood results in harm to some else's health ____% of the time.

33. Giving a pint of blood results in saving someone's life ____% of the time.

34. Giving a pint of blood results in learning of a personal illness ____% of the time.

35. Giving a pint of blood results in persuading someone else to give blood ____% of the time.

36. Giving a pint of blood results in having your friends like you ____% of the time.

37. Giving a pint of blood results in a feeling of satisfaction in helping others ____% of the time.

PLEASE ANSWER APPROPRIATELY

40. Have you ever donated blood? YES____ NO____
(If no, go to Question 41)

How many times have you donated? _____ times

How many of these times were in the past year? _____ times

How long has it been since you last donated? ____weeks ____months ____years

41. Do you know of any reasons why you would be unable to donate blood?

YES____ NO____

If yes, please indicate the reasons:_____

_____

42. Have you or anyone in your immediate family ever received blood (for transfusions, operations, etc.)? YES____ NO____

43. In terms of the information presented at the beginning of this questionnaire, what percentage was new information to you? _____%

44. Male____ Female____

45. Age_____

46. Freshman___ Sophomore___ Junior___ Senior___ Grad.Student___

47. Married___ Single___ Divorced___

THANK YOU VERY MUCH FOR YOUR TIME AND PATIENCE.

As mentioned earlier, the Lansing Red Cross is constantly looking for blood donors to meet the increasing need for blood. Below is a pledge card, pledging one pint of blood to be given at a Red Cross Bloodmobile. A bloodmobile is scheduled to be on campus prior to the end of school and if you choose to sign the pledge card you will be notified of the exact dates and times that the bloodmobile will be available.

Thank you.

MID-MICHIGAN CHAPTER RED CROSS BLOOD PROGRAM
18 E. Grand River
Lansing, Michigan 48911
Phone: 484-7461

In 1973, donors supplied 15,000 units of blood to patients and hospitals in the Mid-Michigan area. These donations helped to save lives; therefore,

I hereby pledge to donate one pint of blood at the Red Cross Bloodmobile at M.S.U.

Name_____

ADDRESS_____

_____

PHONE: _____

MOST CONVENIENT TIMES_____

APPENDIX D

PATH ANALYTIC RELIABILITY COEFFICIENT FOR UTILITY AND SUBJECTIVE PROBABILITY MEASURES

Path Analytic Reliability Coefficient for
Utility and Subjective Probability Measures

Consequences	Utility	Subj.Prob.
	P^2_{xx}	P^2_{xx}
Having free blood for personal use	.85	.86
Reducing the cost of blood for everyone	.98	.73
Giving an hour of your time	.60	.76
Becoming physically ill	.80	.09
Getting hepatitis	.66	.70
Having free blood for your family	.74	.66
Having free blood for your friends	.21	.76
Feeling the pain from a doctor's needle	.96	.80
Feeling physically weak	.77	.93
Earning $7.50	.91	.40
Having blood available for people other than family and friends	.32	.83
Lowering your resistance to disease	.14	.76
Harming someone else's health	.42	.57
Saving soneone's life	.54	.65
Learning of a personal illness	.84	.55
Persuading someone else to give blood	.06	.63
Having your friends like you	.64	.84
Feeling satisfaction of helping others	.20	.75

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