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Negation and Opposition in Drawing Implications

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NEGATION AND OPPOSITION IN DRAWING IMPLICATIONS

by

Suzanne Barnard

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VITA

The author, Suzanne Barnard, is the daughter of James A. Barnard, III and Mary Sue (Hicks) Barnard. She was born May 13, 1963, in Dallas, Texas.

Her elementary and secondary education were obtained in the public schools of Garden City, Kansas. She graduated from Garden City High School in May, 1981.

In September, 1981, Ms. Barnard entered Baylor University. She received the degree of Bachelor of Science in psychology in December, 1985. In 1984, while attending Baylor University, she was elected to Psi Chi National Honor Society in Psychology, and was also presented with the Chi Omega Outstanding Scholarship Award. In 1985, she was chosen for Who's Who Among Students in American Universities and Colleges.

In September, 1986, Ms. Barnard began her graduate career in psychology at Loyola University of Chicago. She was granted an assistantship for the years 1986 - 1989, allowing her to complete the Master of Arts in 1989. In March of 1987, she was awarded second place in the student paper competition of Division 24 of the American Psychological Association, and presented her paper at the national convention in August of that year. She also had two articles published during 1988, as follows:

Rychlak, J. F., Barnard, S., Williams, R., & Wollman, N. (1988). The recognition and cognitive utilization of oppositionality. Journal of Psycholinguistic Research, 18, 181-199.

Slife, B. D., & Barnard, S. (1988). Existential and cognitive psychology: Contrasting views of consciousness. Journal of Humanistic Psychology, 28, 119-136.

During the summer of 1987, she completed a clinical externship at Alexian Brothers Medical Center in Elk Grove Village, Illinois. She spent the subsequent summer as a psychology extern at the Katharine Wright Clinic and Illinois Masonic Medical Center in Chicago, Illinois.

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CHAPTER I

INTRODUCTION

A great deal of research in cognitive-social psychology has been
concerned with the proposition that people consistently engage in a process of
making educated guesses about causes of events. In addition to examining the
processes by which people form causal interpretations of the events around
them, theorists in this tradition have sought to understand the process whereby
people attribute characteristics, intentions, feelings, and traits to the objects in
their social world. Large bodies of research have been devoted to the study of
such processes, which have been variously referred to as attribution (Kelley,
1967), perception of causality (Taylor & Fiske, 1975), scriptal extension (Abelson,
1976), and human inference (Nisbett & Ross, 1980). A careful reading of the
theories put forth in explanation of such processes reveals that most of them
assume a mediational modeling of cognition and behavior. In this thesis,
however, we would like to propose an explanation of such processes which
derives from a predicational (after Rychlak, 1987), rather than a mediational
model of cognition. Instead of framing the processes underlying causal
attribution and impression formation in terms of various cognitive mechanisms
which are mediated by environmental stimuli, we will present an alternative
theoretical explanation of such phenomena based on the assumption that
people as agents actively endow their social worlds with meaning. We will
contend that the process through which they do so is neither a mechanistic nor
a mediated one, but rather one that reflects the capacity to reason both
demonstratively and dialectically in framing contexts of meaning.

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In developing a framework for understanding attributions in impression formation as a predicational rather than a mediational process, we find it instructive to make a distinction between inference and implication. Although several authors in the literature do refer to both the drawing of inferences and of implications in making category judgments or framing impressions (e.g., Abelson, 1969), they typically use the two terms interchangeably and are at best unclear about how the two processes might differ. Ultimately, such theorists make recourse to a single fundamental mode of reasoning, a demonstrative one, to explain both styles of reasoning. We would like to draw a conceptual distinction between inference and implication as contrasting modes of affirming major premises in a line of reasoning. In elaborating on the nature of the inferential and implicational processes, we hope to demonstrate their respective grounding in the demonstrative and dialectical modes of reasoning. Through characterizing the implicational process as an essentially dialectical one, we hope to make a case for the fundamental role of oppositionality in the drawing of implications. After providing a theoretical justification for negation as one form of oppositionality, the relationship between negation and opposition in the drawing of implications will be examined empirically through a series of two studies.

CHAPTER II

THEORETICAL FOUNDATIONS AND LITERATURE REVIEW

Logical Learning Theory

Mediational versus Predicational Models of Behavior

Rychlak (1987) has drawn a distinction between two fundamental models of cognition represented in the literature, the mediational model and the predicational model. The mediational model of cognition should be a familiar one, given that most of the information-processing theories currently in vogue are either implicitly or explicitly based on such a model. Indeed, "cognitive mediation" between the stimulus-response connections of traditional behaviorism is one of the foundational premises of the cognitive movement, and invocation of such processes is seen as necessary in providing adequate explanations for anything but the most simple behaviors. Schmidt (1976) defines an information processing theory as one which provides "a description of how certain classes of inputs can be *transformed* to yield certain classes of outputs" (p.47).

Thus, in the prototypical information processing explanation there is a presumed process underway initially, and in time certain inputs are encoded, stored, and retrieved (Bower, 1975). The input meanings are always "mediate" because they are being conveyed rather than created; in other words meaning exists "out there" in the environment and is only secondarily "taken in" by the reasoning individual. The mediational process itself never constructs or forms the input meanings, indeed, it is itself shaped by them (Rychlak, 1988). Among

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these inputs are items (such as words, images, plans, schemes, attitudes, etc.) that have been formed or "taken in" as early learnings, and which consequently have an influence on what occurs as behavior proceeds. For example, Siegler (1981) discusses how the different problem-solving rules which children acquire as they interact with their environment come to mediate their behavior in subsequent problem solving situations, and allow for the continuing development of more sophisticated problem solving strategies.

Mediational models are ultimately based on the assumption that the cognitive apparatus works in a mechanistic fashion. It is because of the widespread acceptance of this assumption that Schmidt (1976) can assert that any information processing theory of mind must be expressed in a language that can (at least in principle) be directly translated into an executable program, and that an empirical correspondence must exist between at least some of the temporally-ordered states of the computation and some of the temporally-ordered states of the human process being described by the theory. Thus, in such a model, the contents of the mind mediate between earlier influences and later influences in a strictly efficient-cause manner. Although some authors (e.g., Edelman, 1978) have focused on how the innate "hard-wiring" of the brain (or the *material cause*) constrains the learning process, they invariably describe whatever is to eventually constitute a "meaning" in the cognitive process underway as something which is brought in *secondarily*, as a product of input or mediated learning.

As we can see in the explanations outlined above, there is a confounding of *content* and *process* in almost all information processing accounts of cognition. A meaning (content) which is originally taken in as input comes subsequently to influence the process by which new meanings are encoded and

stored in memory. Higgins, Rholes, and Jones's (1977) explanation of their findings concerning the attribution of personality traits provides a more specific example of a mediational account of social cognition. In their study, subjects read a paragraph describing a young man as having many risky hobbies, having a high opinion of his abilities, having few friends, and as being unlikely to turn back from a chosen course of action. Before reading the paragraph, subjects had participated in a "learning experiment" in which some were exposed to the words "adventurous," "self-confident," "independent," and "persistent" (adjectives rated as positive in evaluative tone), and others were exposed to the words "reckless," "conceited," "aloof," and "stubborn" (adjectives rated as negative in evaluative tone). Subjects exposed to the "positive" words later evaluated the young man more highly than did those exposed to the "negative" words. Higgins et al suggest that this effect was mediated by the transient availability of personality "scripts" or "personae" activated by the previous exposure to either the positive or negative words. Thus the input contents (e.g., "adventurous," "self-confident") were assumed to have influenced the subsequent processing of the information contained in the paragraph and, ultimately, the subjects' evaluation of the target.

Mediational accounts are not only invoked to describe the "lower" levels of information processing, but are also used in attempting to explain the "transcendental" or "higher" reflective properties of cognition. For example,

even the development of metacognition, or the knowledge structures that allow us to "know what we know" and to understand "how things are supposed to go" in cognitive enterprises, is described by many authors (e.g., Flavell, 1977) as being mediated by input knowledge which the child gains through cumulative experience with cognitive tasks. Thus, it seems that, despite Schmidt's (1976) call for "an explicit decoupling of knowledge possessed by the system from the processes possessed by the system" (p.47) in information processing theories, those assuming a mediational model of cognition are unable to avoid invoking contents to mediate processes.

In the predicational model, however, the process of predication is viewed as fundamental. The predicational theorist suggests that meanings are never "out there" in experience independent of a person's capacity to frame (i.e., predicate) what "is experienced" meaningfully in the first place. Meanings are not taken in or "in-put," but are implicitly framed or created. Something like a predication would only occur secondarily in a mediational process, as certain arrangements of the input might be affected. In contrast to the mediational model, the predicational model is based on the assumption that it is the process (i. e., that of predication) which determines the contents of cognition and not vice versa. Although the contents of cognition framed through predication may change across time, the process itself does not change over time. It is interesting to note that the concept of *categorization*, so fundamental to most mediational accounts of cognition, is actually an etymological derivative of the Greek *kategorein*, meaning to "predicate." Thus, the historical meaning of categorization was more akin to that of *lending meaning* to experience through predication or contextualization, rather than that of merely mediating

pre-existing meanings. In line with its historical meaning, we will employ the term *predication* to refer to the *act of affirming, denying, or qualifying broader patterns of meaning in relation to narrower or targeted patterns of meaning.*

Unlike mediation, which is thought of as moving over time from antecedent inputs to consequent outputs, predication is a logical process which occurs "outside" of time. It is logical order and not time that is significant to the predicational process. Predication can be thought of as moving from a wider context of meaning to a narrower context, with the latter being enriched by the meaning of the former. Thus the predication "Anne is compulsive" or "Anne is not compulsive" can be diagrammed via Euler circles, with the wider context ("compulsive people") encircling (i. e., lending meaning to) the specified individual ("Anne")--or, excluding her from this context altogether. In this type of logical (rather than temporal) relationship, it is the predicate (e. g., "compulsive") which sets the context and hence lends the meaning to the "target" of cognition (e. g., "Anne").

The nature of the logical process of predication can perhaps be better understood through an analogy to the logical relationships which exist within the domain of mathematics. Dirichlet's original definition of the mathematical function (e.g., $f(x)=y$) was <u>not</u> in terms of an efficient causal relationship which occurs within time (as changing values in the variable "x" provide the impetus for changes in the variable "y"), but in terms of a formal cause <u>patterning</u> between the two variables. Thus, the relationship or connection between variables was given by definition. What occurs in the act of predication can be understood in a similar way. Just as the dependent variable "y" is situated

within a context which lends it meaning (i.e., the function which describes it), a predication frames the context of meaning for any "target" or "item" of cognition. This is a relationship which is immediately given, and thus does not rely on the notion that meaning derives from spatio-temporal association of previously unrelated thoughts or ideas. The essentially extratemporal, formal cause nature of the functional relationship has typically been obscured within mediational theories, which often seek to account for the dependent variable (consequent cognitions or behaviors) in terms of the independent variable (antecedent input) which impels cognition along in an efficient-cause manner.

In order to describe behavior from within a predicational model, we must think about our data (i.e., people) from their cognitive perspective rather than looking "at" them "over there" as if they were under the directing impulsions of environmental stimulations. If we assume that an individual lends meaning to experience through the process of predication, then a meaningful understanding of cognition must derive from an *introspective* perspective. In contrast, if we assume that meaning is mechanically mediated by pre-existing cognitive structures or sets (e.g., attitudes) and environmental variables which determine which structures will be activated and what will be encoded (e.g., salience or vividness of information), then we needn't concern ourselves about viewing our data introspectively. We have a prototype example of the difference between introspective and extraspective theorizing in the work of Jones & Nisbett (1971), who found essentially that when we look "at" people behaving we are likely to assign extra-personal influences (e.g., traits) to them, acting as mediators of their behavior. On the other hand, when we look "with" people--at the problem facing them--we are likely to assign predicating grounds or

reasons to their course of behavior.

Extraspective formulations of behavioral or cognitive "mechanisms" are legion. We have already suggested that information processing and related cognitive network theories are of this type. For example, in Wyer & Carlston's (1979) associative network account of impression formation, memory is described as organized in a network of nodes (representing "concepts"), each of which are connected to other nodes by one or more "paths." The diameter of each path, which represents the strength of association, is determined both by the frequency and recency of its usage (ibid., pp. 71-73). This is clearly an extraspective description, and within this model a knowledge of the influence of past associations on the strength and direction of learning is all we need to understand the basic process underlying impression formation. Given that they are construing the mind as a reasoning "machine," it makes no sense for Wyer and Carlston to "anthropomorphize" such a machine by considering what unique predications it might be bringing to bear in the situation at hand.

Several theorists within the cognitive tradition have found such mechanistic descriptions inadequate to account for many attribution and impression formation phenomena, and have turned to more introspective styles of theorizing in an attempt to capture what the mechanistic accounts may be missing. One significant example of such theorizing is Tversky and Kahneman's theory of judgmental heuristics. In their model, Tversky and Kahneman explore several strategies that permit or encourage perceivers to go beyond the information given in forming judgments about social situations. They outline several "heuristics" or cognitive biases that seem to influence the inferences or implications people make in a variety of situations. What makes

Tversky and Kahneman's judgment heuristics model an introspective one is the fact that, in order to know what a subject "processes" as relevant information, we must understand his or her predicating assumptions and idiosyncratic evaluations of what is under examination. Tversky and Kahneman (1974; see also Kahneman & Tversky, 1972; Kahneman, Slovic, & Tversky, 1982) find that people do not reason with mechanistic precision, nor do they reason the way a statistician reasons. The person's imagination and mood can, for example, influence an estimation of the proper category judgments to apply to some problem.

What Tversky and Kahneman are attempting to address is how, once we recognize that the individual is not simply a "dutiful clerk who passively registers items of information" (Nisbett & Ross, 1980, p. 17), we can understand the process by which individuals resolve ambiguities, make guesses about events that cannot be observed directly, or even distort their experience. Of course, as we will see below, many theorists pay lip service to the need to explain such phenomena and several make serious attempts to incorporate such explanations into their theories. However, as most are models trapped within extraspective, mechanistic forms of explanation, they ultimately end up begging the question they set out to answer.

Inference and Implication in the Predicational Model

As outlined above, we are assuming that the predicational process is logical in nature. The notion of predication as a logical process can actually be traced back to early Greek philosophy where, as previously noted, rational patterns of meaning or contexts were referred to as categories or predicates. Thus, to predicate meant to bring meaning to bear consistent with a given

context or logos. We intend to use the term _logic_ in an equivalent manner; that is, as being concerned with the _predicated relationship_ between and among conceptual meanings, and in particular with the extension of such meanings through inference and implication.

Aristotle, who is often referred to as "the father of logic," was particularly concerned with outlining the factors underlying our acceptance or rejection of propositions about our experience (Rychlak, 1981). As a part of this project, he drew a distinction between two types of reasoning or ways of extending meaning which will be instructive for our purposes. He called one such form of meaning-extension _demonstrative_, describing it as reasoning from premises that "are true and primary, or are such that our knowledge of them has originally come through premises which are primary and true" (Aristotle, 1952, p. 143). Premises typically accepted as demonstratively certain are usually definitions such as "All bachelors are unmarried males," in which one can determine the truth value analytically (i. e., through internal examination) or "The sun produces heat," in which case one can observe empirically the (synthetical) relationship between something called the sun and how it should be predicated (e. g., hot, not cold).

Logicians within the tradition of analytic philosophy have historically been most concerned with this type of reasoning - reasoning that begins with self-evident propositions or propositions whose truth value can be determined by empirical means. Many of the early information-processing theorists looked to this body of literature for the theorems necessary to model human reasoning through use of computer analogs (Hastie, 1983). Thus, machine simulations of human reasoning have from the outset been simulations of demonstrative

reasoning. The current literature continues to reflect this preoccupation, as most theories are directed towards understanding how various cognitive structures and processes might interact to account for the products of demonstrative reasoning (e.g., Abelson, 1976; Braine, 1978; Johnson-Laird, 1983).

Given their preoccupation with the development of knowledge structures and forms of reasoning which can be simulated mechanically, it is perhaps not surprising that many of the information processing models ignore the question of _how_ an individual comes to accept a proposition as "primary and true" or how an individual reasons from propositions whose "truth values" are uncertain or unclear. In the few attempts to account for the process by which people arrive at conclusions based on uncertain, ambiguous, or tentative premises (e.g., Abelson & Reich, 1969; Mackie, 1974), such theorists inevitably invoke the influence of some mediating mechanism which determines whether an individual accepts a particular proposition as "given" or "true." As described above, a "thinking" machine accepts "input" as primary and true, unless instructed to do otherwise by an input set of rules, which themselves must be accepted as primary and true, and so on ad infinitum. Thus, computer logic is essentially demonstrative.

An important corollary of their exclusive reliance on demonstrative accounts of human reasoning is that information processing models are constrained to descriptions of a unipolar intelligence. In such models, meanings are always input as discrete bits of unipolar information, which are only subsequently combined according to scripts, processing rules, templates, etc. to form more complex "meanings" such as categories or increasingly

elaborated scripts. Thus, bipolarity of meaning or oppositionality is never intrinsic to such systems, but can only arise as a secondary by-product of the joining of two unipolar meanings according to some processing rule. For example, in the nodal network theory outlined above (Wyer & Carlston, 1979), cognitive mediation is assumed to be fundamentally unipolar and unidirectional. Paths connecting, say, two nodes in the network are initially unidirectional; if two concepts are to be associated one with the other, two paths would have to be formed between the nodes (Rychlak, 1988). Constrained as they are to the use of mechanistic metaphors, such theorists lose the essence of what Aristotle recognized as the very human ability to reason from premises that were not taken as unipolar or demonstratively given.

As Aristotle pointed out, individuals are also capable of framing their experience dialectically. He described such a process as reasoning from "opinion," or from premises reflecting cultural biases or idiosyncratic personal values rather than demonstrative "truth." In this sense, he characterized dialectical reasoning as reasoning from a premise framed somewhere along a pro versus con range of attitude or affective assessment. Rychlak (1987) has retained this sense of dialectical reasoning as reasoning along oppositional dimensions or ranges of meaning in his predicational model of cognition, while discarding the notion of such reasoning as based merely on opinion.

Rychlak (1988) has not only retained the notion of dialectical reasoning, but has convincingly argued that dialectical logic or oppositionality is fundamental to cognition. This is so because, as many authors have demonstrated (e. g., Hormann, 1981; Rommetveit, 1974) meaning only exists, or is generated, within a relation or context. As Mackie (1974) states, humans possess

a capacity for "imaginative transfer" (p. 57) or the the creation of meaning through an implicit understanding both of what is and is not present in a given causal field or context. What Mackie seems to be referring to here is what we would describe as the uniquely human ability to reason *oppositionally*, or to draw predications along oppositional dimensions or ranges of meaning. Oppositionality is at the root of the construction of "causal fields" or attributions, for in a context of meaning the widest possible alternatives occur between what "is" the case and what "is not" the case. The predication must be selected from this broad context. To phrase it another way, to have an understanding of the meaning of (for example) a situation, sentence, or text depends on having an understanding of what is not present in the situation or not "meant" by the sentence or text. Given this model, which pole of a bipolarity or oppositional dimension is affirmed or singled out for identification is up to the individual and not the environment. Thus, when people are reasoning dialectically, the major premise framing a line of thought is not affirmed as "primary and true," but as a starting point for variations in meaning, leading away from the initially framed meaning to various possibilities framed ultimately by its very opposite meanings.

These two contrasting ways of extending meaning are reflected in a distinction often made by philosophers between inference and implication (cf., Reese, 1980). Inference is typically defined as the process whereby the reasoner derives conclusions from premises that are "true"--which means only that the reasoner presumes them to be true (Reese, 1980, p. 252; Runes, 1960, p.146). Thus, an inferential process occurs when a person affirms a given predication, reasoning in accordance with the belief that the meaning-relation

expressed in the premise is the only one which obtains. In contrast, implication occurs when a line of thought is extended from major premises that lack certainty, are suggestive, or are derived in a tentative fashion. This is in line with Aristotle's point about dialectical reasoning; that is, when we take on a major premise as an opinion (i. e., dialectically) we are drawing from a wider range or dimension of meaning than when we take on a major premise demonstratively, in which case we fail to see the "other" side. Thus, the logic of implication is essentially the logic of oppositionality.

Thus, when a premise is viewed as certain (i. e., demonstratively fixed), the range of meaning available from which conclusions might be drawn is narrowed and the flow of thought which occurs is unipolar or unidirectional. For example, if a statement is made to the effect that "Michael is generous," then we would infer from this that he enjoys sharing his possessions and his time with others, is liberal with his funds, and so on. On the other hand, when we are confronted with a premise which is uncertain, is suggestive, or whose meaning lacks clarity, the range of meaning available from which we might eventually draw a conclusion is much broader. So, if we were to ask what is implied in the statement "Michael is generous," we would have to frame a hypothesis about Michael based, not on what is stated explicitly in the premise, but on the possibilities of meaning it points to or leaves open for question. In this case, there a number of conclusions that we might draw. A "clinical" conclusion that could be drawn is that Michael is insecure, that he seeks to gain friendship and bolster his self-esteem through giving away his things, loaning money, and so on.

This is not a flattering implication, even though it takes root from a

positive initiating premise. A reverse scenario might be obtained when beginning with the predication "All politicians are untrustworthy." The inference here would be that politicians often fail to uphold their promises, may seek public office to attain selfish ends, and so on. However, an implication derived from this premise might be that, since politicians are confronted with so many competing demands, and because their control over formulation and implementation of public policy is typically limited, that they often fall prey to forces beyond their control.

We are not suggesting that the implications we have outlined above are necessarily the most valid ones or the only ones that could be framed from the given premises. However, they do exemplify what we feel to be an important factor in understanding the nature of social cognition and impression formation, namely that the process of drawing implications is grounded in the individual's ability to consider a broad range of possible meanings which, in turn is based on the individual's ability to reason dialectically as well as demonstratively. Thus, we assert that dialectical logic plays an important role when an individual must make an attribution or form an impression based on an implication from a premise whose meaning is left open to question. If we do not accept a premise as demonstratively given, the conclusions ultimately drawn derive from an oppositional broadening or extending of the context in which we are considering the premises. Since dialectical logic is based on an implicit oppositional tie to the meaning framed in a premise, it follows that such oppositionality would play an important role in the drawing of implications.

Ogden (1967) has noted that Aristotle himself was "obssessed by the problem of opposition which appears in different forms in all his works,

though the special treatise which he devoted to it has not survived" (p. 21).
Aristotle stressed that for any idea a contrary (opposite) idea could be framed.
Indeed, one of his principles of association in thought was that of contrast or
oppositionality (Esper, 1973). In his elaboration on the nature of oppositionality
as it relates to cognition, Rychlak (1988) has outlined a typology of oppositional
relationships which includes three forms of conceptual oppositionality:
contrariety, contradiction, and negation. Contrariety can be seen in the
contrary relationship between premises such as "All X is true" and "No X is true."
Contradiction is manifest in the relation between premises of the sort "All X is
true" and "At least this one X is not true." The case of negation derives from the
relationship between premises of the sort "X is the case" and "X is not the case."

Although contradiction and contrariety clearly reflect oppositionality,
negation, since it does not explicity state or refer to the opposite, presents a
more subtle case of oppositionality. However, negation (i. e., "X is not the case")
does prompt a broadening or reassessing of the assumed context, a broadening
which we feel often occurs along oppositional dimensions. In the present
thesis, we are interested in examining specifically the assertion that in
reasoning from a negation, we must draw implications rather than inferences,
and, since a negation frames an oppositional relation, that implications drawn
from premises framed as negations will often reflect a meaning opposite to that
being negated in the premise.

For example, assume that a subject was presented with the following
statement, encompassing a certain predication of a person named John:

"John never takes his shirt off in public."

To invite the drawing of an implication we might now offer the following explanations:

"John catches cold easily."

"John sunburns easily."

"John is ashamed of his physique."

All three of these statements are reasonable hypotheses explaining John's behavior. However, the third alternative is the clearest opposite in meaning to the premise being negated in the initial predication. People take their shirts off in public. There is a certain amount of culturally-defined exhibitionism present in such behavior. Hence, if someone *never* exhibits in this fashion, it is plausible to think that he has "little or nothing" to exhibit. We see that the initial statement sets the context for thinking about John's behavior along the dimension ranging from people who frequently remove their shirts in public to those who never manifest such behavior. Although we recognize that people do not always reason to the opposite in drawing implications, we believe that the broadening of the context suggested by the negation is often likely to occur along oppositional dimensions. The fact that John *never* takes off his shirt in public suggests that his reasons are not merely pragmatic ones, and it may be implied that he is ashamed of his physique. Of course, the implication we have been considering concerning John's motives is quite subtle--or, let us call it indirect. A more direct form of implication can be seen in the following:

"Karen's face reflected an emotional mood, but it was not happiness."
The possible implications might be:

"Karen was angry."

"Karen was bored."

"Karen was sad."

The antonym of happy is sad, so this meaning can be reasoned to in a more "direct" sense. It follows that it should be easier to draw an implication when direct items are being used than when indirect items are being used. The subject reasons from the meaning of one word to its opposite (antonym) and does not have to frame intermediate steps, as is the case with the indirect items.

Empirical Research on Social Inference and Implication

Despite the fact that the term *social inference* is commonly used to refer to a well-researched area of cognitive-social psychology, most theoretical treatments of the topic fail to clearly articulate what it means to say that a social judgment or impression is the result of an inferential process. As will become apparent in the paragraphs that follow, the typically "loose" and all-encompassing use of the term *inference* ultimately makes for several problematic ambiguities in the literature. We will ultimately argue that the distinction we have proposed--that between inference and implication--and the logic of oppositionality on which it is grounded could be instructively applied in reconstruing the processes underlying the formation of social judgments. To begin with, however, I will briefly outline what seems to be the prevailing general understanding of what it means to talk about social inference, and follow this with a comprehensive overview of the regnant theories employed to account for social inference processes.

Hastie (1983) suggests that there are three broad theoretical positions represented in the literature on social inference and attribution: information integration theory (Anderson, 1981), information processing theories (e. g., Wyer & Carlston, 1979; Bower, 1975), and judgment heuristics (Tversky &

Kahneman, 1974). It is important to note that theorists representative of each of these positions (e.g., Johnson-Laird, 1983; Hastie, 1983; Wyer & Carlston, 1979) have in common a characterization of most forms of reasoning as grounded in the process of drawing inferences. Johnson-Laird (1983), for example, asserts that reasoning (which he describes as at the "heart of human mentality") always requires inferential skill (p. 23). The hypothesis that people organize beliefs about their social environment according to syllogistic principles is not new. A syllogistic model of belief organization was proposed by McGuire (1960) and an extension of it has been developed by Wyer (1975, Wyer & Carlston, 1979). Even Abelson's (1976) script processing theory characterizes the activation of particular scripts as often dependent on higher order, propositional (inferential) rules and knowledge structures (Nisbett & Ross, 1980).

An examination of the meaning of inference as it is typically used in the social inference literature suggests a general definition common to most theories. Johnson-Laird (1983) defines inference broadly as the "process of thought that leads from one set of propositions to another... An inference is valid if there is no interpretation of the premises that is consistent with a denial of the conclusion" (pp. 23, 28). Although he echoes the general tenor of Johnson-Laird's definition, Hastie's (1983) definition is a bit more circumscribed: "inference is constituted of three components: a set of premises, a conclusion, and rules, principles, templates, or procedures which connect the premises to the conclusion in a 'reasonable' manner" (pp. 511-512). In addition, Brody (1967) describes an "acceptable" inference as one for which the premises afford good reasons to assert, or render certain, the conclusion.

As we can begin to see already, the theoretical emphasis across these

various positions is on social inference as a very demonstrative, unidirectional process. Such theorists seem preoccupied with understanding how individuals make "correct" or "acceptable" inferences which flow logically, rationally, or "reasonably" from the premises after they have been affirmed as "given" in demonstrative fashion. Several authors (e. g., Collins, 1978; McGuire, 1960; Tversky & Kahneman, 1974) do postulate less "rationalistic" models to address the question of how individuals reason from ambiguous or uncertain premises, or how they might come to accept a premise as having a particular meaning. For example, McGuire's (1960) probabilogical model allows for conclusions to be more or less probable than they should be based on subjective estimates of their desirability. However, most of these theorists seem ultimately to fall back on modes of explanation equivalent to those typically employed to explain how people reason from premises that are accepted as "primary and true."

Information Integration Theory

Anderson (1965, 1981) has postulated a formal model to describe what are often referred to as *algebraic inference processes* in social reasoning. Often cited as one of the most coherent and empirically well-grounded theories in social psychology, Anderson's model is typically invoked to describe how individuals make judgments based on consideration of a number of pieces of information. Although several algebraic inference process models have been postulated, Anderson's weighted average model has been the most influential.

In the prototypical situation designed to test Anderson's model, an individual is presented with several different pieces of information and is asked to make a judgment on the basis of this information. Anderson postulates that the individual first construes the meaning of each piece of information

separately for the inference to be made, then may average these various judgments to arrive at his or her "final" inference. His model not only attempts to account for the effects of the "new" information acquired in the judgmental situation, but additionally attempts to assess the possible effects of the judge's previous experience on his or her judgment in the task situation. In so doing, Anderson identifies as fundamental two components of the judgmental process: valuation and integration. Valuation refers to the process through which the possible effects of the judge's previous experience (in addition to the new information acquired in the judgmental situation) are accounted for. This is accomplished by assigning a weight and a scale value to the meaning of the judge's "initial impression," which is obtained before specific information is received about the targets. Integration refers to the manner in which these weights and scale values are combined to arrive at a subjective judgment of the object. In addition, Anderson suggests that a third, response process may also be involved (that is, the process of transforming the subjective judgment of the object into the response language available for reporting this judgment).

Relevant both for Anderson's project (and for our test of the predicational model in this thesis) is the research on negativity biases in social evaluation (cf., Jones & Davis, 1965; Kanouse & Hanson, 1972; Parducci, 1968). Research in this area has generally revealed that people tend to weigh negative aspects of an object more heavily than positive ones. Anderson himself found that negative adjectives seem more powerful than positive adjectives in affecting individuals' overall evaluation of target persons (Anderson, 1965). Although several theories have been developed to account for this phenomena, perhaps the most widely accepted is that which describes negativity biases as the result

of contrast effects. As Jones & Davis (1965) describe, given the normatively positive informational environment, negative traits and behavior are likely to lead to a greater attribution of personal characteristics to the individual, and thus they provide "more" information than positive traits. By standing in contrast to the norm, the individual invites attributions of responsibility for the particular trait; these attributions are in turn likely to increase the importance and centrality of the trait in evaluations of him or her as an individual (Kanouse & Hanson, 1972).

In evaluating Anderson's model, most critics cite his post hoc parameter estimation procedures as a significant point of weakness in his theorizing (e. g., Wyer & Carlston, 1979). Anderson asserts that the relative importance of a piece of information may indeed be estimated during an initial valuation phase of the inference process, based on some a priori basis for considering it to be more or less relevant or important (e. g., its ambiguity, credibility of its source). However, in cases in which the obtaining of such information from subjects would contaminate subsequent judgments or other cases in which such information can't be obtained, estimates of weights must be obtained post hoc. In practice, the magnitude of the weight attached to each piece of information is usually inferred "ex post facto" (that is, after the experiment has been conducted) from the influence of this information upon judgments. Use of such post hoc parameter estimation procedures often requires certain (somewhat arbitrary) simplifying assumptions concerning the invariance of various model parameters over sets of information.

This brings us to another point at which many consider the model to collapse. A close examination of Anderson's model assumptions reveals that if

the weight and scale value of a piece of information were allowed to vary with its context, these parameters would need to be defined and measured separately for each set in which the piece is contained. In such an event, there would be no way to invalidate the model without independent estimates of these parameters (Wyer & Carlston, 1979). In practice, it is typically assumed that the scale value assigned to each piece of information is invariant over stimulus configurations--that is, the meaning of each piece of information is assumed not to depend on its context. The validity of this assumption is questionable at best. In addition, it betrays Anderson's reliance on a model which is fundamentally a mediational and an extraspective one. Various aspects of the information presented (e. g., source credibility, ambiguity, negativity, consistency) mediate the assignment of weights to this information, and ultimately determine the judgment that will be formed. It is interesting to note that, in invoking aspects of the information such as source credibility, ambiguity and negativity as mediators in his model, Anderson is informally relying on constructs of an introspective nature. However, in practice such stimulus qualities or contexts are often "determined" extraspectively by the theorist/experimenter.

Thus it seems that, although Anderson's averaging model may be somewhat successful in describing the functional relation between characteristics of different pieces of information and judgments based on this information, what the model ultimately says about the psychological processes underlying the judgments made is by no means clear. Lamiell (1987) has posed a challenging critique of the notion that such demonstrative, "algebraic" forms of reasoning underlie the formation of impressions. He has empirically

demonstrated that subjects in impression formation tasks do not simply review a target's score on a given personality dimension(s), situate the target on each dimension in comparison to the scores of others who have been rated along the same dimension, and finally arrive at a statistical estimate of what the target is like. Instead, he has shown that the target is placed within an oppositionally-framed context which ultimately defines the dimension under consideration. Thus, Lamiell asserts that impressions are not formed by normatively relating scores of a target to the score of other persons in a comparison group, but are created through considering the target as he or she "is" (as regards the dimension of interest) in light of how he or she might be otherwise.

Finally, many of the information processing theorists take issue with Anderson's model because it only describes molar processing stages, and fails to address finer processing questions like "In what order are integration operations performed when impression formation judgments are calculated?" Anderson's model is aimed merely at describing the relation between stimulus input characteristics and reported judgment, whereas information processing theories attempt to address more directly the mediating processes that produce this relation and the conditions under which these processes may occur. For example, such theorists would most likely be interested in framing theoretical principles that would predict which processing rules might characterize integration in a variety of social judgment tasks. Several information processing models do attempt to answer such questions and develop such principles. However, as we will see below, such attempts lead them to

encounter a set of problems not wholly unlike that for which they take Anderson to task.

Information Processing Theories

As mentioned above, the second major theoretical position represented in the research on social inference has as its foundation information processing models drawn from traditional cognitive psychology. Theorists within the information processing tradition of social cognition have sought to elucidate the nature of the processes underlying the perception of social cues or "stimuli" and the formation of subsequent judgments. All of these models, among them Wyer & Carlston's (1979) nodal network theory, Bower's (1975) information processing theory, Abelson's (1976) script processing model, and Johnson-Laird's (1983) theory of mental models, can be characterized as mediational ones, as they all seek to describe cognitive processes as mediate or intervening steps between antecedent inputs and consequent responses. In addition, as we will show in the paragraphs that follow, such models fail to provide the theoretical framework necessary to account for inference and implication as two distinct modes of reasoning.

Like information integration theory, information processing approaches typically begin with a molar stage framework, but most then move towards a more detailed specification of a variety of representational formats, knowledge structures, memory systems, and elementary information processes. Even though there exists a core of basic concepts (e. g., sensory register, short-term memory, long-term memory) common to most information processing theories, there is considerable theory-to-theory variation among descriptions of the more "molecular" cognitive processes. In the paragraphs that follow, we will

examine several of the information processing theories that have been most influential in the area of social inference.

Nodal Network Theory

Wyer & Carlston (1979) have designed a nodal network theory of memory to account for social cognition in general, and impression formation in particular. As described above, their model characterizes memory as organized into a network of interconnecting nodes. Each concept in mind is represented by a node, and the nodes are connected by paths.

A distinctive feature of mediation in Wyer & Carlston's model which is highlighted by Rychlak & Bugaj (1988) is that it is presumed to be intrinsically unidirectional. Instead of a predication of "Jean" as "honest" being drawn from an oppositional context encompassing both honesty and dishonesty, nodal network theory describes the process as first requiring the encoding of "Jean", then the relational "is", then finally the descriptor "honest." Some process then combines these (unipolar) bits into a meaningful piece of information. The paths connecting nodes are construed as unidirectional: in other words, if two concepts are associated one with another, two paths would have to be formed--for example, one uniting "honest" to "trustworthy" and one going in the opposite direction. The direction of the path connecting the nodes reflects the order in which the concepts occurred in past presentations of the relation (ibid). (The tie of one nodal concept to another can also be due to the semantic association of meanings assigned to words by culture.)

As this model has no way of capturing a dialectical oppositionality, the same dual associative paths would apply if we had opposite associations under consideration; except in this case, it is assumed that there is a greater distance

between the nodes than would be true of two words with synonymic meaning relations. Such concepts would be "remotely associated in the judge's implicit personality theory, and are unlikely to be connected to the same schema node in the superstructure" (Wyer & Carlston, 1979, p. 99). Thus it is not the inherent oppositional relation between descriptors such as *honest-dishonest* that sets the broad context from which an inference or implication must be drawn, but the past unipolar associations (produced by frequent contiguous presentations of stimuli) in the individual's history (Bugaj & Rychlak, 1988). Consequently, it should be apparent that speaking of inference versus some other kind of process (i.e., implication) would make no sense within nodal network theory.

Implicational Molecule Theory

Abelson & Reich (1969) have postulated an implicational molecule theory to account for the process of drawing social inferences. Although Abelson intended his later script processing theory to be a more comprehensive account of social inference processes, the earlier implicational molecule model clearly illustrates some of the mediational assumptions on which his account of script processing is based. Implicational molecule theory asserts the existence of sets of generalizations about persons, objects, and events that are bound together by psychological "implication" (a term which Abelson and Reich fail to define). In combination, the generalizations in each set form a *molecule* or general concept. To use one of Abelson and Reich's examples, the idea that people do things to accomplish desired goals may be formalized in the three-sentence "purposive behavior" molecule [A wants Y; X causes Y; A does X], where A is a class of persons, X is a class of acts or behaviors, and Y is a class of outcomes or events. Each molecule can be used to interpret information about specific

persons and events and make inferences about them.

Abelson and Reich hypothesize that molecules mediate interpretation according to a *completion principle*. This principle states that if the information a judge receives about specific persons and events is consistent with all but one generalization in a given molecule, the judge will tend to infer a relation between these specific instances that is consistent with the remaining generalization. For example, when the information available about specific instances is relevant to only one generalization in a three-sentence molecule, a judge may often make inferences consistent with the other two. For example, a judge, given information that "Jim wants to win the lottery" and "Jim knows that the last hundred lottery winners bought their tickets on a Friday morning," might apply the purposive behavior molecule and infer that "Jim buys his lottery tickets on Friday mornings." Note that, according to the model, any one of the sentences in the molecule could be inferred given the other two.

Most theorists of an information processing bent view Abelson's postulation of the completion principle to be the most significant contribution of implicational molecule theory. This principle is viewed as unique because it postulates that reasoning does not have to occur in a strictly ordered pattern from a major premise of a molecule, to the minor premise, to the conclusion. Abelson and Reich (1969) assert that many times people infer (or imply?) the third given any two, without regard for the constrictions of formal logic. However, the process by which the completion of a molecule occurs is the same, despite the fact that the person may be reasoning from a premise to a conclusion, from a premise to a premise, or from a conclusion to a premise. We can, therefore, see that even though the authors speak of both *inference* and

implication in describing reasoning processes, the model describes only one
sort of logic grounding reasoning--a demonstrative, inferential sort. There is
no room in their model for the completion of a molecule based on a dialectical
reasoning to the opposite of a molecule premise or conclusion.

Abelson's model is also criticized for lacking guidelines for predicting a
priori which molecules may exist in a judge's cognitive system and which are
apt to be brought to bear on judgments in a given situation. The model
ultimately invokes mediating stimulus properties (such as salience, etc.) to
account for the use of a particular molecule and the type of inference made. As
we will see below, Abelson's (1976; see also Schank & Abelson, 1977) model of
script processing fails to transcend this reliance on strictly mediational
assumptions.

Script Processing Theory

Abelson (1976; Schank & Abelson, 1977) defines a script as a coherent
sequence of events expected by an individual, involving him or her either as
participant or observer. Scripts are presumably acquired throughout a person's
lifetime, either through direct experience or through various communication
media. Thus, Abelson (1976) asserts that scripts, like implicational molecules,
may often be idiosyncratic to an individual, resulting from his unique past
learning history. On the other hand, he argues that many situations and
experiences are sufficiently common to our culture that the essential features
of some scripts are apt to be widely shared. A script is theoretically composed of
a series of vignettes, each of which consists of both an image and a conceptual
representation of the event and the elements involved. Although Abelson
likens the vignette to " a picture plus caption," the modality of both the image

and its representation is unrestricted. In combination, the vignettes comprising a script tell a story.

The limitations of script processing theory discussed in the literature are similar in many respects to those leveled at the implicational molecule theory. For example, the theory offers no clear predictions on what will eventuate when the configuration of information presented fails to adequately match an existing vignette. This in turn suggest a more basic problem concerning how scripts are learned to begin with. Although we suspect that Abelson would describe such learning in terms of a frequency and contiguity form of association, his model only addresses reasoning that occurs after scripts are in place. In addition, the model leaves unaddressed the guidelines for predicting in advance the scripts that are likely to be accessed and used in any given instance, especially under conditions where more than one is potentially applicable. (Usually, some "higher order," propositional reasoning process is invoked post hoc to account for such accessing strategies.)

That this sort of criticism can be leveled at most information processing theories is telling. Essentially, such theorists appear confused about the direction of cognitive "causality" in their theories of mind. Many information processing theories characterize the human organism as actively constructing stimulus fields or at least "going beyond the information given" in making attributions, etc. However, preoccupied as they are with modeling computer analogs, such theorists unnecessarily restrict their description of reasoning in accordance with the mechanism of the computer "hardware" (Rychlak, 1988). Thus, they lack the conceptual tools to frame reasoning as a predicational process. The result of this limitation is what we have revealed thus far--that a

mediational process (such as a script) is invoked to account for what stimuli get encoded at the same time that equivalent mediational processes are described as "called up" or initiated by certain (unmediated?) stimuli present in the environment.

Theory of Mental Models

Echoing the aforementioned theorists' concern with demonstratively certain, "correct" forms of drawing inferences, Johnson-Laird (1983) takes the question of "How is it possible for people to reason validly, that is, to draw a conclusion that must be true given that the premises are true?" as a fundamental riddle to be solved by any theory purporting to explain social judgment. However, in contrast to the theories describing strictly demonstrative, formal syllogistic forms of reasoning, he defends the thesis that reasoning ordinarily proceeds without recourse to a mental logic from which formal rules of inference may be derived. Like Abelson in script processing theory, Johnson-Laird rejects a theory of the person as a strictly propositional reasoner employing rules of logic for a theory of how people reason on the basis of schematic representations of objects, event, and actors. Thus, although he maintains the interest in demonstrative forms of reasoning addressed by the theorists discussed above, he rejects the assumption on which most of the other models rest--that is, that such reasoning is grounded in rules of formal logic.

Mackie (1974) also eschews postulating a system of formal rules and the machinery for manipulating them for a characterization of people as reasoning by constructing a representation of the events described by the premises. Mackie also notes that the propositions that characterize our reasoning about causal events tend to be "elliptical" or "gappy". For both Mackie and

Johnson-Laird, reasoning is not a matter of recovering logical forms of the premises and then applying rules of inference to get a conclusion. Instead, the heart of the process is interpreting premises as mental models and searching for counterexamples to conclusions by trying to construct alternative models of the premises. Mackie (1974) asserts that the notion of cause is defined with reference to contrary-to-fact conditionals. He states: "The key item is a picture of what would have happened if things had been otherwise... It is a contrast case rather than the repetition of like instances that contributes most to our primitive concept of causation" (p. 57).

It should be apparent that both of these theorists are describing something akin to the role of oppositional reasoning in defining the context from which a predication can ultimately be drawn. In line with both logical learning theory and the logic of attribution described by Mackie (ibid), we have demonstrated empirically (Rychlak et al, 1988) that people rely on oppositionality to solve problems, and that they can be seen improving their sensitivity to opposition over a series of learning trials--resulting in a "learning curve" for oppositionality. In addition, Rychlak (1987) found that subjects know when they are inferring from reasonably solid grounds and when they are forming implications based on somewhat tenuous grounds. In the same study, subjects recalled personality descriptors significantly better when they were based on inferences than when they were based upon implications.

Judgment Heuristics

In Tversky & Kahneman's (1974) theory of judgmental heuristics, we encounter an image of the reasoner which is more akin to that hinted at by

Mackie (1974) and Johnson-Laird (1983) than that proferred by the information processing theorists. Tversky & Kahneman propose a number of judgmental strategies or *heuristics* on which people seem to rely in a variety of inferential tasks. These heuristics are often rather primitive and simple, and their use does not imply a conscious and deliberate application of computational-type algorithms for deducing "correct" inferences. These strategies are often employed intuitively or automatically, and are also often applied in tasks or settings in which they are "inappropriate" (or incapable of producing a "correct" inference, see below).

Tversky and Kahneman outline four judgment heuristics--availability, representativeness, anchoring, and adjustment--only one of which we will describe here. Tversky and Kahneman assert that when people are required to judge the relative frequency of particular objects or the likelihood of particular events, they often may be influenced by the relative *availability* or accessibility of the objects or events in the processes of perception, memory, or construction from imagination. For example, it has become apparent to many experimenters that certain aspects of statistical logic are not appreciated by subjects in social judgment tasks. A hypothetical scenario illustrating this phenomenon might proceed thus: A pollster who asks a sample of adults to estimate "the percentage of the work force who are currently unemployed" finds an "egocentric bias." That is, currently unemployed workers tend to overestimate the unemployment rate while currently employed workers tend to underestimate it (after Nisbett & Ross, 1980). In fact, Kahneman and Tversky (1972) did find that subject's category membership (i.e., predicating) judgments were relatively insensitive to baserate information when any case-specific

information was also presented, and they invoked the availability heuristic to account for such errors. Thus, their explanation would assert that unemployed people are more likely to know and meet other unemployed people than are employed people, and vice versa.

However, Tversky and Kahneman also emphasize that individuals are not compelled to rely on biased availability criteria in such situations. For example, given the situation outlined above, individuals could try to remember what information on unemployment they have read or heard in the media and therefore apply some popular rule of thumb, or they could even try to compensate for the biases distorting their samples of available data ("Hardly anyone I know is jobless, but of course, I don't get to meet many unemployed people, do I? I guess I'd better adjust my estimate upward!")

Such a characterization suggests that the individual is not constrained in a particular set of circumstances to reason from a particular heuristic. Thus, it seems that Tversky and Kahneman's theory is compatible with the a theory of reasoning which is grounded in oppositional framing of contexts along dimensions of what is the case to what is not, or what might be implied. In this sense it comes close to the perspective we are arguing for, and to that put forth by Lamiell (1987). Unfortunately, despite a partial characterization of the social reasoner as capable of transcending unipolar input through reasoning against intuitive biases such as availability, etc., they ultimately rely on mediational processes to explain why a given heuristic is used (or not) in a given situation. Since they have no formal theory of the reasoner as predicating agent, they tend to fall back on environmental cues as "activators" of given heuristics.

One of the more interesting aspects of Tversky & Kahneman's research has relevance for our own interest in studying the role of negation in broadening presentational contexts along oppositional lines and its relationship to the drawing of implications. Tversky and Kahneman found that how information is presented to the subject influences his or her framing of its import. For example, a person's attitude toward some event is different if we tell him or her that in a certain battle four hundred people out of six hundred were killed, as opposed to conveying the same information as "two hundred of the six hundred people were spared death." In like fashion, we would predict that statements such as "Andrew never pays his bills on time" and "Andrew is always late in paying his bills" might also differentially influence people's framing of the meaning being conveyed, even though strictly speaking they are semantically equivalent. Such phrasings are irrelevant to a statistician, or to a machine that is processing numbers, but people are apparently differentially influenced here.

The effects of the framing of information found by Tversky and Kahneman, combined with the relationship between negation and oppositional reasoning postulated by logical learning theory lead us to make two general predictions concerning the effect of negational phrasing on the direction of impression formation. First, we would predict that when information concerning the behavior of another person is presented in a negationally-phrased statement, that explanations opposite to the descriptive premise being negated in the statement would be chosen significantly more often than non-oppositional explanations. Second, we would also predict that

information concerning a person about whom one has already formed an impression would facilitate a greater change of opinion in a direction opposite the initial impression when such information is framed in a negational fashion. In the following chapter we will outline a method to study such factors, focusing on negational versus non-negational phrasing and drawing from a predicational model.

CHAPTER III

METHOD

In order to test our predictions concerning the relationship between negation and the drawing of oppositional implications, we designed two separate experiments. The first experiment was designed to ascertain whether subjects would, indeed, tend to draw implications to the opposite of a statement when the statement was framed as a negation. In the second experiment, we were interested in discovering whether information framed in a negational manner would facilitate the change of a previous judgment in a direction opposite this initial judgment. The method employed in implementing both of these experiments is described in Chapter III, with the method used in Experiment I described first and that used in Experiment II described second. The results of both these experiments are presented in Chapter IV.

Experiment I: Implications Scale

Hypotheses:

1. Subjects who are asked to choose between two possible explanations for the behavior of an individual will, when the behavioral description is presented in the form of a negation, select the one of the two alternatives which is most opposite in meaning to the premise being negated in the statement.

RATIONALE: Based on the findings of Tversky & Kahneman (1974, refer above) concerning the way in which information is presented, we --in this instance-- inferred that it would be possible to predict a subject's drawing of implications to the opposite of a statement when that statement encompasses a negation. Thus, if a subject is told that a person has "never done" something or

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that an event was "not done" in some way, then we would expect the subject to be more likely to reason implicationally from what was being negated to its opposite than to accept a less oppositional characterization of the circumstances.

2. <u>The expected effect outlined in Hypothesis 1 will be stronger for the direct implications than it will be for the indirect implications.</u>

RATIONALE: When confronted with a negational statement which sets the context for a direct implication, the subject reasons from the meaning of one word to its opposite (antonym) and does not have to frame intermediate steps, as is the case with the indirect items. It follows that it should be easier to draw an implication when direct items are being used than when indirect items are being used.

Subjects:

Subjects were male and female college students who participated in the experiment in partial fulfillment of a course requirement in their introductory psychology class. One-hundred thirty-seven undergraduate students were randomly assigned to one of the three experimental groups: Group A: N = 43 subjects (23 females, 20 males); Group B: N = 52 subjects (26 females, 26 males); and Group C: N = 42 subjects (21 females, 21 males).

Procedure:

In order to test Hypothesis 1, it was necessary to compare statements encompassing oppositionality with non-oppositional statements. To make for the strongest test of the hypothesis, we decided to confront the oppositional explanation with two different non-oppositional explanations, one on each of two separate test forms (see below). Then, on a third form, the two

non-oppositional explanations could be compared with each other. If subjects could be shown to consistently choose an oppositional explanation for why an individual under description behaves in a particular way, rather than either of two equally plausible non-oppostional explanations, then Hypothesis 1 would appear to have been supported. (In addition, we could compare any non-oppositional alternatives chosen significantly more often on the third form with the oppositional alternative.)

Instruments:

We constructed three forms of an Implications Scale. Each form of the scale contained thirty items, fifteen of which were direct implications and fifteen of which were indirect implications (see Appendix A for the actual items used). Form A contained items of the following sort (*indirect* and *direct* implications, respectively):

1) John never takes his shirt off in public.

_____A. John is ashamed of his physique.

_____B. John catches cold easily.

2) Karen's face reflected an emotional mood, but it was not happiness.

_____A. Karen was angry.

_____B. Karen was sad.

Items on Form B contained the same initial statement, but the oppositional alternative (e.g., "John is ashamed of his physique" or"Karen was sad," respectively) was paired with a second non-oppostional alternative, as follows:

1) John never takes his shirt off in public.

_____A. John sunburns easily.

_____B. John is ashamed of his physique.

2) Karen's face reflected an emotional mood, but it was not happiness.

_____A. Karen was sad.

_____B. Karen was bored.

The order in which the oppositional alternative was presented (i.e., first or second) was counterbalanced within each form. The third form, Form C, contained the same initial statement followed by the two non-oppositional alternatives from Forms A and B, as follows:

1) John never takes his shirt off in public.

_____A. John catches cold easily.

_____B. John sunburns easily.

2) Karen's face reflected an emotional mood, but it was not happiness.

_____A. Karen was bored.

_____B. Karen was angry.

The 30 items ultimately used in the Implications Scale were originally drawn from a larger pool of about 60 items. For each of the items ultimately included in the scale, the "oppositional" alternative had to be reliably rated as clearly oppositional by three independent judges. In other words, all three judges had to agree that the "oppositional" alternative was indeed the one opposite in meaning to the premise being negated in the lead-in statement. In this way, about 30 items were eliminated from the pool, leaving the 30 reliably-rated items which were combined to create the scale.

Application of the Instruments:

Subjects were run in small groups of two to ten students. They were initially given a statement of informed consent to read and sign prior to beginning the experimental procedure. This statement emphasized that their

participation was voluntary, that they could withdraw from the experiment at any time without incurring a penalty, and that their performance would be kept confidential. Following completion of this form, subjects were handed (in random order) either Form A, Form B, or Form C and were instructed to read through the form and follow the directions carefully. Subjects were encouraged to ask questions if they did not understand the instructions. After all subjects had completed the forms, they were given a written debriefing concerning the purpose of the experiment (see Appendix A for a copy of the actual form used). When the subjects had finished reading the debriefing, the experimenter took time to respond to any questions the debriefing may have left unanswered. Following this, the experimenter signed each subject's verification of participation form, and the subjects were dismissed.

Experiment II: Moving an Impression Oppositionally Following Information that is Presented as a Negation

Experiment I is designed to establish that subjects will select an oppositional alternative when the information they are presented with is framed negationally. However, we are also interested in discovering whether such negationally-framed information would facilitate the change of a previously affirmed position in a direction opposite the initial position. In line with our discussion of the Aristotelian context as generated through dialectical oppositionality, we theorized that presenting information contradictory to a previously affirmed opinion would indeed result in a greater change in attitude in the direction of the opposite pole of opinion than when identical contradictory information is presented in a non-oppositional form. This brings us to Experiment II of the present thesis.

Hypothesis:

Subjects asked to make a judgment concerning the relative presence or absence of a personality or character trait in a target person, and who are given subsequent information which contradicts their original judgment, will be seen to change their opinion more readily when the contradictory information is framed as a negation than when it lacks this negational quality.

RATIONALE: As outlined in the rationale for Experiment I, we believe that subjects presented with premises framed as negations will be more likely to exhibit a greater magnitude of opinion change in the direction opposite their initial impression change than subjects who are presented with the same information in non-negational form. Given that the relationship outlined above between negation, implication and oppositionality holds when subjects have formed no previous judgment about a target person, it would be of interest to ascertain whether such a relation would hold when subjects were presented with information designed to change an already existing impression. We were also interested in discovering whether this relationship would hold similarly for information concerning both personality and character traits of a target person.

Subjects:

Forms I and II were administered to separate groups of 85 and 94 subjects, respectively. Of the 85 subjects administered Form I, 43 were female and 42 were male; of the 94 subjects administered Form II, 45 were female and 49 were male. The subjects were college students participating in the experiment in partial fulfillment of a course requirement in introductory psychology.

Procedure:

In order to test our hypothesis, it was necessary to present subjects with information which would allow them to form an initial impression of a target person, then to present them with secondary information--which was framed in either a negational or non-negational fashion-- designed to change this impression. We wanted the formation of their initial impression to be relatively "unconstrained;" that is, we didn't want to "weight" the information in a particular direction or to present it in a way that might have some systematic influence on the subjects' initial ratings. We were also interested in examining the relationship between the subjects' ratings along both personality and character dimensions of target behavior, and the extent to which the subjects would find the target individual likable or dislikable.

Instruments:

Subjects were intially presented with a form containing eight "facts" concerning the behavior of the target person. We employed two general versions of this form, one version characterizing the target in terms of introverted and extraverted behaviors (Form I) and one characterizing the target in terms of selfish and unselfish behaviors (Form II). Within each of these two conditions, we employed both a male (Greg, Robert) and a female (Cheryl, Janet) version of the factual description. Table 1 presents the introverted-extraverted version, Form I; Form II can be found in Appendix B. The target persons were initially described on the basis of eight characteristic behavior patterns that were noted during their high school years. On Form I, four of the descriptive statements suggested introversion and four suggested extraversion; on Form II, four of the statements suggested selfishness and four

Table 1
Introversion-Extraversion Form Used in Experiment II

WHAT SORT OF PERSON IS CHERYL/GREG?

Let's imagine that you have just finished high school. One of the young women in your class is named Cheryl, and you have heard different opinions concerning the sort of person she is. Some people think that she is an extraverted person, but just as many others feel that she is introverted. You have seen her around the school off and on for several years, and even before that you knew her casually when you were both growing up.

As you think about this question of whether Cheryl is introverted or extraverted, you can recall certain facts about her, as follows:

She always seemed to be campaigning for a position in the student government or other organization. Although she was always very quiet during class, she never failed to talk to others at the lunch table. But, she never wanted to go out on weekends, preferring instead to stay at home and read. She never seemed to have any difficulty making friends. She never attended any of the football or basketball games. But, she enjoyed acting and always had a part in the yearly school play.

Based on these facts, please mark below whether you would agree with those who saw Cheryl as introverted, or with those who saw her as extraverted. Place an "X" at the point on the line below that represents your best judgment given the facts you have:

extraverted   introverted

. . . .

Table 1 (continued)
Introversion-Extraversion Form Used in Experiment II

CHERYL/GREG AFTER A PASSAGE OF TIME

Now let's imagine that several years have passed, years in which you have had the chance to learn further facts about Cheryl first hand. Here is what you now know about her first hand:

Extraversion/Negation:
She never failed to eat lunch with her coworkers.
She did not hide her emotions.
She never hesitated to ask other people for advice.
She never failed to attend an office party thrown by one of her colleagues.
She never failed to maintain a large circle of friends.

Extraversion/Non-negation:
She always ate lunch with her coworkers.
She openly expressed her emotions.
She was often asking other people for advice.
She always attended the office parties thrown by her colleagues.
She always had a large circle of friends.

Introversion/Negation:
She never ate lunch with her coworkers.
She did not openly express her emotions.
She never asked other people for advice.
She did not attend any of the office parties thrown by her colleagues.
She never had a large circle of friends.

Introversion/Non-negation:
She avoided eating lunch with her coworkers.
She hid her emotions.
She refrained from asking other people for advice.
She avoided attending any of the office parties thrown by her colleagues.
She only had a few friends.

Based on all the facts you have gathered over the years, what would you now say about Cheryl's relative introversion or extraversion? You may feel that you don't have enough information or would like to know more. However, please make your best judgment utilizing all the information given. Place an "X" at the point on the line below that represents your best judgment about Cheryl:

extraverted   introverted
          . . . .

Table 1 (continued)
Introversion-Extraversion Form Used in Experiment II

Based on what you know about Cheryl's behavior, please let us know whether you would find such a person likable or dislikable. Place an "X" at the point on the line below that represents your best judgment about Cheryl in terms of likableness or dislikableness:

likable   dislikable

. . . .

    Please list any thoughts you have about Cheryl that explain why you gave her the three ratings you did.

suggested unselfishness. Thus, on Form I, subjects were initially presented with equivalent amounts of information describing the target in terms of introversion and extraversion; on Form II, subjects were initially presented with equivalent amounts of information describing the target in terms of selfishness and unselfishness.

To qualify for inclusion on the form, the descriptive statements had to be reliably rated as strongly reflecting prototypical behaviors of a introverted, extraverted, selfish, or unselfish, individual. We presented two independent judges with four lists of eight statements each. Each list contained statements thought to reflect the personality (i. e., extraversion - introversion) or character (i. e., unselfishness - selfishness) trait in question, and were descriptive of actions which might logically characterize the behavior of a "typical" high school-aged individual. Thus, List I statements described behaviors thought to reflect extraversion, List II statements were thought to reflect introversion, List III statements were thought to reflect unselfish behaviors, and List IV statements were thought to reflect selfish behaviors. Half (four) of the statements on each of the lists were framed in negational form and half were framed non-negationally. Examples from List IV (selfish) include "He was never willing to stop on his way to school and pick up friends who needed a ride"(negational) and "When things didn't go his was at basketball practice, he would just up and leave"(non-negational).

The judges were requested to rate the statements on a reliability scale of zero to three based on the degree to which they reflected the personality or character dimension they were designed to convey. A rating of zero suggested that the behavioral description did not reflect the trait at all, a rating of one

suggested that the relationship between the behavior and the trait was only slight, a rating of two suggested that the relationship between the trait and the behavior was fairly strong, and a rating of three suggested that the behavioral description strongly reflected the trait in question. Four statements (two negational and two non-negational) were chosen from each of the lists, based on the criteria that each had been given a rating of three by both of the judges. Examples of statements rated by both judges as strongly reflecting the trait in question include "He never refused to help his friends with their homework" (reflecting unselfishness) and "She was always quiet in class" (reflecting introversion).

To create the forms used in the actual experiment, the four statements from List I and the four statements from List II were put together in the form of a descriptive paragraph, with the order of presentation of the statements roughly counterbalanced. For example, the introductory paragraph on Form I contained eight statements presented in the following order: 1) extraversion/ non-negational 2) introversion/non-negational 3) extraversion/negational 4) introverted/negational 5) introverted/non-negational 6) extraverted/ negational 7) introversion/negational 8) extraversion/non-negational. The four statements selected from Lists III (unselfish) and IV (selfish) were combined to form a descriptive paragraph in an equivalent manner.

The instructions which followed the paragraph of descriptive statements requested that the subjects make a judgment about the target along the given dimension based on the eight facts given. A 25-point rating scale was then presented, with the anchor points labeled "extraverted" (left anchor point) and

"introverted" (right anchor point) on Form I and "unselfish" (left anchor

point) and "selfish" (right anchor

point) on Form II.

The second half of Forms I and II contained additional information, this

time concerning the target's behavior after high school. This information was

presented in the form of five statements, all of which described the target in

terms of either one pole or the other of the personality or character

dimensions. For example, subjects who had been presented with initial

information describing the target in terms of extraversion-introversion were

subsequently presented with additional information which described the target

in terms of either all extraverted or all introverted behaviors. We will refer to

this dimension of the additional information, that is, whether it described

introverted or extraverted behaviors (on Form I; selfish or unselfish behaviors

on Form II) as the content of the additional information. So, the content of the

secondary information the subjects received was dependent on how the subject

had initially rated the target. If a subject completing Form I had initially rated

the target as extraverted, he or she received additional information describing

the target's later behavior in wholly introverted terms. Conversely, if the

subject's initial rating had been placed on the introverted side of the dimension,

he or she received additional information which described only extraverted

behaviors.

However, the additional information that subjects received was also

phrased in one of two ways--either in a negational or non-negational fashion.

We will refer to this dimension of the additional information (i. e., whether it

was phrased in a negational or non-negational fashion) as the _form_ of the additional information. So, for example, a subject who had initially rated the target as extraverted could receive additional information describing the target as introverted which was phrased either negationally or non-negationally. The negational form of such a statement might read "She did not openly express her emotions." The non-negational counterpart would then read "She hid her emotions."

As noted above, the content of the additional information the subjects were to receive was determined by their initial rating. (This initial rating was determined solely by the subject, and was not influenced by the experimenter in any way.) The form in which the additional information was presented, either negational or non-negational, was determined in a random fashion. This was accomplished by ordering the sheets comprising the second half of _Forms_ I and _II_ (i. e., containing the additional information) randomly before distributing them to subjects. Thus, there were eight sets of randomly ordered sheets, four for _Form_ I (introverted/negational, introverted/non-negational, extraverted/negational, and extraverted/ non-negational) and four for _Form_ II (selfish/negational, selfish/non-negational, unselfish/negational, and unselfish/non-negational). For example, if a subject given _Form_ II had placed her initial rating on the selfish side of the dimension, she would be given additional information describing the target in terms of unselfish behaviors. The form of the additional information she received would be determined randomly.

These additional descriptive statements were derived by means of the same procedure used to derive the statements comprising the initial descriptive

paragraph (refer above). That is, two judges were presented with lists of fourteen statements each and asked to rate each on a reliability scale with values ranging from zero to three. List I statements described behaviors thought to reflect introversion, List II statements described behaviors thought to reflect extraversion, List III statements described behaviors thought to reflect unselfishness, and List IV statements described behaviors thought to reflect selfishness. All the statements were designed to reflect actions which might logically characterize the behaviors of a high school or college graduate who had entered the working world.

The instructions following the five descriptive statements asked the subjects to make a second rating based on all the information presented. Subjects were then presented with a second rating scale, which was identical to the one on which they had made their first rating. Following this were instructions asking the subject to rate the target in terms of likableness and dislikableness, and a second 25-point rating scale with the left anchor point labeled as "dislikable" and the right anchor point labeled "likable" was provided for this purpose. Finally, subjects were asked to list any thoughts they had concerning why they gave the target the three ratings they did.

Application of the Instruments:

Subjects were run in small groups of from two to twelve students. Subjects were given an informed consent statement to read and sign prior to beginning the experimental procedure. This statement emphasized that their participation was voluntary, that they could withdraw from the experiment at any time without incurring a penalty, and that the data would be kept confidential. Following completion of this form, subjects were handed either Form I or Form

II and were instructed to read through the form and follow the directions carefully. Subjects were encouraged to ask questions if they did not understand the instructions.

After all subjects had completed the first rating, they were handed the second half of either Form I or Form II. As described earlier, the particular version of the additional information they received was dependent on both the direction of their initial rating and the random ordering of the negationally and non-negationally phrased information within each of the groups. To determine the content of the secondary information each subject should receive (i.e., either introverted or extraverted, or selfish or unselfish), the experimenter placed a template over each subject's rating scale which divided the scale in half and allowed for determination of the direction of the subject's rating. As described above, when subjects made a rating which fell above or below the midpoint of the rating scale, they were given secondary information opposite to this rating. If the subjects made a rating coincident with the exact midpoint of the scale, the content and form of the additional information they received was determined randomly. When subjects had completed the second part of the procedure, the experimenter collected the forms and handed out a debriefing statement which outlined the purpose of the study. After the experimenter answered any questions the subjects might have had about the purpose of the experiment, they were dismissed.

CHAPTER IV

RESULTS

Experiment I: Implications Scale

In order to test Hypothesis 1, it was necessary to examine each item and to compare the selection rate for the oppositional alternative with the selection rate for the two non-oppositional alternatives. Thus, for example, we would want to know how many subjects in the sample chose the alternative "John is ashamed of his physique" rather than the alternative "John catches colds easily" or the alternative "John sunburns easily." These comparisons can be made on Forms A and B. We were also interested in examining any significant differences in the selection rate when the the two non-oppositional alternatives were paired with each other, as on Form C. In this way, Form C served as a control; that is, if one of the two non-oppositional alternatives on Form C was chosen significantly more often, this alternative coud be compared with the performance of the oppositional alternative tested on Forms A and B. If Hypothesis 1 obtains, then we should find a significantly greater number of subjects selecting the alternative "John is ashamed of his physique" than either the alternative "John catches colds easily" or the alternative "John sunburns easily."

To test for the significance of such selections, a Chi-square analysis was performed on each item of Forms A, B, and C of the Implications Scale. Thus, on Form A, subjects were categorized as either choosing the oppositional or

non-oppositional alternative for a given item, and the total number of subjects in each category was tabulated. The difference between the oppositional and non-oppositional categories was then tested against a 50/50 selection ratio. The same procedure was carried out for each of the items on Forms B and C. It was particularly important to contrast the alternatives which were chosen significantly more often on Form C (all of them non-oppositional) with the oppositional alternatives presented on Forms A and B. That is, if a non-oppositional alternative proved to be chosen significantly more often than its other non-oppositional counterpart on Form C, it would suggest the presence of a cultural preference or selection bias between the two non-oppositional alternatives. The most telling test of Hypothesis 1 would then be to see if this cultural preference for one of the non-oppositional alternatives would "override" the logic of oppositional selection which we were investigating on Forms A and B. This question was addressed by comparing any Form C non-oppositional alternatives selected significantly more often with the alternative chosen significantly more often on Forms A and B. Thus, we could assess whether there arose any non-oppositional alternatives which were chosen significantly more often on both Form C and either Form A or B. If no such significant non-oppositional alternative arose on an item, and the oppositional alternative proved significant on one or both Forms A and B, then oppositionality would appear to be a powerful heuristic in organizing information about people and events. Even if a non-oppositional alternative proved significant on Form C, if the oppositional alternative was chosen significantly more often when paired against this alternative, oppositionality would again appear to be a logic fundamental to cognitive organization.

The Chi Square analyses revealed that, on Form A, the oppositional alternative was chosen significantly more often for 10 of the 30 items, whereas the non-oppositional alternative was chosen significantly more often for only three of the 30 items ($X^2 = 3.841$, df = 1, p < 0.05 for all significant items). On Form B, the oppositional alternative was chosen significantly more often for 12 of the 30 items, with the non-oppositional alternative being selected significantly more often for only one of the items ($X^2 = 3.841$, df = 1, p < 0.05 for all significant items). These results are presented in Table 2 (see Appendix A for a complete listing of the items and the significance levels for each of the preferred alternatives for items on which such a selection bias emerged). As mentioned above, however, the most decisive test of our hypothesis lies in the comparison of any significant differences between the two non-oppositional alternatives arising on Form C and significant differences favoring the same non-oppositional alternative on either Form A or B. Significant differences favoring one or the other of the non-oppositional alternatives on Form C ($X^2 = 3.841$, df = 1, p < 0.05) emerged on a total of 16 items. However, in 12 of these 16 cases, the oppositional alternative was chosen significantly more often than the alternative displaying a significant selection preference on Form C when the two were tested against each other on either Form A or Form B. In only one case did the non-oppositional alternative chosen significantly more often on Form C prove to be chosen significantly more often than the oppositional alternative represented on Forms A and B. This item, number 19 on the scale (see Appendix A), is as follows:

Roy did not eat his doughnut with his breakfast.

1) Roy ate his doughnut with his evening meal. (oppositional)

Table 2
Number of Significant Selection Preferences for Oppositional and
Non-oppositional Alternatives on Forms A and B of the Implications Scale

| | Type of Selection Preference | | | |
| | Oppositional | | Non-oppositional | |
	N	%Total	N	%Total
Form A	10*	30%	3*	10%
Form B	12*	40%	1*	3%

*$p < 0.05$. Note: There was a total of 30 items on each form of the Scale.

2) Roy ate his doughnut with his midnight snack.

3) Roy ate his doughnut with his lunch. *

The starred alternative, number three, represents the non-oppositional alternative which was chosen significantly more often on both Form C (tested against the non-oppositional alternative labeled as number two, above) and on Form A (tested against the oppositional alternative labeled as number one, above). The remaining three cases where the logic of oppositionality failed to be the most powerful heuristic were item numbers 6, 11, and 16 on the scale (see Appendix A), in respective order as follows:

John did not start his new job in the Summer.

1) John started his new job in the Winter. (oppositional)

2) John started his new job in the Fall.

3) John started his new job in the Spring. *

Bob refuses to work overtime.

1) Bob would like to find another job. (oppositional)

2) Bob tires easily.

3) Bob is holding down two jobs. *

Barry threw up his hands, but not as a gesture of victory.

1) Barry was indicating defeat. (oppositional)

2) Barry was indicating frustration.

3) Barry was indicating exhaustion. *

Although the starred non-oppositional alternative was chosen significantly more often on Form C in all three cases listed above, no significant selection preference arose when it was tested against the oppositional alternative.

Thus, in 75% of the cases in which a selection bias favoring one or the other of the non-oppositional alternatives arose on Form C, the heuristic power of oppositionality overrode this preference.

Overall, then, the findings strongly support our prediction that oppositionality is a key heuristic in reasoning from premises framed in a negational fashion. For 30% of the items on Form A and 40% of the items on Form B, subjects chose the oppositional alternative significantly more often than either of the non-oppositional alternatives. Most importantly, oppositionality was a more powerful heuristic than significant selection biases favoring one of the non-oppositional alternatives on Form C in all but four cases.

Hypothesis 2 suggests that the trend towards selecting the oppositional alternative on Forms A and B will be more significant for the 15 items framing direct implications than for the 15 framing indirect implications. Out of the 22 items in which the oppositional alternative was chosen significantly more often, 10 of them were direct and 12 were indirect. This difference failed to reach significance; hence, Hypothesis 2 was not supported.

Experiment II: Moving an Impression Oppositionally Following Information that is Presented as a Negation

The experimental hypothesis for Experiment II predicted that subjects who received additional information presented in a negational form would evidence a greater change of opinion than those who received the same information framed non-negationally. Thus the dependent variable in Experiment II was the difference score obtained by subtracting the subject's initial rating along the personality (i. e., introversion-extraversion) or character (i. e.,

selfish-unselfish) dimensions from their second rating along these dimensions. As outlined above, the second rating was made following the presentation of additional information which contradicted the initial judgment and which was framed in either negational or non-negational form. Thus, the larger the difference score obtained, the greater the change in opinion. Since the ratings were made along a 25-point scale, the possible range of absolute values for the difference score was from 0 to 24. In actuality, the difference scores ranged in absolute value from 0.05 to 21.0. The absolute value of this difference score was used in all cases except those in which the second rating was made in a direction opposite than that expected. For example, if a subject initially rated the target as selfish, he or she would subsequently receive additional information describing the target in wholly unselfish terms; thus it would be expected that the second rating would be made in the direction of the "unselfish" end of the dimension. However, if in this case the subject rated the target as more selfish than he or she had initially, the resulting difference score would be assigned a negative value. Actually, only four subjects evidenced a change in opinion in the direction opposite that expected, and all of these were in Sample 2 (selfish-unselfish).

As will be described in more detail below, the difference scores were submitted to a 2 (sex) X 2 (negation vs. non-negation) X 2 (introversion vs. extraversion in Sample 1; selfish vs. unselfish in Sample 2) factorial analysis of variance. All the variables in the experiment are between-subject's variables. As described above, Experiment II actually consisted of two separate studies, one in which the target was described in terms of the personality dimension introversion - extraversion, and one in which the target was described in terms

of the character dimension selfish - unselfish. We will take up the results from these two samples (hereafter referred to as Samples 1 and 2) separately below.

Sample One: Introversion - Extraversion

In the first of these studies, then, the factors in the design included sex, direction of the initial rating (introversion-extraversion), and form of the secondary information (negation - non-negation). (The raw data can be found in Appendix C). Table 3 presents the means and standard deviations of the difference scores arrayed according to experimental condition. The number of subjects in each condition was approximately equal, with 23 subjects in the extraversion-negation condition (12 females, 11 males), 21 subjects in the extraversion - non-negation condition (11 females, 10 males), 20 subjects in the introversion-negation condition (10 females, 10 males), and 21 subjects in the introversion - non-negation condition (10 females, 11 males).

The hypothesis for Experiment II predicts that subjects who make an initial judgment about the relative presence or absence of (in this case) a personality trait in a target person, and who are given secondary information which contradicts their initial judgment, will evidence a greater change in opinion when the secondary information is framed as a negation than when it lacks this negational quality. This hypothesis can be tested in the main effect for negation vs. non-negation. As can be seen in Table 4, only one comparison between means reached significance, reflected in the strong main effect for negation - non-negation ($F = 8.674$, $df = 1$, $p < 0.004$). There were no other significant main effects nor were there any significant interactions.

Since a main effect for negation - non-negation was obtained, we conducted a Duncan Multiple Range analysis in order to determine which mean

Table 3
Means and Standard Deviations of Difference Scores for Introversion vs.
Extraversion

| | | Initial Rating of Personality | |
		Introversion	Extraversion
Form of Additional Information			
	Negation	12.26	13.02
	(SD)	(3.62)	(3.80)
	Non-negation	9.02	11.12
	(SD)	(4.29)	(4.50)

Note: The larger the difference score, the greater the change from the initial
rating to the second rating.

Table 4
Analysis of Variance of the Difference Scores by Introversion vs. Extraversion, Negation vs. Non-negation, and Sex

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig of F
Main effects	224.439	3	74.813	4.491	.006
I-E	39.958	1	39.958	2.399	.126
NEG	144.489	1	144.489	8.674	.004
SEX	43.885	1	43.885	2.634	.109
2-Way Interactions	15.131	3	5.044	.303	.823
I-E NEG	9.103	1	9.103	.546	.462
I-E SEX	6.059	1	6.059	.364	.548
NEG SEX	0.130	1	0.130	.008	.930
3-Way Interactions	3.076	1	3.076	.185	.669
I-E NEG SEX	3.076	1	3.076	.185	.669
Explained	242.646	7	34.664	2.081	.056
Residual	1282.660	72	16.658		
Total	1525.306	79	18.158		

differences were significant. This analysis revealed that the means rank ordered as predicted, with the mean of Extravert - Negation group (X = 13.02) ranked above that of the Extravert - Non-negation group (X = 11.12), and the mean the Introvert - Negation group (X = 12.47) ranked above that of the Introvert - Non-negation group (X = 9.02). The only difference between these pairs that proved significant (alpha = 0.05), however, was that between the Introvert - Negation and Introvert- Non-negation groups.

In order to be certain that the significant main effect did indeed reflect the influence of the experimental manipulation (i. e., negational vs. non-negational additional information), it was important to confirm that the subjects in these two groups came from the same population (or were, in other words, truly randomly assigned to either the negational or non-negational conditions). Thus, we needed to determine whether the subjects who had received additional information framed in negational form differed significantly on their initial rating along the introversion-extraversion dimension from subjects who received additional information framed in a non-negational manner. To test this, we conducted a 2 (negation vs. non-negation) X 2 (introversion vs. extraversion) factorial analysis of variance on the first rating the subjects made along the introversion-extraversion dimension. The test of whether or not the subjects came from the same population would be interpreted in the interaction between introversion-extraversion and negation - non-negation. Table 5 presents the means and standard deviations of the first rating arrayed according to experimental condition.

Table 5
Means and Standard Deviations of Introversion - Extraversion Initial Ratings
Arrayed According to Negation vs. Non-negation

| | Initial Rating of Personality | |
	Introversion	Extraversion
Form of Additional Information		
Negation	16.91	7.77
(SD)	(1.92)	(1.86)
Non-negation	15.76	6.86
(SD)	(1.90)	(2.77)

Note: The initial ratings were made along the dimension introversion - extraversion, ranging from zero ("extraverted") to 25 ("introverted"). Subjects making an initial rating below the midpoint of 13 are characterized as belonging to the "extraversion" group, whereas those making an initial rating above the midpoint are characterized as belonging to the "introversion" group.

The analysis of variance did reveal a significant main effect for negation -
non-negation ($F = 4.964$, $df = 1$, $p < 0.029$); however, the interaction term between
introversion-extraversion and negation - non-negation failed to reach
significance ($F = 0.063$, $df = 1$, $p < 0.803$). Since the significant main effect
reflects the effect of negation - non-negation collapsed across the
introversion-extraversion condition, it is not clearly interpretable until we take
some purely statistical factors into consideration. Note that in collapsing across
the introversion-extraversion conditions, the means on which the main effect
is based reflect the adding of ratings which began on the introverted side of the
dimension (right side of the midpoint) to ratings which began on the
extraverted side of the dimension (left side of the midpoint). Thus, the most that
the significant main effect can tell us "as such" is that the distribution of the
negational group falls slightly to the right of the distribution for the
non-negational group. To ascertain whether a consistent bias in the magnitude
of the first rating occurred between the two groups, we must examine the means
and standard deviations of the initial rating for the four sub-groups of
subjects--that is, the introverted-negation group, the introverted -
non-negation group, the extraverted-negation group, and the extraverted -
non-negation group.

The means in Table 5 show that those subjects whose initial rating fell on
the introverted side of the dimension and who got additional information
framed in negational terms ($M = 16.91$, $SD = 1.92$) did, on the average, start
farther away from the midpoint of the scale (13) than those subjects who also
rated the target as introverted initially, but who got additional information
framed in a non-negational fashion ($M = 15.76$, $SD = 1.90$). This suggests that

subjects in the introversion-negation group had a greater distance to move along the scale when making their second rating than did the introversion - non-negation group. Although this finding is in the direction of the effect predicted by the experimental hypothesis and might suggest the presence of a sampling artifact which could account for the findings, this bias is essentially canceled out by a bias in the opposite direction for the extraverted-negation and extraverted - non-negation groups. Thus, when we examine the means of the initial ratings for extraverted - negation (M = 7.77, SD = 1.86) and extraverted - non-negation (M = 6.86, SD = 2.77) groups, we see that the subjects who received non-negational additional information had farther to move in this case. The cancelling effect of the two contrasting biases is reflected in the non-significant interaction between introversion-extraversion and negation - non-negation mentioned above (F = .063, df = 1, p < 0.803).

Finally, we were interested in examining the relationship between the likableness-dislikableness ratings and the second rating which the subjects made along the introversion-extraversion dimension. If such an analysis were to reveal a significant positive correlation between these two sets of ratings, it might suggest either one of two things--that the subject's affective assessment of the target (as measured by their like-dislike rating) was reflective of feelings towards the target based on all the information they had been presented with, or that the likeableness-dislikeableness rating reflected an affective assessment (presumably based on their first judgment about the target) which had influenced the direction and magnitude of their second rating. In the first case, it would be the content and form of the information on which the affective assessment was based; in the second case, it would be the affective assessment

which determined the magnitude of change--thus, the second explanation could be framed as a competing one with the experimental hypothesis. Table 6 presents the means and standard deviations of the like-dislike ratings arrayed according to experimental condition. A 2 (introversion vs. extraversion) by 2 (negation vs. non-negation) analysis of variance conducted on the like-dislike ratings did not reveal any significant differences among the mean like-dislike ratings as a function of negational versus non-negational phrasing of the additional information ($F = 0.106$, df $= 1$, $p < 0.745$). It is worth noting that although the negational versus non-negational phrasing of the additional information did have a significant effect on the dimension of interest (i. e., introversion-extraversion), it had no such effect on the important but irrevelant dimension of like-dislike.

Table 7 presents the within-cell correlations of the like-dislike rating with the second rating along the introversion-extraversion dimension. These ratings are informative in that they demonstrate that the second rating was not highly correlated with the like-dislike ratings, and thus the affective assessment hypothesis cannot be put forth as an alternative explanation for the positive findings.

Overall, then, these results clearly provide strong support for our hypothesis that subjects will evidence a greater change of opinion, moving more towards the end of the dimension opposite their initial rating, when presented with contradictory information framed negationally than when presented with the same information framed in a non-negational manner.

Table 6
Means and Standard Deviations of the Like-Dislike Ratings Arrayed According to
Introversion vs. Extraversion and Negation vs. Non-negation

| | Initial Rating of Personality | |
	Introversion	Extraversion
Form of Additional Information		
Negation	8.22	9.63
(SD)	(4.06)	(4.25)
Non-negation	8.31	10.10
(SD)	(3.36)	(3.82)

Note: The like-dislike ratings were made along a dimension of like-dislike,
ranging from zero ("likable") to 25 ("dislikable"). These ratings were made
after the second rating along the introverted-extraverted dimension.

Table 7
Correlations Between Like-Dislike Ratings and the Second
Introversion-Extraversion Ratings Arrayed According to Introversion vs.
Extraversion and Negation vs. Non-negation

| | Initial Rating of Personality | |
	Introversion	Extraversion
Form of Additional Information		
Negation	-0.0340	0.2791
Non-negation	0.2652	-0.0714

Note: A positive correlation within a condition reflects that as the second rating along the introversion-extraversion dimension moved more towards the "extraverted" end of the dimension, the like-dislike rating tended to move more towards the "likable" end of the dimension, and as the second rating moved more towards the "introverted" end of the dimension, the like-dislike rating tended to move more towards the "dislikable" end of the dimension. A negative correlation within a condition reflects that as the second rating along the introversion-extraversion dimension moved more towards the "extraverted" end of the dimension, the like-dislike rating tended to move more towards the "dislikable" end of the dimension, and as the second rating moved more towards the "introverted" end of the dimension, the like-dislike rating tended to move more towards the "likable" end of the dimension.

Sample Two: Selfish - Unselfish

With the second of these two samples, we were interested in replicating the findings concerning the differential effect of negational vs. non-negational information on opinion change using a character trait description instead of a personality trait description of the target. Thus, in this second sample, the factors in the design included sex, direction of the initial rating (selfish-unselfish), and form of the additional information (negation - non-negation). (The raw data can be found in Appendix C). The number of subjects in each condition was approximately equal, with 23 subjects in the unselfish-negation condition (10 females, 13 males), 26 subjects in the unselfish - non-negation condition (14 females, 12 males), 24 subjects in the selfish-negation condition (11 females, 13 males), and 21 subjects in the selfish - non-negation condition (10 females, 11 males). As in Sample 1, the dependent variable was the difference score obtained by subtracting the first rating along the dimension (in this case, selfish-unselfish) from the second rating made along the same dimension. Table 8 presents the means and standard deviations of the difference scores arrayed according to experimental condition.

Our hypothesis predicts that subjects who make an initial judgment about the relative presence or absence of a character trait in a target person, and who are given additional information which contradicts their initial judgment, will evidence a greater change in opinion when the additional information is framed as a negation than when it lacks this negational quality. This hypothesis can be tested in the main effect for negation vs. non-negation. As can be seen in Table 9, the analysis of variance did not reveal a main effect for negation - non-negation (F = 1.983, df = 1, p < 0.163), nor did it reveal any other

Table 8
Means and Standard Deviations of Difference Scores for Selfish vs. Unselfish

| | Initial Rating of Personality | |
	Selfish	Unselfish
Form of Additional Information		
Negation	11.92	12.02
(SD)	(4.95)	(4.28)
Non-negation	9.00	11.44
(SD)	(6.56)	(5.54)

Note: The larger the difference score, the greater the change from the initial rating to the second rating.

Table 9
Analysis of Variance of the Difference Scores by Selfish vs. Unselfish, Negation vs. Non-negation, and Sex

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig of F
Main effects	126.423	3	42.141	1.428	.240
U-S	38.744	1	38.744	1.313	.255
NEG	61.941	1	61.941	2.099	.151
SEX	27.456	1	27.456	.930	.337
2-Way Interactions	61.652	3	20.551	.696	.557
U-S NEG	33.419	1	33.419	1.132	.290
U-S SEX	8.551	1	8.551	.290	.592
NEG SEX	20.147	1	20.147	.683	.411
3-Way Interactions	.532	1	.532	.018	.893
U-S NEG SEX	.532	1	.532	.018	.893
Explained	188.608	7	26.944	.913	.501
Residual	2537.999	86	29.512		
Total	2726.606	93	29.318		

significant main effects or any significant interactions.

It was important to confirm that the subjects in these two groups did indeed come from the same population (or, were randomly assigned to either the negational or non-negational conditions), since a non-random assignment of subjects to groups might possibly have influenced the results in the direction of non-significance. Thus, we needed to determine whether the subjects who had received additional information framed in negational form differed significantly on their initial rating along the selfish-unselfish dimension from subjects who received secondary information framed in a non-negational manner. To test this, we conducted a 2 (negation vs. non-negation) X 2 (selfish vs. unselfish) factorial analysis of variance on the first rating the subjects made along the introversion-extraversion dimension. (Table 10 presents the means and standard deviations of the initial ratings arrayed according to experimental condition.) The test of whether or not the subjects came from the same population would be interpreted in the interaction between selfish-unselfish and negation non-negation. The analysis of variance did not reveal a significant main effect for negation - non-negation ($F = 0.009$, $df = 1$, $p < 0.926$), nor did it reveal a significant interaction term between selfish-unselfish and negation - non-negation ($F = 0.138$, $df = 1$, $p < 0.711$). Thus, it can be safely assumed that the subjects were randomly assigned to either one or the other of the negation - non-negation conditions.

Finally, we were interested in examining the relationship between the likableness-dislikableness ratings and the second rating which the subjects made along the selfish-unselfish dimension. If such an analysis were to reveal

Table 10
Means and Standard Deviations of Selfish-Unselfish Initial Ratings Arrayed
According to Negation vs. Non-negation

| | Initial Rating of Personality | |
	Selfish	Unselfish
Form of Additional Information		
Negation	17.90	7.37
(SD)	(2.77)	(2.32)
Non-negation	17.60	7.54
(SD)	(3.47)	(3.40)

Note: The initial ratings were made along the dimension selfish-unselfish,
ranging from zero ("unselfish") to 25 ("selfish"). Subjects making an initial
rating below the midpoint of 13 are characterized as belonging to the
"unselfish" group, whereas those making an initial rating above the midpoint
are characterized as belonging to the "selfish" group.

a significant positive correlation between these two sets of ratings, it might suggest either one of two things--that the subject's affective assessment of the target (as measured by their like-dislike rating) was reflective of feelings towards the target based on all the information they had been presented with, or that the likableness-dislikableness rating reflected an affective assessment (presumably based on their first judgment about the target) which had influenced the direction and magnitude of their second rating. In the first case, it would be the content and form of the information which determined the affective assessment; in the second case, it would be the affective assessment which determined the magnitude of change--thus, the second explanation could be framed as a competing one with the experimental hypothesis. Table 11 presents the means and standard deviations of the like-dislike ratings arrayed according to experimental condition. Consistent with what one might have predicted, we can see that subjects who initially rated the target as selfish and received additional information describing the target in wholly unselfish terms saw him or her as much more likable than did those subjects who initially rated the target as unselfish and received additional information describing the target in wholly selfish terms.

Table 12 presents the within-cell correlations of the like-dislike rating with the second rating along the selfish-unselfish dimension. These ratings are informative in that they demonstrate that the second rating was highly correlated with the like-dislike ratings in three of the conditions: selfish-negation, selfish - non-negation, and unselfish - non-negation. Thus, it

Table 11
Means and Standard Deviations of the Like-Dislike Ratings Arrayed According to
Selfish vs. Unselfish and Negation vs. Non-negation

| | Initial Rating of Personality | |
	Selfish	Unselfish
Form of Additional Information		
Negation	6.83	18.20
(SD)	(3.62)	(4.86)
Non-negation	9.07	17.90
(SD)	(5.49)	(6.04)

Note: The like-dislike ratings were made along a dimension of like-dislike,
ranging from zero ("likable") to 25 ("dislikable"). These ratings were made
after the second rating along the selfish-unselfish dimension.

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Table 12

Correlations Between Like-Dislike Ratings and the Second Selfish-Unselfish
Ratings Arrayed According to Selfish vs. Unselfish and Negation vs.
Non-negation

| | | Initial Rating of Personality | |
		Selfish	Unselfish
Form of Additional Information			
	Negation	0.2163	0.8292*
	Non-negation	0.9032*	0.7736*

*$p < 0.001$. Note: A positive correlation within a condition reflects that as the
second rating along the selfish-unselfish dimension moved more towards the
"unselfish" end of the dimension, the like-dislike rating tended to move more
towards the "likable" end of the dimension, and as the second rating moved more
towards the "selfish" end of the dimension, the like-dislike rating tended to
move more towards the "dislikable" end of the dimension.

does appear that some systematic relationship between the like-dislike ratings and the second ratings made along the selfish-unselfish dimension exists. The possible interpretation(s) of this relationship will be discussed in more detail in Chapter V.

Chapter 5

Discussion and Conclusion

The present research sought to extend the tenets and findings of logical learning theory to the area of social inference and impression formation. Although much research has been motivated by a desire to understand the processes by which people make educated guesses or draw inferences about their social world, the majority of such research has been informed by mediational theories of cognition. Instead of construing the processes underlying social inference as cognitive mechanisms mediated by environmental stimuli, our interest is in presenting an alternative, predicational account of such processes--an account capable of incorporating the notion of people as able to reason both demonstratively and dialectically (oppositionally) in framing attributions. In so doing, we sought to take a further step (see Rychlak, 1987) towards validating a conceptual distinction between inference and implication as two forms of social reasoning. In developing a scheme for presenting information in such a way as to potentiate the drawing of implications, we appropriated Aristotle's (1952) concept of negation. In reasoning from premises framed in a negational fashion, subjects had to reason from premises which did not have clear or certain demonstrative meaning; thus, subjects had to rely upon some strategy (or strategies) for predicting the intended meaning of such statements.

The two experiments carried out in this thesis were designed to test hypotheses relevant to the position outlined above. Hypothesis 1 of the first experiment predicted that subjects who are asked to choose between two possible explanations for the behavior of an individual will, when the behavioral description is presented in the form of a negation, select the one of the two alternatives which is most opposite in meaning to the premise being negated in the statement. Hypothesis 2 of the first study predicted that the expected effect outlined in Hypothesis 1 would be stronger for the direct implications than for the indirect implications.

As described in Chapter IV, the Chi Square analyses were performed on the items of Forms A, B, and C. These analyses revealed that the oppositional alternative was chosen significantly more often for 30% of the items on Form A and for 40% of the items on Form B. The most definitive test of our hypothesis also revealed supportive results, in that in 75% of the cases in which a selection bias favoring one or the other of the non-oppositional alternatives appeared on Form C, the heuristic power of oppositionality overrode this preference. Thus, the overall findings strongly support our prediction that oppositionality is a key heuristic in the drawing of implications.

Of the four cases which went against Hypothesis 1, only one case (item 19 of the scale) arose in which the selection preference for a non-oppositional alternative (selected significantly more often on Form C) clearly overrode a selection preference for the oppositional alternative. In this instance, the alternative chosen significantly more often seems to reflect a clear (non-oppositional) cultural bias.

In each of the other three cases that went against Hypothesis 1 there was also a selection preference for one of the non-oppositional alternatives on Form C; however, since there was no selection preference for the oppositional alternative exhibited on either of Forms A or B, the most decisive test could not be conducted. In these instances which went against the hypothesis it is not clear whether some shared cultural bias was underlying the subjects' selection preferences, or whether the alternatives designated as oppositional were perhaps not as clearly opposite in meaning to the premise being negated as they could have been. Future research in this area could be preceded by supplemental pilot work in order to develop additional statements with clear opposites.

Although Hypothesis 1 received strong support, Hypothesis 2 concerning the direct versus indirect items was not supported. This could possibly be due to the difficulty in composing direct oppositional items which did not appear somewhat simplistic. An example of one such item is as follows:

Debbie never parked her car at the front of the parking garage.

Debbie parked her car at the rear of the garage. (oppositional)

Debbie parked her car at the middle of the garage.

Debbie parked her car at the side of the garage.

These items might have prompted subjects to react "oppositionally" and fail to mark what seemed the obvious or simple answer.

The experimental hypothesis for Experiment II predicted that subjects who received additional information presented in a negational form would evidence a greater change of opinion than those who received the same information framed non-negationally. Sample 1 consisted of subjects presented with

information describing the target in terms of the personality trait introversion-extraversion. The analysis of variance did reveal a strong main effect for negation - non-negation, supporting our hypothesis. No significant correlations were found between liking-disliking and the final ratings when examined for each of the conditions. Thus it appears that that the significant main effect was clearly the result of the negational versus non-negational framing of the information, and was not due merely to some affective assessment of the target, based on the initial information presented. Overall, the results from Sample 1 demonstrated strong support for our hypothesis.

The Sample 2 results are more difficult to interpret, however. Sample 2 consisted of subjects presented with information describing the target in terms of the character trait selfishness-unselfishness. This time, the analysis of variance did not reveal a main effect for negation - non-negation, nor did it reveal any significant interactions. The three positive correlations between the like-dislike ratings and the final ratings can perhaps shed some light on the reasons for this.

Although we had no specific a priori hypotheses concerning the relationship between the like-dislike scores and the subjects' second rating along the unselfish-selfish dimension, the findings of our correlational analysis did prove interesting and potentially instructive. The results revealed that, for the selfish-negation, selfish-non-negation, and unselfish - non-negation conditions (where selfish and unselfish refer to the direction of the subjects' initial ratings), the like-dislike ratings were highly correlated with the final ratings made along the selfish-unselfish dimension. The fact that all these correlations were positive reflects that as the second rating along the

selfish-unselfish dimension moved more towards the "unselfish" end of the dimension, the like-dislike rating tended to move more towards the "likable" end of the dimension, and as the second rating moved more towards the "selfish" end of the dimension, the like-dislike rating tended to move more towards the "dislikable" end of the dimension.

One possible explanation of these three highly significant correlations could be derived from the fact that the <u>character</u> dimension of selfish-unselfish reflects the formation of a more "moral" and therefore perhaps more affectively-tinged judgment than does rating along the introversion-extraversion dimension. In other words, the "personality" assessment of an individual along the dimension *introversion-extraversion* represents much less of a consensually-validated value judgment than does the "characterological" assessment of a person along the dimension *selfish- unselfish*. Thus, the affective assessment of the selfish and unselfish behaviors described may have been potent enough to render the effect of the form of the information (i. e., negational versus non-negational) non-significant.

The high correlations seem to suggest that the subjects' like-dislike rating reflected their affective assessment of the target based on all the information presented, at least as it was reinterpreted in light of the contradictory additional information the subjects received. Since we did not obtain initial like-dislike ratings from the subjects, assessing the exact nature of the relationship between the ratings of selfish-unselfish and the ratings of like-dislike is problematic. In addition, as is apparent in Table 11 (which displays the means of the like-dislike ratings according to experimental condition), there seems to be no systematic relationship between the form of the additional information

that subjects received--negational or non-negational--and the magnitude of the like-dislike ratings. These findings seem ultimately to suggest that when the target dimension is a highly evaluative one (such as is the case with the selfish-unselfish dimension) the resulting ratings along that dimension may reflect an affective assessment of the target which renders insignificant any potential effect of negational versus non-negational phrasing of the information.

The strong positive correlations between the Sample 2 like-dislike ratings and the second ratings along the selfish-unselfish dimension in three of the four conditions also suggest some questions that could be addressed in future research. Initially, one could attempt to replicate the results obtained with the Sample 1 (introversion-extraversion) subjects while using a dimension for which the moral connotation of the behaviors was not quite as strong as that for the selfish-unselfish dimension, but perhaps somewhat stronger than with the introversion-extraversion dimension. For example, ratings made along a dimension such as cautious-impulsive might reflect less of a moral judgment than those made along the selfish-unselfish dimension, but more of one than those made along the introversion-extraversion dimension. Instead of making only one rating of like-dislike, subjects could make two ratings along this dimension--one just after their first rating along the personality dimension and one after their final rating. This slight modification in procedure would provide a clearer picture of the relationship between the two sets of ratings than that obtained using the present design.

As discussed in Chapter II, research has shown that negative information often carries more weight than positive information does (Kanouse & Hansen,

1972). For example, when subjects are evaluating a target whose behavior involves attributes having moral connotations, the target's performance of a socially undesirable behavior often tends to have an overriding impact on the subject's overall judgment of the target on the particular dimension. This effect has been found to hold even when the socially undesirable behavior of the target is clearly inconsistent with the target's past behavior (Jones & Davis, 1965).

Such a negativity bias was not evident in our results, in that the difference for subjects who received additional information describing the target in selfish (negative) terms were not greater than those for subjects who received additional information describing the target in unselfish (positive) terms. Our experimental design is somewhat different than that employed in the studies finding negativity biases, however. Our design differed in that, although the additional information was inconsistent with the direction of the subject's initial rating, it was not necessarily wholly inconsistent with the initial information presented (which contained an equal number of statements describing the target in selfish and unselfish terms). However, in a future study it would be interesting to assess the effect of negational versus non-negational phrasing on the negativity biases as reported in the literature. Thus, in this context, one could assess whether negationally-framed negative information would have a greater impact on the formation of a negative impression than positive information (also framed negationally) would have on the formation of a positive impression.

In the two experiments we conducted, we focused only on the drawing of oppositional implications from premises framed as negations. However, as

discussed in Chapter II, we do not claim that implications can only be drawn from premises framed in negational form, nor that they are always made to the opposite of the premise being negated. One example of an instance in which an implication may be drawn from information framed in a non-negational fashion is when someone is "damned by faint praise." Suppose that, after winning seven gold medals in the 1972 Olympics, Mark Spitz's coach had congratulated him with "nice job" or "good work." In this case the congratulatory remark, even though it is positive, is not quite on par with the magnitude of the accomplishment. Thus, since the praise ("nice job") does not quite fit with the assumed context (a record number of gold medals won by an individual), the recipient of such "praise" (in this case, Mark Spitz) might not accept the statement as demonstratively "true;" instead, he might be led to wonder what was implied by such a statement. The implication he might ultimately draw could be an oppositional one (e. g., "My coach thinks I could have done better") or it could be non-oppositional (e. g., "My coach is holding a grudge against me for missing those last three practices").

Alternatively, a person might also be "damned by faint criticism." As an example, imagine that a teenager who is not of legal driving age takes the family car for a "joyride" one night and wrecks it in a ditch. His father fails to comment on the incident except to say "Try not to do it again." In this case, the son might expect his father to really take him to task for his irresponsibility. Although there a number of conclusions he could draw about why his father did not do so, including that his father was just being sympathetic and letting him off easy this one time, he might conclude that his father's temperate remark implied an indifference or lack of concern about him.

The above examples highlight the fact that whether an inference or implication will be drawn from a particular premise (statement, etc.) depends, in large part, upon the degree to which the reasoner views the premise as "primary and true" or as having demonstratively given meaning. This level or certainty regarding the demonstrative truth of the premise often seems to be related to the appropriateness of the premise to the context in which it arises. Although any given premise can, in principle, stand as the point of departure for an inference, implication, or both, the sort of reasoning the individual ultimately engages in may be dependent on how the premise "fits" with the context as the individual has been construing it. When the premise does fit the individual's understanding of the context, he or she may be most likely to accept the premise as demonstratively given and reason inferentially from it. However, when the premise does not seem to follow or "fit" the individual's understanding of the context, he or she may begin reasoning oppositionally in order to discern what might be implied by such a premise.

Studies designed to test our hypothesis that implications are drawn from both premises framed as negations and premises framed in non-negational form, as well as studies designed to test our hypothesis concerning the effect of the "fit" between premises and their contexts (as construed by the reasoner) on the drawing of inferences versus implications could prove instructive in furthering our understanding of when people may tend to reason demonstratively and when they tend to reason oppositionally. One could design a study modeled on the "faint praise" and "faint criticism" examples given above, using both non-negationally and negationally-framed "praise" and "criticism" statements, and manipulating the contexts so as to make the

statements seem alternately appropriate and inappropriate to the context. Through such a design, one could assess the hypothesized effects of the two types of phrasing and the "fit" with the context as described above.

Another possible line of investigation is suggested by the body of research concerning the relationship between reinforcement value and learning (summarized in Rychlak, 1988, Chapter 9). In his logical learning theory, Rychlak (1988) argues that affective assessment represents an individual's innate capacity to evaluate items of cognition in terms of like-dislike. Reinforcement value, an idiographic measurement of subjects' ratings of the likability of items (pictures, designs, words, trigrams, etc.), is the methodological construct paralleling affective assessment. As studies in this line of research have illustrated, certain groups of subjects (e. g., alcoholics, persons diagnosed as schizophrenic) tend to learn words (trigrams, etc.) that they have rated as dislikable (i. e., words having negative reinforcement value) more readily than those they have rated as likable. This trend towards learning along the negative is in contrast to a positive reinforcement value effect (in which liked words or trigrams are learned more readily) obtained using subjects drawn from a "normal" population.

Given that, for example, persons diagnosed as schizophrenic tend to learn more along the negative in terms of reinforcement value, one might hypothesize that they also tend to transform statements or premises into negational form more often than individuals from a "normal" population. Such individuals, when presented with a premise such as "He remained a bachelor" might cognitively transform this premise into a negation, such as "He never married." As a result, given our belief that premises framed as negations often

facilitate the drawing of implications, and especially implications to the opposite of the premise being negated, we might hypothesize that individuals diagnosed as schizophrenic would be more likely to draw oppositional implications from non-negationally framed premises than would "normal" controls. This hypothesis could be tested by presenting a group of individuals diagnosed as schizophrenic and a group of "normal" control subjects with a set of premises framed in a non-negational fashion and a set of alternative response choices for each non-negational premise. The set of alternative response choices for each item could include a "conclusion" which could be derived from drawing a direct inference from the premise, a conclusion which would exemplify a non-oppositional implication drawn from the negational form of the premise, and a conclusion which represented an oppositional implication derived from the negational form of the premise. One could then assess whether the individuals diagnosed as schizophrenic did, indeed, tend to draw more implications, and whether these implications tended to be oppositional ones.

As should have been apparent after the discussion in Chapter II of existing theories of social cognition and impression formation, theorists from the mediational tradition have not been led to make the sort of predictions concerning negation and oppositional reasoning that we have in the present research. This is not surprising, given that such theories are grounded solely on demonstrative assumptions. Since such theories do not postulate an innate capacity for oppositional reasoning, any instances of people reasoning to the opposite are viewed simply as additional phenomena to be explained in a demonstrative fashion. In the case where a person reasoning to the opposite

would contradict the predictions of such a theory, the theory's proponents can always make recourse to the person's idiosyncratic (mediated) learning history in an attempt to explain the "anomaly."

Out of all the theories discussed in Chapter II, Anderson's (1981) information integration theory is the only one to explicitly address the effect of different sorts of information on the formation of an overall impression. Although he does assert that items of information may be weighted differently in the process of forming an impression, his theory provides no a priori grounds for predicting that negational information would carry more "weight" in the changing of an impression towards the opposite than would non-negational information (as we predicted in Study II). Anderson could only come to such a conclusion based on an a posteriori interpretation of a pattern of results such as that obtained for Sample 1 of Study II. Thus, logical learning theory is the only account in the literature which provides the theoretical language necessary to capture the individual as oppositional reasoner. It provides the most parsimonious and logically consistent explanation of the results obtained in Study I and with Sample 1 of Study II.

In conclusion, the results of the present thesis were, overall, supportive of the tenets of logical learning theory. The predicational model outlined by Rychlak (1988) provides a foundation for considering the human as a social reasoner making an active contribution to the construction of his or her social world. Logical learning theory also provides the theoretical tools to transcend the circularity of many of the mediational accounts of social reasoning. In addition, the more specific distinction between inference and implication and

different modes of reasoning in which they are grounded would appear to make a unique and instructive addition to the current, purely demonstrative accounts of social reasoning.

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APPENDIX A

IMPLICATIONS AND INFERENCES SCALE

Sometimes we hear one statement about a person, and based on this statement we can draw some inferences or implications concerning that person's behavior, motives, or personality style. For example, we might hear it said that "Greg is a loud talker and comments on every little thing." From this statement we might then form anopinion along a couple of lines, such as:

Greg does not want to be misunderstood.
Greg likes to be noticed by others.

There are other implications or inferences possible, but in this task you will be asked to select the best of two possible alternatives. This scale has 30 items, each with a statement about a person and two options to select from, as follows:

Virginia never accepts the blame for anything when it goes wrong.

_____A. Virginia knows that she is frequently at fault.

_____B. Virginia is a very careful planner of things.

Your job is to read each of the 30 items on the scale, and then to place an "X" or check-mark on either "A" or "B" alternative based on your best hunch. Keep in mind that there are no right or wrong answers to these items. People differ in the inferences and implications they draw about others. We are interested in your personal opinion based on your best judgment.

READ EACH STATEMENT AND SELECT EITHER "A" OR "B" AS YOUR CHOICE. IF YOU HAVE ANY QUESTIONS, PLEASE RAISE YOUR HAND.

INFERENCES AND IMPLICATIONS SCALE

1) Frank never takes his shirt off in public.
   Form A alternatives: A. Frank catches cold easily.
                            B. Frank is ashamed of his physique.
                            (oppositional)
   Form B alternatives: A. Frank is ashamed of his physique.
                            (oppositional)
                            B. Frank sunburns easily.
   Form C alternatives: A. Frank catches cold easily.
                            B. Frank sunburns easily.

2) Charlotte's face reflected an emotional mood, but it was not happiness.
   Form A alternatives: A. Charlotte was sad.* (oppositional)
                            B. Charlotte was angry.
   Form B alternatives: A. Charlotte was relieved.
                            B. Charlotte was sad.* (oppositional)
   Form C alternatives: A. Charlotte was relieved.
                            B. Charlotte was angry.*

3) Beth does not laugh at off-color jokes.
   Form A alternatives: A. Beth has moral scruples. (oppositional)
                            B. Beth has no sense of humor.
   Form B alternatives: A. Beth is a very shy person.
                            B. Beth has moral scruples. (oppositional)
   Form C alternatives: A. Beth has no sense of humor.
                            B. Beth is a very shy person.

4) Betsy did not raise her eyes
   Form A alternatives: A. Betsy looked straight ahead.
                            B. Betsy lowered her eyes. (oppositional)
   Form B alternatives: A. Betsy lowered her eyes. (oppositional)
                            B. Betsy looked to the side.
   Form C alternatives: A. Betsy looked to the side.
                            B. Betsy looked straight ahead.

5) Malcolm refuses to ride in an elevator.
   Form A alternatives: A. Malcolm has claustrophobia.* (oppositional)
                            B. Malcolm is an exercise enthusiast.
   Form B alternatives: A. Malcolm distrusts machinery.
                            B. Malcolm has claustrophobia.* (oppositional)
   Form C alternatives: A. Malcolm is an exercise enthusiast.*
                            B. Malcolm distrusts machinery.

6) John did not start his new job in the Summer.
   Form A alternatives: A. John started his new job in the Fall.*
                            B. John started his new job in the Winter.
                            (oppositional)

Form B alternatives:	A. John started his new job in the Winter. (oppositional)
	B. John started his new job in the Spring.
Form C alternatives:	A. John started his new job in the Spring.*
	B. John started his new job in the Fall.

7) Rick gave a signal, but it was not to "retreat"

Form A alternatives:	A. Rick's signal was to "advance." (oppositional)
	B. Rick's signal was to "stay in place."
Form B alternatives:	A. Rick's signal was to "get ready."
	B. Rick's signal was to "advance." (oppositional)
Form C alternatives:	A. Rick's signal was to "stay in place."
	B. Rick's signal was to "get ready."

8) Linda never hangs up her clothes.

Form A alternatives:	A. Linda's clothes are hung up by her roommate.
	B. Linda's clothes can be seen draped over furniture. (oppositional)
Form B alternatives:	A. Linda's clothes can be seen draped over furniture. (oppositional)
	B. Linda sends her clothes directly to the laundry.
Form C alternatives:	A. Linda sends her clothes directly to the laundry.
	B. Linda's clothes are hung up by her roommate.

9) Wendy did not order spicy food from the menu.

Form A alternatives:	A. Wendy ordered mild food from the menu.* (oppositional)
	B. Wendy ordered rich food from the menu.
Form B alternatives:	A. Wendy ordered tangy food from the menu.
	B. Wendy ordered mild food from the menu.* (oppositional)
Form C alternatives:	A. Wendy ordered rich food from the menu.*
	B. Wendy ordered tangy food from the menu.

10) Anne did not pick the apples from the upper branches of the tree.

Form A alternatives:	A. Anne picked the apples from the middle branches of the tree.
	B. Anne picked the apples from the lower branches of the tree.* (oppositional)
Form B alternatives:	A. Anne picked the apples from the lower branches of the tree.* (oppositional)
	B. Anne picked the apples from among those that had dropped to the ground.
Form C alternatives:	A. Anne picked the apples from among those that had dropped to the ground.*
	B. Anne picked the apples from the middle branches of the tree.

11) Bob refuses to work overtime.
Form A alternatives: A. Bob would like to find another job.
          (oppositional)
          B. Bob tires easily.
Form B alternatives: A. Bob is holding down two jobs.
          B. Bob would like to find another job.
          (oppositional)
Form C alternatives: A. Bob tires easily.
          B. Bob is holding down two jobs.*

12) Jack's rifle shots did not form a low pattern on the target.
Form A alternatives: A. Jack's rifle shots patterned to the right side.
          B. Jack's rifle shots patterned on the high side.
          (oppositional)
Form B alternatives: A. Jack's rifle shots patterned on the high side.
          (oppositional)
          B. Jack's rifle shots patterned to the left side.
Form C alternatives: A. Jack's rifle shots patterned to the right side.
          B. Jack's rifle shots patterned to the left side.

13) Peter did not applaud the actors at the final curtain of the play.
Form A alternatives: A. Peter has seen better plays. (oppositional)
          B. Peter is reserving his judgment.
Form B alternatives: A. Peter never openly demonstrates his feelings
          about things.
          B. Peter has seen better plays. (oppositional)
Form C alternatives: A. Peter never openly demonstrates his feelings
          about things.
          B. Peter is reserving his judgment.

14) Karen's expression was not that of cooperation.
Form A alternatives: A. Karen's expression was that of disinterest.
          B. Karen's expression was that of opposition.*
          (oppositional)
Form B alternatives: A. Karen's expression was that of opposition.*
          (oppositional)
          B. Karen's expression was that of confusion.
Form C alternatives: A. Karen's expression was that of disinterest.
          B. Karen's expression was that of confusion.*

15) Marta has never received a traffic ticket.
Form A alternatives: A. Marta is a lucky driver. (oppositional)
          B. Marta is a careful driver.
Form B alternatives: A. Marta drives infrequently.
          B. Marta is a lucky driver.* (oppositional)
Form C alternatives: A. Marta drives infrequently.
          B. Marta is a careful driver.*

16) Barry threw up his hands, but not as a gesture of victory.
Form A alternatives: A. Barry was indicating exhaustion.
                                 B. Barry was indicating defeat. (oppositional)
Form B alternatives: A. Barry was indicating defeat. (oppositional)
                                 B. Barry was indicating frustration.*
Form C alternatives: A. Barry was indicating exhaustion.*
                                 B. Barry was indicating frustration.

17) Bruce said he was not impressed by his friend's new car.
Form A alternatives: A. Bruce envies his friend's new possession. (oppositional)
                                 B. Bruce has high standards for automobile performance.
Form B alternatives: A. Bruce is a non-materialistic person.
                                 B. Bruce envies his friend's new possession. (oppositional)
Form C alternatives: A. Bruce is a non-materialistic person.
                                 B. Bruce has high standards for automobile performance.

18) Laura has never disagreed with any of her parent's decisions.
Form A alternatives: A. Laura has very sensible parents.
                                 B. Laura is a submissive person.* (oppositional)
Form B alternatives: A. Laura is a submissive person.* (oppositional)
                                 B. Laura believes in cooperation.
Form C alternatives: A. Laura has very sensible parents.*
                                 B. Laura believes in cooperation.

19) Roy did not eat his doughnut with his breakfast.
Form A alternatives: A. Roy ate his doughnut with his evening meal. (oppositional)
                                 B. Roy ate his doughnut with his lunch.*
Form B alternatives: A. Roy ate his doughnut with his midnight snack.
                                 B. Roy ate his doughnut with his evening meal.* (oppositional)
Form C alternatives: A. Roy ate his doughnut with his midnight snack.
                                 B. Roy ate his doughnut with his lunch.*

20) Lynn has never been seen out on a date.
Form A alternatives: A. Lynn has consistently turned down dates.
                                 B. Lynn is an unpopular person.* (oppositional)
Form B alternatives: A. Lynn is an unpopular person.* (oppositional)
                                 B. Lynn's parents will not let her date.
Form C alternatives: A. Lynn has consistently turned down dates.
                                 B. Lynn's parents will not let her date.*

21) Martin did not leave by the northern route out of town.
Form A alternatives: A. Martin left by the southern route out of town.
                            (oppositional)
                            B. Martin left by the eastern route out of town.
Form B alternatives: A. Martin left by the western route out of town.
                            B. Martin left by the southern route out of town.
                            (oppositional)
Form C alternatives: A. Martin left by the western route out of town.
                            B. Martin left by the eastern route out of town.

22) Roger was not complimented by his boss for doing a certain job.
Form A alternatives: A. Roger's boss simply forgot to compliment him.
                            B. Roger's boss thought the job was only fairly
                            well done. (oppositional)
Form B alternatives: A. Roger's boss thought the job was only fairly
                            well done. (oppositional)
                            B. Roger's boss does not believe in
                            complimenting employees.
Form C alternatives: A. Roger's boss simply forgot to compliment him.
                            B. Roger's boss does not believe in
                            complimenting employees .

23) Debbie never parked her car at the front of the parking garage.
Form A alternatives: A. Debbie parked her car at the rear of the
                            garage. (oppositional)
                            B. Debbie parked her car at the middle of the
                            garage.
Form B alternatives: A. Debbie parked her car at the side of the
                            garage.
                            B. Debbie parked her car at the rear of the
                            garage. (oppositional)
Form C alternatives: A. Debbie parked her car at the side of the
                            garage.
                            B. Debbie parked her car at the middle of the
                            garage.

24) Juan did not answer the question put to him by the teacher.
From A alternatives: A. Juan is too self-conscious.
                            B. Juan needs to study more.* (oppositional)
Form B alternatives: A. Juan needs to study more.   (oppositional)
                            B. Juan was daydreaming.
Form C alternatives: A. Juan is too self-conscious.*
                            B. Juan was daydreaming.

25) Sheila did not place her books on top of the table.
    Form A alternatives: A. Sheila placed her books below the table.
    (oppositional)
    B. Sheila placed her books in front of the table.
    Form B alternatives: A. Sheila placed her books above the table.
    B. Sheila placed her books below the table.
    (oppositional)
    Form C alternatives: A. Sheila placed her books below the table.
    B. Sheila placed her books in front of the table.

26) Gail never leaves a tip.
    Form A alternatives: A. Gail is on a strict budget.
    B. Gail is a cheapskate. (oppositional)
    Form B alternatives: A. Gail is a cheapskate. (oppositional)
    B. Gail does not believe in the practice of
    tipping.
    Form C alternatives: A. Gail is on a strict budget.
    B. Gail does not believe in the practice of
    tipping.

27) Mark did not smile when he looked at the picture.
    Form A alternatives: A. Mark frowned.   (oppositional)
    B. Mark was expressionless.*
    Form B alternatives: A. Mark bit his lip.
    B. Mark frowned.* (oppositional)
    Form C alternatives: A. Mark bit his lip.*
    B. Mark was expressionless.

28) Santos never takes the lead in social situations.
    Form A alternatives: A. Santos believes in group consensus.
    B. Santos is a follower.* (oppositional)
    Form B alternatives: A. Santos is a follower.* (oppositional)
    B. Santos likes to see others excel.
    Form C alternatives: A. Santos believes in group consensus.*
    B. Santos likes to see others excel.

29) Walter told the officer that he did not see the red light change.
    Form A alternatives: A. Walter is lying.* (oppositional)
    B. Walter was blinded by the sun.
    Form B alternatives: A. Walter is usually preoccupied.
    B. Walter is lying.* (oppositional)
    Form C alternatives: A. Walter is usually preoccupied.*
    B. Walter was blinded by the sun.

30) Susan looked for signs of tenderness but they did not materialize.

Form A alternatives: A. Susan did see signs of self-consciousness.
                        B. Susan did see signs of toughness.
                        (oppositional)

Form B alternatives: A. Susan did see signs of toughness.
                        (oppositional)
                        B. Susan did see signs of boredom.

Form C alternatives: A. Susan did see signs of self-consciousness.
                        B. Susan did see signs of boredom.

Note: $*p < 0.05$

DEBRIEFING STATEMENT

In this study we were in fact interested in how you frame inferences or draw implications. You were in only one of three conditions. Some subjects took Form A of the INFERENCES AND IMPLICATIONS SCALE, others took Form B, and still others took Form C.

In Form A an item would be phrased as follows:

William's face reflected an emotion, but it was not sadness.

_____A. William was excited.

_____B. William was happy.

In Form B an item would be phrased as follows:

William's face reflected an emotion, but it was not sadness.

_____A. William was happy.

_____B. William was embarrassed.

In Form C an item would be phrased as follows:

William's face reflected an emotion, but it was not sadness.

_____A. William was embarrassed.

_____B. William was excited.

According to our experimental hypothesis, the alternative "William was happy" (i. e.,"B" in the Form A item and "A" in the Form B item) would be chosen significantly more often than either of the other two alternatives. In addition, any consistent differences in the selection of alternatives on Form C should be overridden by what we are calling the "oppositional" selection (e. g., "William was happy") on Form A and Form B.

The hypothesis we are trying to investigate is that whenever something is negated, we tend to draw conclusions in the opposite direction of what is being negated. Sadness and happiness are opposites; therefore when we are presented with a statement negating William's experience of sadness, we tend to think that his expression must reflect happiness, even though there are other plausible conclusions we could draw concerning his emotional expression.

Please feel free to ask any questions you have concerning the experiment. Do you have any observations on this procedure? We would be interested in anything you would like to tell us about it. Thank you for your cooperation.

APPENDIX B

APPENDIX B

WHAT SORT OF A PERSON IS ROBERT/JANET?

Let's imagine you have just finished high school. One of the young men in your class is named Robert, and you have heard different opinions concerning the sort of person he is. Some people think that he is an unselfish person, but just as many others feel that he is selfish. You have seen him around the school off and on for several years, and even before that you knew him casually when you were both growing up.

As you think about this question of whether Robert is selfish or unselfish, you can recall certain facts about him, as follows:

He always volunteered to help out with school drives and to sell tickets for events. However, he was never willing to stop on his way to school and pick up friends who needed a ride. He never refused to share his lunch money, but was always seen pushing ahead of people in line. He did seem to make an effort to be cheerful most of the time. But when things didn't go his way at basketball practice, he would just up and leave. He never let others borrow things such as pencils, pens, and notebook paper. But, he never refused to help his friends with their homework.

Based on these facts, please mark below whether you would agree with those who saw Robert as selfish, or with those who saw him as unselfish. Place an "X" at the point on the line below that represents your best judgment given the facts you have:

unselfish   selfish

· ·

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ROBERT AFTER A PASSAGE OF TIME

Now let's imagine that several years have passed, years in which you have had the chance to learn further facts about Robert first hand. Here is what you now know about him first hand:

Unselfish/Negation:
> He did not refuse to do volunteer work in the community ,
> when asked to do so.
> He never missed an opportunity to assist his associates at work.
> He was not tight with his money.
> He did not hesitate to loan tapes and books to his neighbors.
> He was never too busy to find time to go out with his friends.

Unselfish/Non-negation:
> He was willing to do volunteer work in the community, when
> asked to do.
> He took every opportunity to assist his associates at work.
> He was generous with his money.
> He was willing to loan tapes and books to his neighbors.
> He always found time to go out with his friends.

Selfish/Negation:
> He was not willing to do volunteer work in the community, when
> asked to do so.
> He never offered assistance to his associates at work.
> He was not generous with his money.
> He was not willing to loan tapes or books to his neighbors.
> He never found time to go out with his friends.

Selfish/Non-negation:
> He was reluctant to do volunteer work in the community, when
> asked to do so.
> He avoided offering assistance to his associates at work.
> He was tight with his money.
> He was reluctant to loan tapes or books to his neighbors.
> He was always too busy to find time to go out with his friends.

Based on all the facts you have gathered over the years, what would you now say about Robert's relative selfishness or unselfishness? You may feel that you don't have enough information or would like to know more. However, please make your best judgment utilizing all the information given. Place an "X" at the point on the line below that represents your best judgment about Robert:

unselfish   selfish

. . . .

Based on what you know about Robert's behavior, please let us know whether you would find such a person likable or dislikable. Place an "X" at the point on the line below that represents your best judgment about Robert in terms of likableness or dislikableness:

likable   dislikable

. . . .

Please list any thoughts you have about Robert that explain why you gave him the three ratings you did.

DEBRIEFING STATEMENT

We are interested in studying how the way in which information is presented to people influences the types of conclusions they draw based on such information. In this study, you were initially presented with descriptive behavioral patterns of a target person, with an equal number of statements reflecting either introversion and extraversion or selfishness and unselfishness. We then asked you to take a position regarding this person's relative introversion-extraversion, or selfishness-unselfishness. We are not particularly interested in how you arrived at this first conclusion. We are interested, however, in looking at the how the way in which we presented the subsequent information affected the second judgment you made regarding the person's introversion/extraversion or selfishness/unselfishness.

Let's say you were in the group which got information describing the target in terms of selfishness and unselfishness, and that you originally located the target on the "selfish" end of the rating continuum. We then presented you with information in contradiction to this position, i. e., with information describing the target as unselfish. However, some of you received this information presented in the form of a negation (e. g., "Robert never refused to help others.") and some of you received this information presented in a non-negational fashion (e. g., "Robert was always willing to help others when asked."). An equivalent procedure was followed for those of you who originally rated the target as "unselfish."

What are we trying to get at? Well, we feel that when the additional information you were given was framed as a negation, you were more likely to change your original opinion in the direction of the opposite opinion than if you were given additional information which was framed in a non-negational manner. We predict this to be the case even though you each received the asme information, just phrased in a different way. We feel this will hold for information that is derived in a tentative or uncertain fashion,because of the role negation plays in suggesting oppositional implications.

Please feel free to ask any questions you have. If you have any observations about the procedure, please don't hesitate to tell us about them.

Thank you for your cooperation.

APPENDIX C

APPENDIX C

Raw Data for Sample 1 of Experiment II

(Sample 1 was composed of subjects who received information describing the target in terms of the personality trait introversion-extraversion.)

Condition 1: Initial Rating of Introverted, Additional Information Framed as Negation

	First Rating	Second Rating	Difference Score	Like-Dislike
Male				
1)	16.0	2.0	14.0	7.5
2)	15.0	2.0	13.0	4.0
3)	17.0	1.0	16.0	12.0
4)	18.5	3.5	15.0	11.5
5)	18.0	1.0	17.0	14.0
6)	18.0	3.0	15.0	8.0
7)	15.0	5.5	9.5	4.0
8)	13.5	3.5	10.0	3.0
9)	19.0	11.0	8.0	9.5
10)	19.5	2.5	17.0	16.0
11)	17.0	3.0	14.0	7.5
Female				
1)	14.0	9.5	4.5	11.0
2)	17.0	10.0	7.0	5.5
3)	18.0	1.5	16.5	6.0
4)	15.0	3.0	12.0	4.5
5)	19.0	6.0	13.0	10.0
6)	18.0	3.0	15.0	10.0
7)	20.0	7.5	12.5	16.5
8)	16.5	2.5	14.0	5.0
9)	18.0	11.5	6.5	7.5
10)	16.5	2.5	14.0	2.5
11)	13.0	2.0	11.0	10.0
12)	17.5	10.0	7.5	3.5

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Condition 2: Initial Rating of Introverted, Additional Information Framed
Non-negationally

	First Rating	Second Rating	Difference Score	Like-Dislike
Male				
1)	18.0	9.0	9.0	7.0
2)	16.0	9.5	6.5	12.0
3)	17.5	2.5	15.0	10.0
4)	14.0	13.5	0.5	12.0
5)	18.5	4.5	14.0	6.0
6)	15.0	4.0	11.0	7.5
7)	14.0	7.0	7.0	5.0
8)	19.5	1.5	18.0	15.0
9)	14.0	6.0	8.0	5.0
10)	16.0	7.0	9.0	4.0
Female				
1)	15.5	3.0	12.5	4.5
2)	14.0	8.0	6.0	6.5
3)	15.0	8.0	7.0	10.0
4)	19.5	6.0	13.5	7.0
5)	15.0	6.0	9.0	7.0
6)	14.0	5.0	9.0	2.5
7)	15.0	12.0	3.0	10.0
8)	17.0	15.0	2.0	12.0
9)	16.0	8.0	8.0	13.5
10)	14.5	3.5	11.0	9.0
11)	13.0	2.5	10.5	9.0

Condition 3: Initial Rating of Extraverted, Additional Information Framed as Negation

	First Rating	Second Rating	Difference Score	Like-Dislike
Male				
1)	7.0	24.0	17.0	15.0
2)	5.5	19.0	13.5	7.0
3)	10.0	24.0	14.0	9.5
4)	8.0	24.0	16.0	6.5
5)	10.5	18.5	8.0	12.0
6)	6.5	24.5	18.0	19.0
7)	6.0	16.0	10.0	2.5
8)	7.5	24.0	16.5	12.0
9)	9.0	19.0	10.0	9.0
10)	11.0	21.0	10.0	11.5
Female				
1)	5.5	21.0	15.5	4.5
2)	9.0	20.0	11.0	12.0
3)	8.0	22.0	14.0	8.0
4)	6.5	20.5	14.0	8.0
5)	8.5	25.0	16.5	6.0
6)	9.0	22.0	13.0	15.5
7)	7.0	12.0	5.0	13.0
8)	10.0	16.0	6.0	3.0
9)	7.0	23.0	16.0	10.5
10)	4.0	20.5	16.5	8.0

Condition 4: Initial Rating of Extraverted. Additional Information Framed Non-negationally

	First Rating	Second Rating	Difference Score	Like-Dislike
Male				
1)	7.0	18.0	11.0	4.5
2)	5.5	20.5	15.0	6.0
3)	10.0	15.0	5.0	5.0
4)	8.5	21.5	13.0	16.0
5)	9.0	16.5	7.5	14.5
6)	4.0	14.0	10.0	12.5
7)	2.5	18.5	16.0	11.0
8)	6.0	23.0	17.0	14.5
9)	11.0	18.5	7.5	8.0
10)	7.0	21.5	14.5	11.0
11)	8.0	20.0	12.0	13.0
Female				
1)	7.0	8.0	1.0	13.0
2)	4.0	18.0	14.0	9.5
3)	12.0	23.0	11.0	5.0
4)	9.5	15.5	6.0	3.5
5)	6.5	20.0	13.5	6.0
6)	2.0	18.0	16.0	13.0
7)	5.0	21.5	16.5	13.0
8)	7.5	12.5	5.0	10.0
9)	3.0	11.0	8.0	13.5
10)	9.0	23.0	14.0	9.5

Raw Data for Sample 2 of Experiment II

<u>Condition 1</u>: <u>Initial Rating of Unselfish, Additional Information Framed as Negation</u>

	First Rating	Second Rating	Difference Score	Like-Dislike
Male				
1)	10.0	19.5	9.5	20.5
2)	6.5	24.0	17.5	20.0
3)	10.5	24.0	13.5	21.5
4)	9.0	24.0	15.0	24.0
5)	6.0	23.0	17.0	24.0
6)	6.0	23.0	17.0	20.5
7)	5.5	19.5	14.0	20.0
8)	6.0	15.0	9.0	11.0
9)	8.0	16.0	8.0	11.0
10)	7.5	15.0	7.5	17.0
11)	12.0	23.5	11.5	20.0
12)	6.0	19.5	13.5	18.0
13)	7.0	9.0	2.0	13.0
Female				
1)	9.0	22.0	13.0	20.0
2)	8.5	19.5	11.0	17.0
3)	5.5	20.0	14.5	20.0
4)	9.0	19.5	10.5	12.5
5)	5.0	20.0	15.0	16.0
6)	9.0	20.0	11.0	21.0
7)	8.0	25.0	17.0	23.5
8)	6.0	20.5	14.5	19.0
9)	8.0	21.0	13.0	24.0
10)	7.0	9.0	2.0	5.0

Condition 2: Initial Rating of Unselfish, Additional Information Framed
Non-negationally

	First Rating	Second Rating	Difference Score	Like-Dislike
Male				
1)	11.0	20.5	9.5	22.0
2)	5.0	16.0	11.0	13.0
3)	7.0	19.0	12.0	12.0
4)	6.0	19.5	13.5	22.0
5)	9.0	23.0	14.0	24.0
6)	2.0	23.0	21.0	22.5
7)	9.0	21.0	12.0	17.0
8)	6.0	25.0	19.0	25.0
9)	10.0	16.0	6.0	13.0
10)	8.5	23.0	14.5	20.0
11)	13.0	15.0	2.0	4.0
12)	13.0	24.5	11.5	24.5
Female				
1)	6.5	19.5	13.0	12.5
2)	12.0	22.0	10.0	24.0
3)	1.0	19.5	18.5	18.0
4)	4.0	20.0	16.0	16.0
5)	7.0	4.0	-3.0	3.0
6)	9.5	16.0	6.5	18.0
7)	4.0	23.5	19.5	23.0
8)	9.0	23.5	14.5	22.0
9)	7.5	12.5	5.0	15.5
10)	1.0	9.5	8.5	12.5
11)	5.5	20.5	15.0	14.0
12)	9.0	20.0	11.0	24.5
13)	8.5	19.5	11.0	21.5
14)	12.0	18.0	6.0	22.0

Condition 3: Initial Rating of Selfish, Additional Information Framed as Negation

	First Rating	Second Rating	Difference Score	Like-Dislike
Male				
1)	17.5	5.5	12.5	13.5
2)	18.5	2.5	16.0	3.0
3)	19.5	3.5	16.0	4.5
4)	21.5	2.5	19.0	5.5
5)	18.0	3.0	15.0	8.0
6)	19.0	6.0	13.0	8.5
7)	21.5	1.0	20.5	2.0
8)	19.5	21.0	-1.5	2.0
9)	15.5	7.5	8.0	9.0
10)	21.0	7.0	14.0	10.0
11)	13.0	9.5	3.5	11.0
12)	13.5	2.0	11.5	2.5
13)	18.5	6.5	12.0	9.5
Female				
1)	18.0	5.5	12.5	7.5
2)	16.5	5.5	11.0	12.5
3)	19.5	3.0	16.5	3.0
4)	22.0	11.0	11.0	8.0
5)	14.0	3.0	11.0	7.0
6)	21.5	3.5	18.0	2.5
7)	19.0	5.0	14.0	6.0
8)	18.0	12.0	6.0	13.0
9)	14.0	5.0	9.0	2.5
10)	14.0	5.0	9.0	6.0
11)	16.0	7.0	9.0	7.0

Condition 4: Initial Rating of Selfish, Additional Information Framed Non-negationally

	First Rating	Second Rating	Difference Score	Like-Dislike
Male				
1)	18.0	2.0	16.0	4.0
2)	15.0	10.0	5.0	6.0
3)	14.0	2.0	12.0	3.5
4)	13.5	8.5	5.0	10.0
5)	23.0	4.5	8.5	6.0
6)	25.0	1.0	24.0	3.0
7)	19.0	23.0	-4.0	21.0
8)	16.5	3.0	13.5	3.0
9)	16.0	12.0	4.0	10.0
10)	18.5	6.5	12.0	9.0
11)	13.0	5.0	8.0	8.5
Female				
1)	25.0	24.0	1.0	20.0
2)	17.0	6.0	11.0	7.0
3)	14.5	16.0	-1.5	22.0
4)	18.0	6.0	12.0	8.0
5)	16.0	5.0	11.0	7.0
6)	18.0	5.5	12.5	7.5
7)	17.0	8.0	9.0	9.0
8)	19.5	15.5	4.0	10.0
9)	19.5	12.5	7.0	10.0
10)	13.5	4.5	9.0	6.0

APPROVAL SHEET

The thesis submitted by Suzanne Barnard has been read and approved by the following committee:

> Dr. Joseph F. Rychlak, Director
> Maude C. Clarke Professor of Humanistic Psychology, Loyola
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The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the committee with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts in Clinical Psychology.

Dec. 8, 1989
Date

Joseph F. Rychlak
Director's Signature