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THE INTEGRATION OF MOTIVE AND FOREKNOWLEDGE
INFORMATION IN JUDGMENTS OF INTENTION

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**THE INTEGRATION OF MOTIVE AND FOREKNOWLEDGE
INFORMATION IN JUDGMENTS OF INTENTION**

By

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ABSTRACT

THE INTEGRATION OF MOTIVE AND FOREKNOWLEDGE INFORMATION IN JUDGMENTS OF INTENTION

By

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The effects of two types of information--motive information and foreknowledge information--on attributions of intention were tested. A repeated measures design in which subjects made judgments of several different scenarios was used. It was hypothesized that (a) both types of information would produce large effects on intention judgments, (b) subjects would rely proportionately more on motive than on foreknowledge information, and (c) the two types of information would be combined via a simple additive information integration process, suggesting that subjects considered the joint implications of these factors minimally or not at all (which is contrary to a rational, idealized, or normative model of intention judgment). It was also predicted that certain factors would moderate the manner in which subjects weighed and combined information. Specifically, instructions promoting systematic cognitive processing were expected to result in information integration more closely resembling a normative model of intention judgment. Instructions promoting heuristic cognitive processing were expected to facilitate an adding integration model and to cause subjects to increase the

extent to which they based judgment on the implications of motive as opposed to foreknowledge information. Results indicated that both types of information were important but motive information was slightly more important in judgment. Subjects' judgments were adequately predicted by a simple additive integration model. In addition, subjects in more negative moods relied less on the implications of foreknowledge information than subjects in more positive moods. This mood effect was replicated in a second experiment where mood was manipulated rather than measured. The results have implications for how we normally think about intentions and point the way for more domain-specific investigations of how intention judgments are formed.

This work is dedicated to my parents,
Josephine and Richard Kramer,
who taught me to value learning,
and to Michelle, my best friend.

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CHAPTER I

INTRODUCTION

Statement of the Problem

Because they are not open to direct observation, the intentions of others must be inferred by perceivers. It is important to understand how perceivers attribute intention for at least three reasons. First, inferences about others' intentions may form the primary bases for a variety of other judgments, including judgments of responsibility (Heider, 1958; Jones & Davis, 1965), blame (Shaver, 1985), gratitude (Lane & Anderson, 1976), or even personality dispositions (Jones & McGillis, 1976; Jones & Davis, 1965). In legal contexts, judgments about others' intentions can determine jury verdicts and/or penalties. For example, killing someone intentionally usually constitutes murder, but killing someone unintentionally may constitute manslaughter, negligent homicide, or no crime at all.

A second reason why it is important to understand the attribution of intention is that such judgments frequently influence our perceptions of others and our social interactions with them. For instance, a recent Newsweek article discussed how the commonplace drama of misread intention is pervasive in human communication and conflict

(Gelman, 1989). The following example is probably typical of how such conflict might develop:

John: "Did you put gas in the car?"

Laura: (*He's always expecting me to take care of things for him*) "No. I didn't have time. I was too busy with things around here."

John: (*She's trying to make me feel guilty about not spending more time at home. I won't let her manipulate me that way*) "I'll get it then. I'll probably have to work late tonight"

Laura: (*Now he's trying to punish me by staying away*) "Fine. I had plans anyway!"

Repeated judgments of intention can form a pattern, and that pattern can influence our beliefs about others' personality characteristics. Jones & McGillis (1976) proposed that "A disposition is inferred when an intention or related intentions persist or keep reappearing in different contexts." (p. 393). Over time, patterns of attributed intention can help shape the very nature of our interpersonal relationships. Judgments of intention can also be generalized across persons, affecting how one sees the larger social environment (e.g., "most people can be trusted" or "city dwellers don't like strangers").

Finally, understanding attributions of intention is important because such judgments occur with great frequency in social interaction. Rather than occurring only in situations where inferences are clearly prescribed (e.g., juror decision tasks), it is probably the case that attributions of intention are made for nearly all social

behavior. Lichtenstein and Brewer (1980) have demonstrated that much of our understanding and recall of even the most ordinary behavior is organized around inferences about what goals or intentions a target had in mind, and Smith and Miller (1983) have provided evidence that intention judgments occur more rapidly during the comprehension of a behavior than do many other kinds of judgments. Indeed, it would be difficult to know what to make of others' behavior, what impressions to form of others, or how to respond to them without some implicit inferences about their intentions (see Read, 1987). Even in situations where perceivers carefully and effortfully process information about intention, however, they may be aware of only the product of their inference (e.g., "I guess he did that accidentally") and not the process. Regardless of recognition of process or product, however, judgments of others' intentions are clearly pervasive and pivotal in social behavior.

Because there already exists a voluminous literature on attribution theory, it would be reasonable to suspect that the processes involved in judging intention would be thoroughly investigated. Though much of the groundwork has been laid by existing attribution theories, there have been few systematic empirical investigations of how perceivers infer others' intentions. One reason for this is that studies derived from early attribution theories were typically concerned with investigating whether perceivers

made causal attributions to the person or to the environment. Such studies were generally uninformative about if or how perceivers inferred intention. Even in those studies that focused on attributions made to internal factors (e.g., dispositions), intention was typically included as a manipulated independent variable (perceivers were told of its existence or absence) or as a given contextual variable, rather than as a dependent variable (Alicke, Weigold, & Rogers, 1990). Therefore, little has been learned about how perceivers infer intention when intention is ambiguous. The goal of this investigation is to supplement the limited empirical literature on intention judgments by investigating a few factors presumed to influence judgments of intention.

Scope the Investigation

The scope of the investigation is limited to attributions of intention for negative outcomes. There are two reasons for adopting this limitation. First, the argument can be made that greater social importance is attached to judgment of intentions for negative outcomes than for positive outcomes. Questions concerning intention for negative outcomes certainly receive more legal attention than those concerning positive outcomes. Studies investigating the development of children's ability to infer intention find that acts leading to negative outcomes are

discriminated before acts leading to positive ones (Fincham, 1985), suggesting developmental priority and possibly greater importance. Beyond this, the decision to restrict the investigation to negative outcomes is a pragmatic one, designed to make our inquiry more tractable.

The investigation is also limited to attributions of intention for behavioral outcomes rather than for behavior per se. When judging a target's intention, perceivers might judge whether the target intended to perform a given behavior or they might judge whether the target intended a specific outcome that resulted from that behavior. This investigation will focus on judgments of intention for outcomes (e.g., "did X intend to hurt Y?" rather than "did X intend to swing his arm?"). The underlying question under investigation here is this: once a specific outcome has been identified, how do perceivers infer backwards in time to judge a target's intention relative to that outcome?

Research Questions

The foundation for this work is formed by a few simple research questions concerning how perceivers judge the intentions of others:

- 1) What information do perceivers use to judge the intentions of others?
- 2) How is intention-relevant information weighted and combined in judgments of intention?

- 3) What factors moderate the manner in which information is weighted and combined in judgment?

The first two questions are concerned with developing a better understanding of how perceivers infer intention from intention-relevant information. Legal theories and traditional attribution theories have tended to depict perceivers as rational decision makers who combine relevant information via abstract inference rules, much like scientific induction (see Fincham and Jaspars, 1980; Hilton and Slugowski, 1986). The first question follows this line of thought by investigating two classes of information--motive and foreknowledge information--presumed to be necessary for intention. The second question addresses how that information is combined in judgment. A limited set of alternatives is compared, some reflecting a normative, rational model of judgment and some reflecting a descriptive, arational model. The third question seeks to further investigate the descriptive, arational approach by investigating factors that might bias, mediate, or moderate how perceivers infer intentions. These factors include subjects' processing goals, mood, self-esteem, and gender.

The proposal advanced here is that these two basic approaches to forming attributions--one emphasizing a rational, normative approach and the other emphasizing a more arational, descriptive approach--may be thought of as complementary lines of reasoning that help us understand how

perceivers arrive at a decision about another's intentions. The goal of this investigation is to propose and test a formal, normative model of intention judgments while simultaneously exploring factors that might produce deviations from a normative model (i.e., to work both sides of the fence). Such an approach, it is hoped, should reveal the extent to which subjects' judgments reflect the use of motive and foreknowledge information while at the same time provide the initial steps for a more descriptive account of how intention judgments are formed.

Overview of the Remainder of the Dissertation

A selected review of the related literature is reported in Chapter II. The chapter begins with a description of the nature of intention judgments. Next, legal and psychological (primarily attribution theory) literatures are selectively reviewed to ascertain what information theorists and researchers have considered most important for the attribution of intention. Competing accounts of how intention-relevant information might be combined are then described, and potential moderator variables are considered. The chapter concludes with a list of specific research hypotheses.

Chapter III and Chapter IV report the results of two experiments, the latter being a follow-up of the former. The material is written in the style of a multi-experiment

manuscript, with each experiment including a description of the method, then a combined results and discussion section. The experimental procedure for each experiment is one in which subjects make judgments of a target's intention from written vignettes. The design includes both between- and within-subjects (repeated measures) factors. The statistical goodness of fit of competing models of intention judgments, and the effects of potential moderator variables on intention judgments, are tested and the results discussed.

Chapter V is a general discussion of the results, including a summary of key findings and a discussion of limitations and possible implications of the results.

CHAPTER II

REVIEW OF THE LITERATURE

The Nature of Intention Judgments

In this section, theoretical and empirical accounts of the role of intentions in behavior are reviewed, and assumptions about the automaticity (or lack thereof) of intention judgments are examined.

Intentions and Behavior

Intentions may be thought of as relatively transient mental representations of specific desired goals (possibly including action plans for how the goals can be achieved). Intentions are often conceptualized as mediators between motivating variables, such as dispositions, attitudes, or situational pressures, and overt behavior. For instance, Jones and Davis's (1965) "covariation theory" postulates that in order to postdict a target's disposition (e.g., hostility) from observed behavior (e.g., insulting someone), it is necessary that perceivers first form an inference about the target's intention. According to the theory, only intended behaviors are informative about dispositions. The mediating role of intention is similarly conceived in the "theory of reasoned action" (Ajzen, 1985; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). The theory, which is designed to predict behavior from attitudes, postulates that

one's attitude toward a given behavior, and one's evaluation of how others would react to the behavior, directly affect one's behavioral intention, which in turn affects production of behavior.

Both of these highly influential theories postulate similar causal relationships among motivating characterological or situational constructs (e.g., dispositions, attitudes, evaluation concerns, etc.), intentions, behavior, and behavioral outcomes. Both regard intentions as the immediate causal precursor to behavior. The following diagram represents the general relationships among the key variables.

Attitude

Disposition ----> Intention ----> Behavior ----> Outcome
Situation (etc.)

There is some evidence that lay theorists may also regard intentions as the immediate causal precursors to behavior. Zadny and Gerard (1974) found that perceivers recalled intention-relevant information associated with an act more easily than they recalled disposition-relevant information associated with that act. This would be expected from assumptions about a more direct causal link between intention and behavior. Though the empirical research on how lay persons view the causal role of

intentions is limited, it seems plausible that lay theories postulate many of the same variable relationships as are found in popular psychological theories.

Of course, it is entirely possible that overt behavior is not always be mediated by intention. For instance, Bagozzi (1983) found that past behavior explained some of the variation in current behavior without mediation by intention. Bentler and Speckart (1979) argued for a direct link between attitudes and behavior as well as one mediated by intention. However, that behavior can sometimes be explained without recourse to intentions does not diminish the importance of investigating attributions of intentions, particularly since many expert and lay theorists apparently assume that intentions are valid and informative causal explanations for behavior.

What Kind of Judgment Is an Intention Judgment?

Much judgment research in the last several years has relied on a distinction between systematic and heuristic information processing (Bargh, 1989; Bodenhausen, 1988; Chaiken, Liberman, & Eagly, 1989; Fiske & Neuberg 1989; Kahneman, Slovic, & Tversky, 1982; Mackie & Worth, 1989; Petty & Cacioppo, 1986). Though most researchers would probably agree that the dichotomy has been somewhat overstated or oversimplified (see Bargh, 1989), the distinction is nevertheless a useful one for beginning to

describe the nature of intention judgments (see Chaiken et al., 1989).

Systematic judgments are relatively effortful, controlled, conscious attempts to seek judgment-relevant information, analyze its implications, and integrate the implications in judgment. Systematic judgments are closer to what most persons would probably consider rational, data-driven judgments, though systematic judgments are not necessarily unbiased (Chaiken et al. 1989). Heuristic judgments, on the other hand, are relatively automatic judgments that typically require less cognitive effort, and may be formed outside awareness. Heuristic judgments generally rely on a subset of the data and may be formed via the use of simple inference rules or schemata.

There are good reasons to suspect that heuristic (i.e., spontaneous, effortless, automatic) intention judgments are made with great frequency in the course of ordinary social interaction. Some empirical evidence for this was provided by Smith and Miller (1983), who measured the the length of time it took subjects to make various judgments from stimuli. They found that intention (and trait) judgments were made in the shortest time, suggesting that these judgments were based on simple retrieval from memory rather than from inferences derived from retrieved information. Lichtenstein and Brewer (1980) had subjects view videotapes of targets performing ordinary actions (e.g., looking for a

paper clip), then analyzed the subjects' recall of the events. They found that subjects' memories of the targets' actions were organized hierarchically such that subordinate events (e.g., opening a desk drawer) were understood by reference to inferred superordinate goals or intentions (e.g., to find a paper clip). Subjects apparently made inferences about the targets' goals or intentions without experimental instructions to do so, suggesting that the subjects had encoded inferences about others' goals or intentions in a relatively spontaneous manner at the time of observation. Lichtenstein and Brewer suggested that inferences about intentions form a nucleus around which to understand others' behavior(s).

Read (1987) also suggests that spontaneous inferences about others' intentions are necessary for simple comprehension of social behavior. Even simple reflection would suggest that we often respond to others on the basis of spontaneous inferences about their intentions, at least when comprehension of behavior is a goal. Wyer and Srull (1986) argue that the comprehension of behavior may function something like a default processing goal. That is, unless another processing goal is invoked, the goal to comprehend information is operative so long as a perceiver is processing information. It therefore seems plausible that implicit inferences of intention occur with great frequency. One obvious advantage of forming heuristic, spontaneous

intention judgments is that limited cognitive resources can be conserved.

Though there is limited empirical work concerning spontaneous inferences of intentions, there is a substantial literature documenting spontaneous inferences of others' traits or dispositions (see Newman & Uleman, 1989 or Weiner, 1985 for reviews). This is significant because various theorists consider the attribution of intention to be a necessary, or at least frequent, component of a dispositional attribution (e.g., Jones & Davis, 1967; Jones & McGillis, 1976; Trope, 1986). From these accounts, it follows logically that intentions must be spontaneously inferred, since a component or subroutine of an automatic, spontaneous process must be automatic as well.

Though there are several good reasons to suspect that intention judgments are often formed automatically and effortlessly, they certainly need not always be formed heuristically. Processing may become more effortful when perceivers become aware of the need to search for intention-relevant information, such as when someone's behavior produces an unexpected or negative outcome (Winer, 1985). In courts, hours or days can be devoted to examining intention-relevant information. Under such circumstances, an inference of intention may become relatively more controlled, effortful, less spontaneous, and less automatic, just as inferences about others' traits or the processing of

persuasive messages may sometimes be (Bargh, 1989, Chaiken, Liberman, & Eagly, 1989; Newman & Uleman, 1989). Even in these situations, however, it is likely that perceivers are aware of the product of their inferences (e.g., "I guess he did that accidentally") and not necessarily the process.

It seems likely then that intention judgments, like many other highly practiced social judgments made during the course of social interaction, are often formed relatively heuristically (i.e., effortlessly, spontaneously, and automatically). It also seems that they can be formed systematically (i.e., consciously, effortfully, in a controlled manner), particularly when persons are confronted with negative or unexpected outcomes, and/or when the task clearly calls for an intention judgment.

Theorists working in related areas (e.g., attributions of attitudes or dispositions, stereotyping) have suggested that spontaneous inferences based on heuristic processing may precede attributions based on systematic processing. The former attributions are then incorporated into the latter (Fiske, 1989; Gilbert, 1989; Trope, 1986). Gilbert (1989), for instance, has proposed a two-stage process for attributions of attitudes and moods: a "characterization" stage and a "correction" stage. The former is a relatively automatic inference based on observed behavior. This heuristic inference is typically an "over-attribution" based on simple inferences or schemata (e.g., "persons who act sad

are sad" "someone who hurts another's feelings is mean"), similar to the fundamental attribution error (Ross, 1977). The latter is a revision based largely on consideration of situational pressures on the target. In a series of experiments, Gilbert found that subjects given cognitively demanding tasks did not revise their initial (heuristic) inferences about targets' attitudes or moods in light of information about situational constraints on the targets, but subjects not given such tasks did. In effect, cognitively-preoccupied subjects were unable to revise their heuristically-formed attributions, which typically make limited use of situational information and over-attributed to the person.

This two-stage approach is similar to Trope's (1986) model for attribution of dispositions and to Fiske's (1989) analysis of whether persons stereotype others intentionally. In each of these theories, a relatively heuristic processing stage occurs, and its product--some form of heuristic categorization--seems to become part of a perceiver's cognitions relatively automatically and effortlessly. Perceivers are typically unaware that the product of this stage is an inference, but rather seem to include it as data (though usually not consciously). Interpretations based on other judgment-relevant information (e.g., situational pressures) then overcome or "correct" the product of heuristic processing during a second, systematic processing

stage. The extent of this correction is dependent on factors affecting capacity and motivation to process the judgment-relevant information (Chaiken et al., 1989; Fiske & Neuberg, 1989).

To summarize, it is assumed that attributions of intention share essential features with other frequently-made social judgments in that (a) they may be formed heuristically or systematically; (b) when they are formed systematically, some residual of heuristic judgment is incorporated into a final (systematic) judgment; and (c) the extent to which judgment-relevant information available during systematic processing overwhelms heuristically-formed attributions is largely dependent on factors affecting motivation and capacity to process the judgment-relevant information. It is also assumed that individual differences can influence the direction or extent of processing at either stage (Uleman, Winborne, Winter, & Shechter, 1986). Though this account must be regarded as a somewhat speculative, given the limited empirical evidence regarding intentions per se, it is consistent with theoretical and empirical work in a variety of conceptually related areas. It also seems to correspond to an intuitive analysis of everyday intention judgments.

In the next section, reviewing traditional legal and attribution theories, the focus is primarily on factors presumed to influence the second (systematic) stage of the

proposed processing sequence. Trope (1986) has argued that traditional attribution theories have tended to neglect earlier-stage processing in favor of later-stage processing. Because the law is typically concerned with specifying normative, rational judgments, the same could be said for legal theories. Of course, one possible reason for the emphasis on later-stage (i.e., systematic) processing is that it allows one to derive models for how an ideal perceiver would form judgment from relatively unambiguous categories of relevant information. Much of the literature reviewed below is oriented in this general direction.

Intention in Legal and Attribution Theories

Intention in the Law and Forensic Psychology

In the law, the concept of intention falls under the doctrine of *mens rea*, meaning literally, "guilty mind." To be found guilty in most criminal offenses, a person must have performed an act proscribed by law (*actus reus*) and done so with the requisite intention (*mens rea*).¹ Sebba (1980) listed four levels of legal accountability based on a defendant's increasing mental guilt: (a) strict liability, (b) negligence without foreknowledge, (c) foreknowledge plus recklessness or indifference, and (d) foreknowledge plus intention. Strict liability requires only that a person be associated with a proscribed outcome. Negligence without foreknowledge requires that a person's behavior caused a

proscribed outcome, but the person did not make the inference that their behavior would probably lead to that outcome. Crimes involving foreknowledge plus recklessness or indifference are often considered "general intent" crimes, which require that a person knowingly caused a proscribed outcome but the specific outcome was not clearly mentally represented at the time (e.g., manslaughter may be the verdict when the defendant intended only some unspecified injury to the victim). Crimes involving foreknowledge plus intention are often termed "specific intent" crimes, which require that a defendant must have, at the time of an act, intended to bring about the very outcome in question (e.g., first degree murder requires that the defendant specifically intended the victim's death).

It is clear that legal philosophy places considerable emphasis on implications of foreknowledge for intention. The highest level of legal accountability is reserved for clearly foreseen outcomes that were intentionally committed. Attribution theorists have also stressed the importance of foreknowledge, though their emphasis has differed somewhat. Following Heider (1958), attribution theorists have typically emphasized the foreseeability of an outcome rather than whether a target actually foresaw the probable outcome. The difference between general foreseeability and actual foreknowledge is important because there are situations in which a generally foreseeable outcome might not have been

foreseen (e.g., high stress). Legal theorists stress that, in order to say that a person exercised specific intent for an outcome, one must establish that the person actually made an inference (i.e., foresaw) that the behavior would result in the outcome (Koenig, 1982). The target's mental representation of a probable outcome (i.e., foreknowledge) is considered a critical element for determining a person's intention.

Also pivotal for attributions of intention is a person's motive. Lawyers often build their case around arguments about why a defendant desired (or did not desire) a certain outcome, and jurors are often encouraged to examine evidence that might support or refute the existence of a motive. Like foreknowledge, the notion of a motive--reason(s) why a defendant might desire or not desire a specific outcome--is considered a critical element for an attribution of intention.

A variety of other factors, such as opportunity, effort, ability, and volitional control have been discussed by legal theorists (Marshall, 1968). But legal theorists are usually more concerned with specifying how various conceptions of intention affect legal decisions than they are with developing prescriptive models of how intention ought to be formed in the abstract (see Koenig, 1982, 1984; Marshall, 1968). The result is that the law contains no clear statement about how persons should weigh and combine

intention-relevant information. Consequently, legal decision-makers (jurors and judges) are essentially on their own when combining intention-relevant information in judgment. For instance, jurors in Michigan are given instructions concerning specific intent crimes (1986), but the instructions only tell jurors that they should use "...what a defendant said, how he or she said it, or any other facts or circumstances in the trial evidence" to determine a defendant's specific intention. Judicial instructions concerned with determining a defendant's intention avoid explaining or describing to jurors the inference process, relying instead on the assumption that jurors will employ fair and rational strategies on their own.

In much the same way, forensic psychology addresses the concomitants of intention, but has little to say about the actual process of judging intention.² Expert forensic psychological testimony often includes opinion on conscious or unconscious motivation (often based on inferences about a defendant's characterological makeup), cognitive capacity to plan ahead, and/or environmental influences that may have interacted with a defendant's character (Shapiro, 1985). These in turn should be informative about intention, but it is not explicitly clear how because forensic psychology lacks a scientific/psychological model for determining intention. Maselli and Altrocchi (1969) noted that "...one

can scour the clinical literature in vain for explicit theories or findings concerning attribution of intent." Clark (1986) argues that forensic psychologists should not attempt to make determinations of a defendant's criminal intent because (a) psychologists have no empirically-validated psychological model and must rely instead on commonsense theories of intention, and (b) being an ultimate question (i.e., one which determines a verdict), intention should be determined by the jurors or the judge.

Legal theory and forensic psychology propose elements for an attribution of intention that are probably congruent with what most persons would arrive at through conceptual analysis: A target's voluntary behavior must have been a cause of an outcome in question; the target must have foreseen the outcome prior to acting; and the target must have desired the outcome (i.e., had a sufficient motive). Probably more by default than by explicit design, it seems that legal theory has implied that voluntary control, motive, and foreknowledge are pivotal factors, though others (effort, ability, opportunity, unconscious desires, etc) may be important considerations.

Intention in Traditional Attribution Theories

Heider's theory. Heider's (1958) "lay epistemology" proposed three criteria by which perceivers determine the intention of an actor: equifinality, local causality, and exertion. Equifinality refers to whether an an observed

outcome was an end in itself or merely as a means to a desired end. Local causality refers to whether an actor's behavior is identified as the proximate cause of an outcome. Exertion refers to effort--the greater the exertion, the more likely the presumption of intention to produce the outcome. Causality and exertion are fairly clear--if one caused an outcome and exerted considerable effort in the behavior that produced the outcome, intention is more strongly implied. Equifinality may be less immediately clear, but Heider did maintain that a critical component of equifinality involved the determination that the outcome of an act was desired by the actor. Thus Heider implies that outcomes most desired by a target are those most likely to have been intended, echoing the importance of inferences about motive for attributions of intention.

Heider also proposed five levels of responsibility attribution that had clear implications for intention. The first four of these levels (mere association, causality, foreseeability, and intention) are directly comparable to the levels of legal accountability proposed by Sebba (1980). (The fifth level, justification, is equivalent to excusing circumstances.) As with legal levels, Heider's levels are cumulative in that each successive level assumes the inclusion of the level before it, and each successive level assumes attribution of greater responsibility. Thus,

Heider's description of how persons make attributions of intention emphasizes foreseeability as well.

Covariation theory. As Ross and Fletcher (1985) and Shaver (1985) have noted, Heider's theorizing was difficult to test empirically, so it was left to others to translate those theories into empirically testable propositions. Kelley (1967, 1972, 1973) developed covariation theory, which has generated more research than any other theory of causal attribution (see Ross and Fletcher, 1985, p. 94). But covariation theory and its progeny were designed to assess how perceivers attribute causality to one of a few possible causal loci (e.g., "something about the person" or "something about the environment") and the methodology used to test these theories was generally inappropriate for addressing questions about attributions of intention. Thus, theories of intention were left somewhat neglected by much of early attribution research. Unfortunately, covariation theory and its progeny are basically mute on the question of intention.³

Correspondent inference theory. Along with covariation theory, correspondent inference theory (Jones & Davis, 1965; later revised by Jones & McGillis, 1976) has been one of the two dominant attribution paradigms over the last two decades. Correspondent inference theory was designed to account for how perceivers attribute dispositions to targets from observation of behavior and behavioral outcomes. The

theory implies that dispositions can only be inferred from intentional behavior (probably a dubious assumption if we think about clumsy people). Because the theory emphasizes intentions as a necessary part of the inference chain, it provides suggestions for how perceivers might infer intentions.

Jones and McGillis maintained that, to judge whether a target intended a specific outcome, perceivers must judge whether the outcome was foreseeable to the target. Perceivers also must generate ideas about other possible outcomes (counterfactual outcomes) and decide how desirable each of the possible outcomes might have been for the target.

To determine desirability, perceivers rely on "category-based" expectancies and "target-based" expectancies. Category-based expectancies are those derived from a target's group categorization (e.g., age, sex, ACLU membership, species membership, etc); they resemble stereotypes. Target-based expectancies are based on previous knowledge of a specific target's behavior; they function as an implicit personality theories held for a single person. These expectancies are presumed to come from perceivers' prior beliefs about a given target in a given situation.

Though there are clearly problems with the theory as an account of intention judgments,⁴ it does nevertheless tend

to echo legal theories in emphasizing foreseeability (or foreknowledge) and desirability (or motive) as the two most critical features or preconditions for an attribution of intention. It is also one of the few theories that provides suggestions for how perceivers might generate initial (heuristic) hypotheses about intention--from category-based and target-based expectancies.

Other attribution theories relevant to intention.

Heider (1958) and Brewer (1977) have presented theories of responsibility attribution, and Shaver (1985) has proposed a model for the attribution of blame. In these theories, as in correspondent inference theory, intention judgments are conceptualized as important precursors to later judgments. Unfortunately, intention has typically been included as a manipulated independent variable or as a given contextual variable rather than as a dependent variable (Alicke et al., 1990). Thus, how persons form intention judgments on their own has received little attention, as have questions about how attributed intention influences other judgments.

A recent exception to this, Alicke et al. (1990), investigated how intention judgments mediate responsibility judgments for positive versus negative motive and foreseeable versus unforeseeable outcomes. As expected, Alicke et al. found that the significant effects of motive information on responsibility attributions were eliminated when intention was covaried. However, the effects of

foreseeability on responsibility were not as clearly moderated by intention but interacted with outcome valance (positive versus negative outcome). Unfortunately, Alicke et al. did not report a significance test of the simple effect of foreseeability on intention for negative outcomes, or the interaction of foreseeability and motive on intention for negative outcomes, so their results do not directly address some of the effects of most interest for this investigation. (Additional aspects of this study will be discussed later.)

Shaver (1985), who finds extant attribution theories unable to provide a satisfying account for the attribution of intention, makes some substantive suggestions. He proposes that a perceiver's attributions are likely to be a result of an analysis of the target's wants. Following Alston (1967), Shaver suggests that "wants are thought to cause intentional actions" (p. 128). He suggests that perceivers may examine foreseen (but not chosen) options available to the target in order to infer the target's wants (echoing Jones & Davis, 1965, who termed these "effects foregone."). By examining nonchosen alternatives, perceivers can begin to construct a target's presumed system of wants. Shaver suggests that perceivers rely heavily upon inferences about the desirability of an outcome for a target. He draws freely from correspondent inference theory (Jones & Davis, 1967; Jones & McGillis, 1976) and in so

doing emphasizes how attributions of intention may be derived from attributions of desirability or motive.

Theorists in other areas have also proposed or examined how perceivers attribute intention. For instance, developmental theorists (Fergusson & Rule, 1982; Fincham, 1985; Hook, 1989; Karnoil, 1978; Nelson-LeGall, 1985; Sedlak, 1979; Shultz & Wells, 1985) have explored how children learn to understand and attribute intention for behavioral outcomes. Since Piaget (1932), it has been widely accepted that very young children overattribute intention. However, when children do discriminate outcomes based on relevant information, they are able to use desirability (motive) information before they are able to use foreknowledge information (Nelson-LeGall, 1985; Shultz & Wells, 1985; Yuill & Perner, 1988). This developmental priority for motive information suggests that attributions based on motive may be easier to make, or possibly more important, than attributions based on foreknowledge. One implication of this is that persons who function at a lower developmental level may be more inclined to infer intention from motive information than from foreknowledge information. Also, factors that induce less-developed cognitive processing may cause perceivers to attend to the implications of motive information more than to the implications of foreknowledge information.

Arguing from a cognitive response model, Fiske (1989) has suggested that intention judgments are partly a function of the cognitive availability of alternatives available to a perceiver. Alternatives available to a perceiver, she suggests, are partly dependent on "motivated attention," a guided or non-random selection from among cognitively available possibilities. Fiske emphasizes the cognitive availability of alternatives for the perceiver (and factors affecting such availability) rather than those presumably available for the target. Her line of argument is similar to arguments in the law in that the abstract foreseeability of an outcome is not nearly so important as the inference concerning whether the outcome was in fact foreseen.

The Integration of Motive and Foreknowledge Information

Several theorists have proposed the necessary or relevant input information for judgments of intention (Fiske, 1989; Heider, 1958; Jones & Davis, 1967; Jones & McGillis, 1976; Marshall, 1968; Sedlak, 1979; Shaver, 1985). For the most part, these theorists have emphasized the elements necessary for a rational, systematic, or ideal intention judgment. Table 1 summarizes the information which--according to different theorists--a rational perceiver would use to judge whether a person intended an observed outcome.

Insert Table 1 about here

A few rather basic questions concerning the attribution of intention can be raised. The first is whether motive and foreknowledge information are indeed the primary elements necessary for a rational, systematic attribution of intention, as many theorists seem to suggest. At the same time, theorists differ in the extent they emphasize various factors. While some disagreement might be a matter of semantics (i.e., essentially the same concept might be described with different words), there is enough variability in Table 1 to raise the question of relative importance of factors. Therefore the second question is whether one type of information is significantly more important than the other. Though there are reasons to suspect that one type of information might carry more weight than another, there is no empirical research on this topic.

A third question is closely related to the second. It concerns the issue of how intention-relevant information is combined in judgment--in addition to the possibility of differential weighting of information, can we identify something about the process by which information is integrated in judgments of intention?

One can easily make a case that motive and foreknowledge are jointly necessary for a rational judgment of intention. This is the position seemingly favored by legal theory and traditional attribution theories. For instance, Jones and McGillis (1976) propose that if an outcome occurs that is not desired by the target, perceivers should infer no intention because of the fundamental notion of hedonism (people intend only those things that they perceive as somehow beneficial to them). They also maintain that foreknowledge is a necessary condition for judgment of intention--if it is absent, intention should not be not inferred, regardless of how much a target is seen as desiring an outcome. The conjunctive necessity of motive and foreknowledge is also strongly implied in rational choice theories (Ajzen and Fishbein, 1980), legal theory (Marshall, 1968), and other attribution theories (Shaver, 1985; Heider, 1958).

On the other hand, a case can be made that, at least under some circumstances, judgments of intention may not be based on the joint necessity of motive and foreknowledge. Instead, perceivers might infer intention when one factor is sufficiently strong (i.e., either may be a sufficient condition). In common language usage, for instance, "intention" is nearly synonymous with motive. Heider (1958) maintains that intention "is often taken as the equivalent of wish or wanting" (p. 110). According to the American

Heritage Dictionary (1982), synonyms for intention such as "goal", "aim" or "purpose", all "refer to what one hopes to achieve or attain" (p. 668). Common language at least suggests the possibility that attributions based on wishes, hopes, or wanting (motive) may be closer to the concept of intention than attributions based on knowing (foreknowledge). Motive information may therefore be sufficient to produce judgments of intention, either in the absence of information about foreknowledge, or possibly in the presence of contradictory information about foreknowledge. Conversely, it is possible that foreknowledge information might lead to inferences of intention despite the absence (or contradictory value) of motive information. Psychologically, perceivers might "fill in" missing information, or they might ignore or mutate information inconsistent with that which leads to a more dominant inference.

This of course raises the possibility that one type of information might be more important than the other. There are certainly reasons to suspect differential importance. Developmental research suggests the priority of motive-based judgments (Fergusson & Rule, 1982; Fincham, 1985; Hook, 1989; Nelson-LeGall, 1985; Shultz & Wells, 1985). Also, one of the only theories that proposes a process model for how adult perceivers might judge intention--Jones and McGillis's (1976) correspondent inference theory--argues that

perceivers first form a hypothesis about what a perceiver wanted to accomplish, and then attempt to validate whether the perceiver foresaw an outcome. Though Jones and McGillis argued that both factors are necessary, their hypothesized information processing sequence parallels the sequence found in developmental literature--motive information is sought for and used prior to foreknowledge information when judging intention. Though sequential priority does not guarantee greater importance for a factor, rules that emerge earlier in a sequence may be more essential for judging intention than rules that emerge later (Shultz & Wells, 1985). Thus, there are reasons to suspect that motive information might be weighted more heavily than foreknowledge information in judgments of intention.

Though apparently simple, the issue of relative importance is elusive because its detection usually requires experimental treatments of equal potency. If treatment strengths are unequal, one cannot determine whether judgments reflecting greater reliance on one category of information (e.g., motive) were formed because persons generally regard that category as more informative or because the specific examples to which persons were exposed from one category were more convincing than the examples from the other category. For conceptual purposes, the assumption here is that persons will be exposed to equal strength treatments, and that values within the range of

motive information may generally be regarded as more indicative of intention than equivalent values within the range of foreknowledge information. (The extent to which this is the case in the actual data will be examined later.)

Models for the Attribution of Intention

The possible relationships among motive, foreknowledge, and intention can be represented by structural models of judgment (Abelson & Levi, 1985; Anderson, 1982)). One approach, for instance, is Anderson's (1979, 1982) information integration theory, or "cognitive algebra," in which the processes by which persons integrate information are described in terms of simple mathematical equations. The pattern of subjects' actual judgments are then compared with the predictions made from the equations.

The relationship among motive, foreknowledge, and intention could be represented by any number of possible equations. However, the first suggestion--that motive and foreknowledge are jointly necessary--can be best represented by a multiplicative relationship between motive and foreknowledge. If the value 1 represents the presence of motive or foreknowledge, and the value 0 represents the absence of either factor, there are four possible combinations (1,1; 1,0; 0,1; 0,0). A model combining information as $\text{Intention} = \text{Motive} \times \text{Foreknowledge}$ would predict that only one of these combinations should lead to an inference of intention (1,1). Experimentally, such an

integration approach would be revealed in a 3 versus 1 interaction pattern in the data. To the extent that inferring intention based on the joint presence of motive and foreknowledge reflects the legal and traditional attributional ideal, this model might be considered a normative, rational intention judgment.

The second suggestion--that either motive or foreknowledge may be sufficient for an attribution of intention--can best be represented by an adding model: $\text{Intention} = \text{Motive} + \text{Foreknowledge}$. Alternately, an averaging model, wherein subjects average the scale values of available cues, might be used: $I = (M + F)/2$. (The general pattern suggested by an adding and averaging model would look the same. To distinguish between an adding and averaging integration model, one needs to vary the number of cues presented to subjects [Anderson, 1982; Baron, 1988], which was not done in this investigation. Therefore, the two models will be considered equivalent for the present purposes.) Given the same values for motive and foreknowledge information, three combinations might lead to an inference of intention (1,1, 1,0, and 0,1). Assuming that the dependent variable is a continuous scale (e.g., probability of intention ranging from 0 to 1), it is possible that perceivers would attribute at least a moderate probability of intention in the presence of either intention-implying motive or foreknowledge information,

despite the status of the other factor. While the multiplying model may represent a legalistic, rational ideal, the adding/averaging model deviates somewhat from this, particularly if persons tend to ignore or mutate inconsistent data. Because the rational ideal suggests that both kinds of information are independent and equally necessary, a deviation from the rational ideal might also occur if subjects tend to weight one kind of information (e.g., motive information) significantly more than the other.

A third possibility is that some combination of these two models might best predict judgment. For instance, perceivers might be partially aware of the logical necessity of having both motive and foreknowledge, but still attribute intention primarily according to a simple additive process. Alternatively, judgments made by some persons (e.g., more intelligent persons, persons concerned with evaluation of their judgments) might approximate a (normative) multiplying model, while judgments made by others might look more like an adding model. (The issue of potential moderator variables is discussed later in this chapter.) A combined approach might include both additive and multiplicative integration terms (e.g., $I = [(D + F)/2 + (D \times F)]/2$; this model is constrained to be between 1 and 0, facilitating comparison with the other models. Also consistent with the

other models is the practice of dividing by the number of terms added together in the numerator).

The table below presents a comparison of predictions from the three models (multiplying, adding/averaging, and combined). Arbitrary scale values of 1 (for information implying intention) and 0 (for information implying no intention) are assumed, reflecting treatments of equal potency. The 0-1 dichotomous scoring also assumes that the extremes of treatment potency are used, and that the weights (importance) of motive and foreknowledge are approximately equal. For purposes of comparison, each equation is presented so that its predicted values fall between 0 and 1. These models are not intended as definitive, but rather illustrative in that the pattern of predictions from a model should predict the pattern of judgments from subjects.

<u>Independent variables values</u>		<u>Predicted pattern of judgment</u>		
<u>Motive</u>	<u>Foreknowledge</u>	<u>MxF</u>	<u>(M+F)/2</u>	<u>[(MxF)+(M+F)/2]/2</u>
1	1	1	1	1
1	0	0	.5	.25
0	1	0	.5	.25
0	0	0	0	0

The critical difference between the models occurs in the intermediate cases (i.e., in situations in which motive and foreknowledge information are inconsistent or

contradictory). The strict multiplying model predicts an interaction that can be described as a 3 versus 1 pattern. The adding/averaging model predicts no interaction, but merely the addition of main effects. The combined model is intermediate between the two; it predicts interaction, but not to the extent to which a multiplying model predicts one. It is possible to distinguish among these models by examining the interaction in an analysis of variance, and by examining the variance accounted for with multiple regression analyses. The information integration models are based on theoretical considerations prior to data collection, but analysis of variance and regression analysis involve comparison of patterns of subjects' actual responses after data collection. These two approaches (mathematical modeling and regression analysis) are complimentary in the sense that the latter can be used to assess the statistical "goodness of fit" of the former. By entering motive, foreknowledge, and their interaction as terms in regression analyses, the extent to which each factor contributes to judgement can be examined.

If the adding model fits the pattern of subjects' judgments best, only two factors, additively combined (corresponding to two main effects) should best predict judgment. The extent to which a multiplying or combined model fits the data can be examined by including an interaction term in the regression equation. The more

variance accounted for by the interaction term, the more subjects' judgments reflect the use of a multiplying strategy. But the nature of the interaction is also important. A 3 versus 1 interaction pattern would reflect judgments more in line with a legal/attributional ideal. However, other interaction patterns might occur. For instance, if motive information is regarded as more important, the value of positive foreknowledge information might be diminished by the presence of negative motive information, or the value of negative foreknowledge information might be enhanced by the presence of positive motive information, but the value of motive information might be unaffected by foreknowledge information.

Differential importance of motive and foreknowledge can be assessed by examining regression weights. If motive and foreknowledge manipulations with approximately equal scale values (i.e., equal strength treatments) can be constructed, relative importance should be reflected in significantly different beta-weights in the regression equations.

It is important to note that the use of cognitive algebra or any form of mathematical modeling to study judgment does not allow one to draw firm conclusions about the actual psychological processes involved (see Abelson & Levi, 1985; or Pennington & Hastie, 1988 for discussions of this issue). Many different psychological processes could conceivably result in the same general pattern of observed

results. One might also wonder whether perceivers typically form intention judgments by first deciding upon the status of preconditions (e.g., motive, foreknowledge) and then combining this information via some mathematical rules. More recent theories of causal attribution have emphasized how perceivers underutilize logical propositions or relations and instead base judgment on more-easily-recalled representations such as scripts (Abelson & Lalljee, 1988; Schank & Abelson, 1977), event schemas (Nelson, 1986), stories (Pennington & Hastie, 1988; Read, 1987), or heuristics (Kahneman, Slovic, & Tversky, 1982). Certainly the previous discussion of the nature of intention judgments would suggest that some aspects of judging intention (e.g., heuristic processing) would not be modeled very well by formal computational models.

Nevertheless, exploration of formally-represented models may still be worthwhile. Einhorn, Kleinmuntz, and Kleinmuntz (1979), for instance, have argued that the frequent success of linear regression models may result from their ability to capture essential characteristics of judgment, a view shared by Anderson (1982). If the proposed two-stage analysis of intention judgments is correct, investigation of formal models might reveal something about the processes involved in the later, systematic stage of judging intention, at least to the extent that persons systematically process information.

Potential Moderators of Intention Judgment Strategies

The nature of the task. Theories of human judgment and decision making in several domains suggest that factors which influence perceivers' capacity or motivation to process information can influence judgment (Fiske & Neuberg, 1989; Kruglanski, 1989; Petty & Cacioppo, 1986). If we assume that perceivers are able and highly motivated to process judgment-relevant information about motive and foreknowledge, the weight of legal and psychological theorizing about intention favors the normative, multiplying model (3 versus 1 pattern) with roughly equal weight afforded to motive and foreknowledge (assuming equal scale value). But in the present study, subjects will make judgments of targets' intentions from brief written scenarios. Because this situation may have low "hedonic relevance" (Jones & Davis, 1967), subjects' motivation to process systematically may be moderate at best. What kind of prediction would be derived from assumptions of limited systematic processing?

It is possible that, as processing capacity or motivation decrease, perceivers will be more inclined to use an adding/averaging model of information integration and less inclined to use a multiplying model. It seems that addition is simpler than multiplication and that conjunctive relationships (i.e., joint necessity) involve considering the implications of one factor in light of the other

(analogous to consideration of moderator variables in experimentation), which may be more complex than considering factors sequentially (as suggested by an adding process; analogous to considering main effects in experimentation). Other research has found adding or averaging when multiplying would have been expected on rational grounds (see Lane & Anderson, 1976), and Zuckerman, Eghari, and Lambrecht (1986) argue that persons making attributions about past behavior rely more on explanations based on sufficient (as opposed to necessary) causes, supporting an adding over multiplying model. Though admittedly speculative, it therefore seems plausible that persons will deviate from a normative multiplying integration model in the direction of an adding/averaging integration model.

Possibly less speculative are the reasons to suggest that as processing capacity or motivation decrease, perceivers will rely on the implications of motive information proportionately more than on the implications of foreknowledge information. Based on evidence in developmental psychology and common-language usage, it is predicted that motive information will have a larger impact than foreknowledge information as persons process less systematically. Specifically, positive motive information will produce higher overall judgments of intention than will positive foreknowledge information, and negative motive

information will produce lower overall judgments of intention than will negative foreknowledge information.

Processing goals. A simple manipulation has been used by Kruglanski (1988) and Mayseless and Kruglanski (1987) to influence the processing strategies of perceivers, and ultimately, their judgments. Kruglanski's theory proposes that a few fundamental "epistemic motives" influence processing motivation and capacity. For instance, Kruglanski has found that when subjects under no time constraints are given bogus information about a correlation between high intelligence and reaching conclusions by carefully considering all evidence, or are told that their judgments will be examined by others (evaluation apprehension), they tend to generate more hypotheses and evaluate relevant information more critically. He argues that these conditions promote a broad epistemic motive, which he terms "need for accuracy" (or "fear of invalidity").

In contrast, when subjects are given experimental instructions that impose time constraints or include bogus statements about the correlation between high intelligence and the ability to reach conclusions on the basis of limited information, perceivers generate fewer plausible alternatives and more quickly become committed to one hypothesis. In short, subjects are more heuristic and less thorough in their judgments. Kruglanski argues that these

conditions occur because experimental instructions induce a "need for structure", which causes subjects to be motivated to reach a conclusion quickly rather than accurately.

Applied to judgments of intention, these results suggest that subjects under (heuristic-promoting) need for structure instructions (as manipulated by bogus information about the correlates of particular processing strategies) might employ the adding/averaging model and weight motive information more than foreknowledge information, while subjects under the (systematic-promoting) need for accuracy instructions would employ a multiplying model and weight the same factors more equally.

Mood. The influence of mood states on memory and judgment has received considerable attention in recent years (Blaney, 1986; Bless, Bohner, Schwarz, & Stack, 1990; Bodenhausen & Kramer, 1990; Forgas & Bower, 1989; Kuiken, 1991; Mackie & Worth, 1989). One way mood might influence intention judgments is through mood's effect on memory. Reviewers (e.g. Blaney, 1986; Kilstrom, 1991) have typically assigned a large role to what are called mood congruence effects. Mood congruence occurs when persons encode or recall information which is consistent with their prevailing mood state more easily than they encode or recall mood-inconsistent information.

Mood congruence might influence the processing of information about intentions by causing persons in a

negative mood to be more likely to encode and recall information consistent with negative outcomes (e.g., negative moods might trigger recall of scripts in which bad intentions lead to bad outcomes). Persons in negative moods would therefore judge negative intentions as more probable than would persons in positive moods. Because only negative outcomes are being considered in this investigation, only negative mood subjects should experience mood congruence; no mood congruence effects should influence happy subjects.

An alternate way that mood might affect judgments of intention is through mood's effect on motivation or capacity to process information. Recent research on mood and judgment suggests that certain mood states are associated with careful or systematic thinking, while other moods are associated with less-careful or heuristic thinking. For example, when stereotypes are available, persons in a happy mood are more prone to base guilt judgments on stereotypes than are persons in a sad or neutral mood (Bodenhausen and Kramer, 1990). Parallel results have been obtained in the domain of persuasion. People in a happy mood tend to rely more on simple persuasion heuristics (e.g., more arguments are better) than on systematic analysis of the arguments, relative to people in sad or neutral moods (Mackie & Worth, 1989). Apparently, happiness seems to limit processing capacity and/or motivation while neutral or mildly sad moods do not. This "processing deficit" approach would seem to

suggest that judgments made by happy persons would be more heuristic, and therefore more likely to approximate a simple adding/averaging model (with proportionately more weight assigned to motive information). Conversely, judgments made by mildly sad persons would be more systematic and approximate a multiplying integration model (with near-equal weight for motive and foreknowledge information).

However, there may be an important difference between the current judgment task (i.e., intention) and judgments used in stereotyping and persuasion literatures (i.e., guilt judgments, attitude change) where the mood/processing deficit theory has yielded such results. Bodenhausen and Lichtenstein (1987) found that a complex task (e.g., expecting to process a large amount of information) caused subjects to be more heuristic in their attributions of guilt, but no more heuristic in their attributions of dispositions. Apparently the nature of the task did not affect how subjects attributed dispositions. Because intention judgments are probably more like disposition judgments than they are like guilt judgments (i.e., frequently-made spontaneous inferences that assist in the comprehension of everyday behavior), it is expected that intention judgments may be somewhat insulated from the effects of task difficulty because, like disposition judgments, intention judgments are so highly practiced. Thus, the mood to processing deficit to heuristic judgment

pattern found in persuasion and stereotyping literatures is not expected here. However, mood may still affect how subjects initially encode situations (in early-stage heuristic processing) and recall evidence via mood congruence effects, so negative-mood subjects are expected to infer intention more frequently than positive-mood subjects for these negative-outcome scenarios.

A final prediction concerns the influence of motive and foreknowledge information as a function of the order of their presentation. The "primacy effect"--information which is encountered first typically has more of an impact on judgment than later-encountered information--was first demonstrated by Asch (1946) and has subsequently been investigated by others (e.g., Jones & Goethals, 1972; Luchins, 1957; Kruglanski & Freund, 1983).⁵ But primacy can be exaggerated or attenuated by situational manipulations such as those proposed here. Kruglanski and Freund (1983) found that primacy effects are greater under need for structure (manipulated by degrees of time pressure). Subjects in this condition were less sensitive to subsequent information if a first-encountered piece of information confirmed their expectancy. Kruglanski and Freund argue that an initial hypothesis is more likely to become "frozen" under need for nonspecific structure conditions. The same exaggeration of the primacy effect should be expected for first-encountered intent-relevant

information in need for nonspecific structure conditions. One possibility is that primacy effects will be greater for motive-first information. Another is that primacy effects will be equal for motive-first and foreknowledge-first information. (They may also occur for neither type of information or only for foreknowledge information.) Stronger primacy effects for first-encountered motive information would provide support for the relative priority of motive information. These effects would be expected to be greater under heuristic instructions. If no primacy effects occur, or if they occur equally for motive and foreknowledge information, assessment of the relative weighting of information about motive and foreknowledge could be assessed without complicating effects due to order of presentation. If foreknowledge information produced greater primacy effects, the priority of motive information becomes less plausible.

Summary of Hypotheses

The following hypotheses have been advanced:

1. Both motive and foreknowledge information will produce large significant effects on judgments of intention.
2. Motive information will generally produce larger effects on judgment than will foreknowledge information (assuming treatments of approximately equal strength are used) because motive is conceptually closer to how persons (heuristically) think of intention.

3. Because personal relevance is relatively low in this judgment task, motivation to process information systematically is expected to be somewhat limited. Therefore, a strict multiplying model (3 versus 1 pattern) is not expected to fit the data as well as either a simple adding/averaging model or a combined model. With either the strictly additive model or the combined model, somewhat greater weight is expected to be afforded to motive. However, judgments more closely approximating the systematic, multiplying model are more likely when subjects are given experimental instructions designed to invoke systematic processing. When subjects are given experimental instructions designed to invoke heuristic processing, judgments are expected to approximate a simple adding model.
4. Because negative outcomes are likely to produce mood-congruent recall and processing, subjects in a negative mood may be generally more inclined to infer intention than subjects in a positive mood. In terms of processing stages, it is speculated that mood congruence is particularly likely to influence early-stage (heuristic, automatic) attributions.
5. If primacy effects occur, they are more likely to occur when motive information is presented first than when foreknowledge information is presented first.

CHAPTER III

EXPERIMENT 1

Method

Subjects

Subjects were 277 undergraduates from a developmental psychology course at Michigan State University who volunteered to participate as part of a class exercise. Subjects did not identify themselves, so their responses were completely anonymous.⁶ The subjects ranged in age from 17 to 40 years-old, with a mean age of 20.1 years. Females made up eighty-three percent of the subjects.

Materials

Each subject was provided with a twenty-eight-page booklet containing instructions, short questionnaires, and eight different scenarios. The booklets were constructed from half-pages of regular 8 1/2 inch by 11 inch paper and stapled on the left margin. The appendix contains copies of all materials used in the booklets.

The first two pages of each booklet were copies of experimental instructions. Two different versions of instructions were used; the two versions were identical except for one paragraph designed to manipulate subjects' processing strategies. In one version, subjects were told

that the ability to make judgments quickly from limited information was related to general social intelligence. In the other version, subjects were told that the ability to consider carefully all available information was related to general social intelligence. Other than the few sentences designed to manipulate processing strategies, the experimental instructions for all subjects were the same.⁷

The next page of the booklet was a brief questionnaire designed to obtain demographic information about subjects' gender, age, grade point average, and the number of social science courses that they had taken in college. This page also contained a series of seven-point Likert-type scales on which subjects were asked to rate themselves. The ratings, which were labeled "Not at all" [like me] (1) to "Extremely much," [like me] included terms referring to political orientation (conservative, liberal), self-perceived social tendencies (trusting, sociable), and state affect or mood (happy, sad, pleased, angry, irritated, anxious). The primary purpose of this page was to gather information about self-reported mood, but the other factors were of potential theoretical interest and therefore included.

The next twenty-four pages of the booklet were made up of eight brief written scenarios consisting of three pages per scenario. The first page of each three-page sequence presented a skeletal description of a target's behavior and the negative behavioral outcome that resulted. The "story

lines" in the scenarios included (a) a driver running over a snake in the road, (b) a person hitting another person, (c) a person selling a used car that turned out to be a "lemon," (d) a woman failing to acknowledge her husband's birthday, (e) a man shooting and killing another man with a handgun, (f) a man accused of "flashing" two female pedestrians from within his apartment, (g) a woman locking her female roommate out of their shared apartment, and (h) a boss's failure to hire a qualified black applicant for a job. These scenarios were chosen from approximately one dozen or so scenarios generated by the investigator and several research assistants. The scenarios used were chosen on the basis of pilot testing (described below).

The story lines of the scenarios varied in a number of ways: severity of the consequences, gender and ethnicity of the participants, relationships of the participants, and type of act for which intention was being judged (commission or omission). It was hoped that this range of scenarios might capture a cross-section of real-life situations in which people try to judge others' intentions. At the same time, the use of several scenarios might avoid generalizability limitations sometimes associated with results from studies using fewer or domain-specific situations.

Following the skeletal scenario, the first page of each three-page scenario sequence requested that subjects make an

initial, first-impression judgment about the likelihood that the target intended the outcome. This judgment was on a 1 ("Definitely not intended") to 9 ("Definitely intended") scale. For instance, subjects responded to the question "How likely is it that Paul intended to kill the snake?" This initial intent judgment was assumed to be something of a baseline first-impression judgment--since minimal information was provided, subjects had to combine what little information they had with a general estimate of the frequency with which such outcomes are usually intended. Pilot testing had established that all eight scenarios were sufficiently ambiguous to avoid ceiling or floor effects.⁸ Subjects also rated how confident they were of their initial judgment using a similar nine-point scale.

The second page of each scenario provided additional information about the persons or events involved. This additional information was in the form of a five-sentence paragraph. Two of the sentences, located in the first and fourth serial position in the paragraph, varied information about the target's probable motive for the outcome (e.g., "Paul hates snakes" or "Paul loves animals and is a member of the Humane Society") and probable foreknowledge of the outcome (e.g., "Paul knew that the snake was in the road at the time." or "Paul did not know that the snake was in the road at the time."). The other three sentences, which were neutral with regard to their implications for intention,

were always the same for each scenario.

The purpose of including the neutral sentences was to provide a more detailed and realistic context in which to present the Motive and Foreknowledge information. A second purpose was to provide a framework in which to test the possible effects of primacy or recency (for Motive or Foreknowledge information) in judging intention. With the three neutral sentences always appearing in the second, third, and fifth position, levels of Motive (hereafter designated "M+" and "M-") and Foreknowledge (hereafter designated "F+" and "F-") information could be varied between the first and fourth positions. Thus, there were eight possible combinations of Motive, Foreknowledge, and serial Order (i.e., M+F+, F+M+, M+F-, F-M+, M-F+, F+M-, M-F- and F-M-).

The final page of each three-page sequence consisted of ten questions designed to ascertain the subjects' final judgments. The most important of these was the final intent judgment, again made on a nine-point scale. Other questions included queries about (a) whether the actor wanted the outcome to occur and knew ahead of time that the outcome would occur (designed to assess post-intention judgments attributions of motive and foreknowledge), (b) the cause or reason behind the actor's behavior (designed to look for patterns in causal attributions, (c) the extent to which the reason given was internal versus external, stable versus

unstable, and controllable versus uncontrollable (designed to measure Wiener's (1971) three traditional dimensions of attributions), and (d) the seriousness of the outcome of the incident.

A final page at the end of the booklet included two questions designed to measure the effectiveness of the instructional manipulation and Rosenberg's (1979) 10-item questionnaire designed to measure level of self-esteem.

Procedure

Subjects were told that they would take part in a study of how people judge the motives and intentions of others. After the basic nature of the task was verbally outlined to them, they signed consent forms. Once these were collected, experimental booklets were randomly distributed to the subjects, and they were asked to refrain from opening the book until instructed to do so. Once all subjects had a booklet, they were instructed to read carefully the experimental instructions on the first two pages of the booklet. Half of the subjects had received booklets in which one paragraph of the instructions encouraged heuristic decision making while the remainder of subjects received booklets in which a corresponding paragraph encouraged systematic decision making. Once they had read the instructions, they were asked to begin, working through the booklet in order without turning back.

After subjects completed them, the booklets were

collected by the experimenter. Once all subjects had finished, they were thanked and verbally debriefed. In exchange for the students' and instructor's generosity, the experimental debriefing was quite detailed. Immediately following the debriefing, the experimenter answered questions and delivered a lecture to the class on the development of children's ability to judge intentions (a topic germane to the course material).

Design

Because there were several independent variables in this experiment, the research design threatened to become rather complex. Primary independent variables included one manipulated between-subjects variable (Instructions), three key within-subjects variables (Motive, Foreknowledge, and the serial position of Motive/Foreknowledge sentences within the paragraph--called "Order"), and two "nuisance" within-subjects variables (Scenario and serial position of the scenario within the booklet--called "Position"). In addition, data were collected that permitted the examination of other measured between-subjects variables (e.g., gender, mood, grade-point average, and self-esteem). Because it was not feasible to test all possible combinations of these factors, a Greco-Latin square design was employed. The design was adapted from a plan discussed in Winer (1971). A schematic representation of the Greco-Latin square design for this experiment is presented in Table 2.

Insert Table 2 about here

Using this design, each person could be exposed to all eight of the possible combinations of motive, foreknowledge, and order. Because there were eight different scenarios, each unique combination of information could be associated with one of the scenarios. Thus, any one subject received a booklet that contained all eight scenarios, and each scenario contained (in the paragraph on its second page) a nonrepeating combination of information about Motive, Foreknowledge, and Order.

A further restriction on the design was introduced when the serial position of the Scenario (and its associated Motive and Foreknowledge information) was varied. For instance, sometimes scenario a1 with the M+F+ condition appeared as the first scenario in the booklet, sometimes second, third, and so on. There were eight different positions available for each Scenario + Information combination. The result was an $8 \times 8 = 64$ different booklets distinguished by 64 combinations of Scenario + Information + Position.

Between-subjects factors were incorporated into this design in a less complex manner. Five "cycles" of the sixty-four unique booklets were made, resulting in a total of approximately 320 booklets. An equal number of copies of

the two different types of instructions (see Appendix A) were created and randomly combined with the 320 booklets. These booklets were then randomly distributed to the subjects at the time of the experiment. In this manner the two sets of instructions were randomly and equally distributed among the subjects.

Other between-subjects factors were incorporated into the design in much the same way as the instructions. For instance, consider level of self-esteem. Since the various booklets were randomly distributed to subjects, it was assumed that each of the various booklet types would be roughly equally distributed among subjects of high or low self-esteem. Though it was possible that high self-esteem subjects, for example, might have received a disproportionate number of booklets of one type, the possibility was quite remote given the large sample size and the random distribution of subjects. Thus, it seemed reasonable to consider each of the levels of the between-subjects factors (instructions, self-esteem, mood, etc.) as equivalent replications of the Greco-Latin square design.

Results and Discussion

Overview of Analysis Strategy

Analyses for this design were conducted along lines suggested by Winer, Brown, and Michels (1991) and Bock (1985). The data were first reorganized so that the

responses of each subject were ordered according to the eight information conditions: M+F+, F+M+, M+F-, F-M+, M-F+, F+M-, M-F-, and F-M-. Table 3 shows the organization of the eight judgments made by each subject. This organization of the data emphasizes the 2 x 2 x 2 within-subjects factorial across the top of the table. It reveals, in the column means, the pattern of responses for the independent variables of primary interest (information conditions). The rows of the table define an eight-level between-subjects variable representing different booklets; the booklets were differentiated by the unique combinations of Scenario (a_x) plus the associated information. For instance, Row₂ represents a booklet in which scenario a2 was associated with condition F+D+, scenario a1 with D+F+, scenario a6 with F+D-, and so on.

Insert Table 3 about here

Not explicitly included in Table 3 is the serial Position of the Scenario-plus-Information combination. If serial position had been included in Table 3, each row would be further subdivided into eight other rows (again revealing 8 x 8=64 unique booklets). The position information was excluded from Table 3 for two reasons. The first was ease of presentation. The second was dictated by inherent limitations of the Greco-Latin square design. Analysis of

the interactions involving Information, Scenario, and Position cannot be unambiguously interpreted because these dimensions of the design are confounded and not recoverable (Winer et al., 1991). This feature requires a researcher to emphasize certain within-subjects factors over others; those of primary interest are typically placed at the top of the square and analyzed as the primary within-subjects factors, and those of lesser interest are, at least temporarily disregarded; their effects merely contribute nonsystematic error. Because position effects were of negligible interest, they were excluded from Table 3, and booklets with the same combinations of Scenario-plus-Information were treated as equivalent regardless of the serial position. Additional between-subjects variables were analyzed in this design by repeating the design illustrated in Table 3 for each level of the new between-subjects variable.

Repeated measures multivariate analysis of variance (MANOVA) was used to conduct most of the analyses of the data once they were organized in this manner (using SPSSx software).⁹ Exceptions to this analysis strategy occurred when ANOVA was used to analyze strictly between-subjects effects, such as manipulation checks, or when multiple regression or graphical approaches were used to test goodness of fit or examine information integration models.

Manipulation Checks

Analysis of variance (ANOVA) was used to assess the effectiveness of the instruction manipulation. Subjects had been asked to rate the extent to which they had quickly or carefully considered the information presented to them. The extent to which either measure varied as a function of the instructions was used as an indicator of the effectiveness of the instructions. Results were in the expected direction for both manipulation checks, but they were not significant. Means for the "quick" measure were 5.7 versus 5.3 for the heuristic and systematic instructions, respectively, $F(1,273)=1.76$, $p<.2$, while means for the "accurate" measure were 6.3 versus 6.7 for heuristic and systematic instructions, respectively $F(1,272)=2.22$, $p<.14$. Analysis on the pair of items, combined via a difference score as a single quick-to-accurate scale was similarly not significant, $F(1,272)=2.20$, $p<.12$. Further analyses using MANOVA (as described above) revealed that the instruction manipulation produced no main effects on initial or final intention judgments, nor did instructions interact with Motive, Foreknowledge, or Order on final intention judgments. Given the manner in which this manipulation was enacted (i.e., subjects read instructions to themselves and only one brief paragraph in the instruction was used to encourage the different processing strategies), it was not surprising, in retrospect, that it had little effect.

Because of a lack of evidence for an effect of instruction, this variable was eliminated from further analyses.

Effects of Motive and Foreknowledge Information

Three hypotheses were advanced concerning the effects of Motive and Foreknowledge information on intention judgment. The first was that both would significantly affect judgment, the second was that Motive information would influence judgment more than Foreknowledge information would, and the third was that Motive and Foreknowledge information would generally be combined in an additive fashion in judgment. Each of these hypotheses will be examined in turn.

The significant effects of Motive and Foreknowledge information. Column means from Table 3 reveal the pattern of judgments for the combinations of Motive, Foreknowledge, and Order. Not surprisingly, both Motive and Foreknowledge information produced highly significant effects on subjects' final intention judgments. Positive Motive conditions (i.e., conditions strongly suggesting a reason for desiring the outcome) produced higher final intention judgments than negative Motive conditions (i.e., conditions strongly suggesting a reason for not desiring the outcome) ($M=6.23$ versus 2.97 , respectively), $F(1,186)=971.5$, $p<.001$, and high Foreknowledge conditions produced higher final intention judgments than low Foreknowledge conditions ($M=6.0$ versus 3.23 , respectively), $F(1,186)=607.5$, $p<.001$.¹⁰ The effect

sizes (eta-squared) were .84 and .77 for Motive and Foreknowledge, respectively. The interaction was also significant, $F(1,186)=33.2$, $p<.001$ such that the increase in attributed intention resulting from Foreknowledge was greater when Motive was positive ($M=4.57$ to 7.94 , an increase of 3.37) than when Motive was negative ($M=1.88$ to 4.06 , and increase of 2.18). The effect of Order was not significant, nor were there any two- or three-way interactions involving Order. Table 3 (column means) shows the pattern of responses for conditions involving Motive, Foreknowledge, and Order. As expected, both Motive and Foreknowledge information were of great importance for intention judgments.

The relative importance of Motive and Foreknowledge information. In the present study it was hypothesized that subjects' judgments would be more influenced by Motive information than by Foreknowledge information. When Motive information was high it was expected that subjects would judge intention more likely than when Foreknowledge was high, and when Motive information was low it was expected that subjects would judge intention less likely than when Foreknowledge was low.

Figure 1 shows that the change in intention was greater as a function of Motive information than as a function of Foreknowledge information, suggesting that Motive information was more influential than Foreknowledge

information in judgment. But this result cannot be taken as firm evidence that Motive information is generally more important because it is entirely possible that the sentences used to convey Motive information in the present study were simply stronger those used to convey Foreknowledge information. It is necessary to distinguish cue weight (i.e., general importance) from cue intensity or scale value (i.e., potency of these particular stimuli).

Insert Figure 1 about here

As Anderson (1982) and Abelson and Levi (1985) have pointed out, there is no single unambiguous way to determine the relative importance of various stimuli in judgment. Both sources list and critique a variety of approaches that have been used. Among the measures of importance commonly used are (a) significance levels, (b) zero-order and partial correlation coefficients, (c) various effect size measures, especially eta squared, (d) raw-score and standardized regression coefficients, and (e) self- or subject-estimated weights.¹¹ Each of these methods has problems, and an evaluative critique of their relative strengths and weaknesses for assessing cue importance is beyond the scope of the present work. However, if a variety of approaches to determining cue importance all revealed the same general pattern, greater confidence in the pattern should be

warranted. Table 4 shows a comparison of the measures of cue importance of Motive and Foreknowledge information, as determined by each of the above measures.

Insert Table 4 about here

With the exception of the subject-estimated weights, each of these measures tend to confound cue weight and cue intensity because they are derived directly from subjects' responses to the stimuli. The subject-estimated weights, however, were not generated from the experimental data but from a separate sample of subjects. This measure was obtained from a pretesting of the Scenarios and Information. Pretest subjects had been asked to read one of the brief scenarios, then to read a single sentence which was either a Motive, Foreknowledge, or neutral sentence. Subjects were then asked to rate (a) how useful or informative the sentence was for indicating the target's intention on a 0 (not at all) to 11 (extremely useful) scale and (b) whether the sentence caused them to think that the target had or had not intended the outcome. The first scale provided a measure of the sentence's potency or intensity while the second provided the direction of the information (toward or away from intention). By combining the two scales, a single 23-point direction + intensity measure (with 0 as the midpoint, +11 as strongly implying intention, and -11

strongly implying lack of intention), was obtained. Pretest subjects were approximately 150 Michigan State University undergraduates recruited from introductory psychology classes and from an undergraduate statistics class. Approximately fifteen independent ratings were available for every sentence.

The final rows in Table 4 show pretest subjects' estimates of the mean cue intensity for the M+, F+, M-, and F- sentences used in this experiment. Higher positive numbers reflect pretest subjects' judgments that the information more strongly indicated intention, while higher negative numbers reflect judgments that the information more strongly indicated lack of intention (zero indicated uncertainty or neutrality of the information). The greater range of the Motive information suggests that Motive may have had slightly greater cue intensity, but it is important to note that the range for Motive was not symmetrical around the zero point. High Motive information was rated as more potent than High Foreknowledge information in the positive direction, but Low Foreknowledge information (F-) was rated as more potent in intensity than Low Motive information (M-) in the negative direction. This is important because if responses to Motive and Foreknowledge information in the experiment were simply reflections of these values of cue intensity (assuming minimal measurement error), Low Motive conditions would have resulted in stronger attributions of

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intention than Low Foreknowledge conditions, but instead the reverse occurred. It appears that the potency of the Motive and Foreknowledge manipulations were roughly comparable, though positive Motive might have been slightly more potent than positive Foreknowledge, and negative Foreknowledge might have been slightly more potent than negative Motive. It also appears that information suggesting the absence of a Motive produced more of a drop in attributed intention than did information suggesting the absence of Foreknowledge.

It might also be argued from the pretest data that the potency of the manipulations approached the extremes of the scale. Though the manipulations of positive and negative information were certainly not perfect (i.e., they were not rated as perfectly diagnostic of intention or nonintention by pretest subjects), the positive information (implying intention) fell at toward the upper end of the scale and the negative information (implying no intention) fell toward the lower end of the scale. If we assume roughly uniform distribution across the scale, the positive and negative information fell at roughly the 80th and 20th percentiles, respectively.

The exonerating effect of the no-Motive condition is also evident in a comparison of initial and final intention judgments. Figure 2 shows that change scores--Final Intention minus Initial Intention--indicate that subjects revised their judgments downward when information suggested

the absence of a Motive, but they made no such downward revision when information suggested the absence of Foreknowledge.

Insert Figure 2 about here

The mean decrease from Initial to Final judgment when Motive information was negative (and Foreknowledge was positive) was $-.53$, while the same difference when Foreknowledge information was negative (and Motive was positive) was $-.04$. Analysis of the four conditions in the middle of Figure 2 (i.e., F+M-, M-F+, F-M+, M+F-) revealed a significant effect for Motive on change scores, $F(1,175)=7.23$, $p<.01$, but no effect for Foreknowledge ($p>.10$). Thus, the absence of a Motive (coupled with the presence of Foreknowledge) seems to produce an exonerating effect while absence of Foreknowledge (coupled with the presence of Motive) does not.

A final way to assess the relative importance of Motive and Foreknowledge information for judgments of intention is to examine subjects' responses to questions about the likelihood that the target had wanted the given outcome (motive) or knew that the outcome would occur (foreknowledge). These measures provided an indication of the degree to which Motive, Foreknowledge, and Intention "hangs together" in subjects' cognitions. The correlations between subjects' attributions of how likely the target had

wanted the outcome (Motive) and attributions of intention was $r=.78$, while the correlation between their attributions of how likely the target knew the outcome would occur (Foreknowledge) and attributions of intention was $r=.61$. The partial correlation, measuring the proportion of variance in intention uniquely accounted for by the Motive "manipulation check" when the effect of Foreknowledge was removed was .68, approximately double the partial correlation for Foreknowledge with Motive removed, which was .37. This suggests that subjects identified Motive with intentionality more than they identified Foreknowledge with intentionality. Of course, it is also possible that the particular Motive information used was simply more memorable than the Foreknowledge information. But it seems equally likely subjects' attributions of Motive more were more influenced by their subjective codings of motive than by their codings of Foreknowledge.

To summarize the issue of importance, the data demonstrate that both Motive and Foreknowledge are important. Subjects' final judgments showed a pattern in which Motive attributions were more closely aligned with Intention than were Foreknowledge attributions, supporting the notion that Motive may be conceptually closer to intention than is Foreknowledge. Motive information presented prior to final judgments produced somewhat more extreme intention judgments than did Foreknowledge

information presented prior to final judgment. There are indications from pretest ratings that the greater increase in intention due to positive Motive information may have been attributable to the slightly greater potency of the positive Motive information. On the other hand, negative Motive information decreased attributions of intention while negative Foreknowledge information did not, and this was not contrary to what was expected from pretest ratings of treatment strength. This may have occurred because subjects inferred that negative Motive information tended to decrease the probability of intention generally, or because subjects partially ignored or mutated Foreknowledge information in the presence of negative Motive information. In any case, the exonerating effect of the negative Motive/positive Foreknowledge condition was small but significant. Taken together, these data suggest that, at least for these subjects considering these situations, Motive information was slightly but significantly more important than Foreknowledge information in influencing judgment.

The integration of Motive and Foreknowledge Information. It was hypothesized that subjects who processed information more heuristically would integrate information about Motive and Foreknowledge in an additive fashion, while subjects who processed information more systematically would integrate the same information in a multiplicative fashion. But there was little evidence that

subjects varied systematically in their processing strategies as a result of the instruction manipulation, and MANOVAs which included the Instructions as a between-subjects variable (despite the lack of a convincing manipulation check) revealed no significant effects involving Instructions. However, it was still possible to examine the way in which subjects generally integrated information.

A simple test of information integration models (proposed by Anderson, 1982) involves visual examination of graphical data. Parallel lines typically indicate that the information integration process is additive, while non-parallel lines (i.e., a linear fan pattern) indicate a multiplicative integration. Figure 3 shows the four data points for the 2 x 2 Motive and Foreknowledge conditions. This figure reveals a slight fan pattern; the slopes of the lines for positive and negative Foreknowledge conditions differ slightly.

Insert Figure 3 about here

But Figure 3 may present only a partial picture because the Motive and Foreknowledge manipulations do not represent the extremes of potential treatment strength. Rather, Figure 3 probably represents results from a restricted range of potential treatment values. The key question then

concerns the severity of the restriction in range. This cannot be unambiguously answered with the available data, but the pretest ratings of scale value can probably shed some light on the issue. It does not seem unreasonable to suppose that the endpoints of the pretest scale approximated the extremities of scale values for Motive and Foreknowledge. Even if more extreme manipulations could be imagined, the Motive and Foreknowledge information presented in this study was at least as unambiguous and extreme as information commonly available in natural settings. Thus, the pretest data provide an imperfect but not unusable metric to judge the extremity of potential restriction in range. Because pretest subjects' ratings had suggested that the treatment scale values fell at approximately the 20th (for negative) and 80th (for positive) percentiles, it seems fair to suggest that the restriction in range was not extreme (i.e., we are likely seeing more than, say, only one quarter of the true picture in Figure 3), but rather moderate.

Given that there was some restriction in range, if one visually extended the lines in Figure 3 another 20% or so on each end (the best estimate from pretest data), the fan pattern would become somewhat more distinct. Based on this, and on the finding of a significant interaction term from the MANOVA analysis, a strictly adding/averaging model should be rejected. The significant interaction and the

slight fan pattern suggest that the multiplying model may be more appropriate.

But a strict multiplying model of information integration fits the data no better. Two analyses support this contention. The first analysis involves a comparison of the predictions of the theoretical integration models with the obtained values for intention judgments. A comparison of predicted and observed patterns for the adding/averaging, multiplying, and combined mathematical models reveals the adequacy of the various integration models, as shown by Table 5. Assume the value 1 (rather than 0) is chosen to represent the low Motive and Foreknowledge conditions, reflecting the possibilities that either (a) subjects viewed the Motive and Foreknowledge information as less than perfectly credible or (b) subjects avoided using the ends of the scale and instead moderated their responses. If the value 2 is assigned to the positive conditions (assuming equal potency and equal weights for the moment), the multiplying model seems to approximate the shape of the data while the adding/averaging model clearly underestimated the magnitude of the increase attributable to the M+F+ condition. When the value 3 was assigned, the pattern suggested by the adding/averaging model more closely approximated the observed data, and the multiplying model overestimated the differences between the intermediate conditions and the positive/positive condition. In each

case, however, the combined model seemed to fit the general pattern of the observed data the best. Thus, strict additivity and strict multiplying should probably be rejected; some compromise between the adding/averaging and multiplying models probably fits the data best.

Insert Table 5 about here

The question then becomes to what extent did subjects make use of the interaction of Motive and Foreknowledge, and this is where the second analysis comes in. The weights assigned to each of the three components (Motive, Foreknowledge, and their interaction) were assessed by entering each factor (Motive, Foreknowledge, and their interaction) into a multiple regression analysis. Results of this analysis, in which responses were averaged across persons and across scenarios, produced the following raw-score regression weights and confidence intervals (in parentheses): Motive: 1.68 (1.58-1.76); Foreknowledge: 1.38 (1.29-1.47); and Motive x Foreknowledge: .28 (.19-.37).¹² Such regression weights are often considered indices of the extent to which factors influenced judgment, though Dawes (1988) suggests that linear models may not be entirely accurate in uncovering the importance of monotonic (ordinal) interactions because simple main effects tend to capture most of the variance when monotonic interactions are

present.

It is clear that the data do not fit a strictly adding or strictly multiplying model and that a combined model fits the data better. It is less clear how much influence or weight should be given to the interaction term (i.e., to what extent were subjects' judgments influenced by an interaction of Motive and Foreknowledge information?). Regression weights and effect sizes (Motive=.84, Foreknowledge=.77, and the interaction=.15) suggest that the interaction term should be relatively small, as does visual examination of Figure 3. Yet those analyses may underestimate the influence of the interaction term, particularly if the interaction is monotonic and if there is a restriction in range of the scale values of the independent variables, as is the case here.

The question of the most appropriate model might be clarified by asking two related questions: (1) what equation or model best fits the observed pattern of data? (2) what equation or model makes the most parsimonious predictions, both in terms of statistical complexity and in terms of probable psychological processes reflected by the various models? We have mostly answered the first question: the model that fits the data best is a combined adding and multiplying model in which the multiplying (interaction) term has more than trivial importance, but probably less importance than of the main effects.

To propose an equation describing the pattern of data, and to address the question concerning the most parsimonious prediction model, requires considering one additional effect on intention judgments: the effect of the subjects' responses to the various scenarios. Table 6 shows subjects' initial intention judgments as a function of Scenario and Position.

Insert Table 6 about here

The means for the row (Position) totals were surprisingly uniform, ranging only from 4.47 to 4.93. (The standard deviations for Position are similarly uniform, ranging only from 2.05 to 2.18.) The same cannot be said for the effect of the scenario content on initial intention judgments. Column means (Scenario) range from 3.05 to 6.44, and standard deviations range from 1.66 to 2.19. The statistical significance of Scenario and Position on initial intention judgment was assessed with a series of ANOVAs in which only one response from each subject was used (an appropriate analysis because the design is essentially between-subjects at that point). For each of these ANOVAs, a single information condition (e.g., M+F+) was selected and the effects of Scenario and Position on initial intention judgment were analyzed as two entirely between-subjects factors. (The information condition, which should have no

bearing on the initial intention judgment, was used simply as a means of selecting one judgment from each subject. In effect, it was the same as randomly selecting a single judgment from each person and allowing scenario and position to vary with equal frequency across subjects.) For every sample of eight judgments, scenario produced a main effect on initial intention judgment (all p-values $<.01$) while position produced no effect (all p-values $>.2$) There were no significant interactions between the two. Thus, it is clear that Scenario influenced subjects' initial intention judgments--outcomes of some scenarios were initially judged as more likely to have been intentional than others, while Position had no effect.

Given that subjects seemed to form initial impressions of the scenarios, it seemed prudent to examine the extent to which these initial impressions carried over to final intention judgments. A repeated measures MANOVA in which initial impression was included as a covariate revealed that the influence of an initial impression judgment remained significant even after relevant information was introduced. This suggests that the influence of subjects' first-impression judgments was not overwhelmed by the effects of relevant information but instead continued to exert a significant influence on intention judgments. The covariate significantly affected judgment for each effect tested.¹³

F-values for the covariate were 7.1, 8.8, and 10.7 for

Motive, Foreknowledge, and their interaction, respectively (all $p < .01$). The original effects remained essentially unchanged when the influence of initial impression were covaried. For instance, effect sizes (eta-squared) were .84, .77, and .13 for Motive, Foreknowledge, and their interaction in the covariate analysis (all effects were still highly significant); the corresponding effect sizes from the original analysis were .84, .77, and .15. This is important because it rules out the possibility that the procedure requiring subjects commit to an initial impression strengthened or amplified the initial impression and thereby exaggerated its effect on final judgment (and possibly simultaneously weakened the influence of information).

It seems that subjects judged the probability of intention differently for each scenario (i.e., each different situation), and that their initial judgment established an anchor point around which later judgment would move. This process is consistent with a two-stage judgment in that an initial impression, which may be based on heuristic processing (because little information is available for systematic processing), carries over to final judgment. The finding is also consistent with the "anchoring heuristic" proposed by Kahneman and Tversky (1982) wherein persons' "reasoned" judgments tend to be influenced in the direction of an initial estimate, even though the initial estimate may be arbitrarily derived.

The effect of an initial judgment (based on Scenario) can be easily represented in a model by a constant term in a standard regression equation. In these data, the constant for initial impression is 4.7 (averaged across all scenarios). (If the interest were in examining individual scenarios or providing for their effects rather than exploring the applicability of a general, cross-situational model, the constant would vary according to the mean judgment for each scenario.)

Subjects' responses to these stimuli can be best described by a model that includes an initial impression, two main effects, and an interaction term:

$$\text{Intention} = C_0 + w_m M + w_f F + w_{mf} MF$$

where C_0 , a constant, is the initial impression, $w_m M$ is Motive (1=positive; -1=negative) times its weight, $w_f F$ is Foreknowledge (1=positive; -1=negative) times its weight, and $w_{mf} MF$ is the interaction term times its weight. Weights for various terms are probably best suggested by raw score regression weights. Though less than ideal (see Dawes, 1988), these regression weights may be the best estimates of how subjects used the information (see Abelson & Levi, 1985). The data suggest that the weight assigned to Motive information should be slightly higher than that assigned to Foreknowledge information. Raw score regression weights derived from the regression analyses suggest that there is a change in final intention judgment of about plus

or minus 1.7 for each unit change in Motive and a change in final intention of about plus or minus 1.4 for each unit change in Foreknowledge. The interaction term can be assigned a weight of .3 (its approximate raw-score regression weight).

Whether this model represents the most parsimonious prediction or process model, however, is another question. Dawes (1988), Einhorn et al., (1979), and others have argued that simple additive linear models (with no interaction component) often do an admirable job of predicting judgment. Further, Dawes argues that there are psychological reasons why this is so. Those reasons relate to the probable psychological processes involved. Basically, he argues that persons have great difficulty attending to two or more aspects of a situation at once (i.e., joint necessity), but instead are more likely to proceed sequentially, making incremental changes to judgment as each new piece of information is encountered.

Such a process description would fit a simple adding model quite well. Such a model would be represented by

$$\text{Intention} = C_0 + w_M M + w_F F.$$

Certainly an adding model makes simple assumptions about the cognitive processes involved. It is likely that subjects' initial judgments, which probably reflected ambivalence, included implicit inferences about motive and foreknowledge (though this could not be verified with the current

procedures). When subjects encountered a piece of new, intention-relevant information, they simply made incremental changes in their impressions in the direction suggested by the information.

A description of the processes suggested by the combined model would be more complex, probably requiring an assumption that persons were vaguely aware, or that some persons were aware of the logical necessity of including both Motive and Foreknowledge for intention. For reasons of parsimony, the simpler adding model may be preferred here as a prediction model for judgments of intention. This is consistent with Dawes's three reasons why simple linear models seem to predict so well: most interactions in nature are monotonic, main effects models typically do a good job of approximating monotonic interactions, and process explanations consistent with main effects models are often more parsimonious than explanations consistent with monotonic interaction models (Dawes, 1988; p. 212-215).

Some support for the predictive utility of a simple adding model was provided by the results of a stepwise multiple regression analysis. Stepwise regression enters variables sequentially according to how much of the variance in the criterion (final intention) is accounted for by each factor. Factors are entered in decreasing order of magnitude (i.e., those accounting for the most variance are entered first) until all factors which have a significant

effect (usually $p < .05$) on the criterion are entered. One can determine the percent of variance in the criterion accounted for by each factor by subtracting the R^2 for each equation from the previous equation. Results are presented in Table 7. The simple additive model accounts for 49% of the variance while addition of the interaction component to the model increases the variance accounted for by 1% (to 50%). Though such an analysis should be interpreted with caution (because scale values of the variables may be restricted and because main effects models capture most of the variance when monotonic interactions are present), the results tend to corroborate the relatively small predictive utility of the interaction term in an equation.

Insert Table 7 about here

These two models can be compared with the observed data.

<u>Adding Model</u>	<u>Adding+Multiplying Model</u>	<u>Observed</u>
<u>Predicted</u>	<u>Predicted</u>	<u>Data</u>
4.7+1.7+1.4= 7.8	4.7+1.7+1.4+.3 = 8.1	7.94
4.7+1.7-1.4= 5.0	4.7+1.7-1.4-.3 = 4.7	4.57
4.7-1.7+1.4= 4.4	4.7-1.7+1.4-.3 = 4.1	4.06
4.7-1.5-1.5= 1.6	4.7-1.7-1.4-.3 = 1.3	1.88

Both models provide a reasonable fit to the observed

data. It seems reasonable to suggest that the combined model is the closest statistical fit to the observed data, but the simple adding model may provide an adequate predictive model consistent with parsimonious assumptions about underlying psychological processes. The issue becomes whether or when the addition of the interaction term provides a fit that is significantly superior to the simpler additive model, and, if so, whether the superior statistical fit is worth the greater potential problems in interpretability and lack of parsimony.

Analyses of Potential Moderator Variables

Theoretical considerations had suggested the possibility that other variables besides the failed instruction manipulation might have moderated how subjects processed information about intention. Also, the finding that a multiplicative term had at least a small influence raises the possibility that some subjects may have used the multiplicative term more than others.

Several potential moderator variables were measured in this experiment: mood, self-esteem, grade-point average, gender, political orientation, and age. Analyses were conducted in which each was entered separately as a between-subjects variable. Variables not already in dichotomous form were dichotomized with a median split, or an upper- and lower-thirds split. Two of the variables, Mood and Self-esteem, produced interactions with the Information

conditions when they were entered as between-subjects factors in repeated measures MANOVA. They are considered below. Among the others, only gender produced an effect. MANOVA revealed an effect for gender on initial impression judgments such that males judged initial intention as more likely than did females. This main effect was highly significant (means were 5.33 for males and 4.36 for females, $F(1,226)=7.78$, $p<.01$), and also consistent in that males inferred intention as more likely than females for all eight scenarios (there was no interaction between scenario and gender.) Interestingly, when gender was entered as a factor in an analysis of final intention judgments, it produced neither main effects nor interactions. Apparently, whatever effect gender had on initial judgment could not be detected at final judgment, possibly because the effect of information overwhelmed the influence of gender.

Mood. It was hypothesized that persons in a sad mood would make stronger initial attributions of intention than would persons in a happy mood. It was also hypothesized that persons in a sad mood would be more influenced by Motive information and less influenced by Foreknowledge information relative to persons in a happy mood.

Subjects had rated themselves on a series of adjectives prior to reading the scenarios. These adjectives (happy, sad, pleased, angry, irritated, trusting, sociable, anxious) were entered into a principle components factor analysis

with Varimax rotation (SPSSx). Two easily-interpreted factors emerged: factor 1 (hereafter called Positive Mood) was made up of the terms happy, pleased, sociable, and trusting (factor loadings were .83, .78, .73, and .62, respectively); factor 2 (hereafter called Negative Mood) was made up of terms sad, angry, and irritated (Factor loadings were .81, .79, and .76, respectively. Because "anxious" loaded positively on both factors--.37 and .50, it was excluded.) The two factors were negatively correlated ($r = -.63$), so in addition to considering the factors separately, it made sense from a conceptual standpoint also to consider a single factor representing Positive-to-Negative mood. (This latter mood scale correlated with the former $r = .87$) The relationship between positive and negative moods found here is somewhat at odds with other research that finds these factors to be relatively independent (e.g., Diener & Emmons, 1984). It is possible that the brevity of the scale used to assess affect in this study contributed to this, though the actual reason for the apparent inconsistency remains in doubt.

Subjects' responses were grouped by assigning subjects scoring in the upper third to the "high" group and those in the lower third to the "low" group, while those in the middle were discarded. This three-way (as opposed to median) split was used because the procedure enhanced group differences and because the sample sizes were sufficiently

large to tolerate loss of some observations.

Repeated measures MANOVA revealed that the between-subjects factor of Positive Mood had no significant main effect on subjects' initial or final intention judgment. However, it did interact with Foreknowledge information. Mean intention judgments for persons in a positive mood were 6.0 versus 3.0 for positive versus negative Foreknowledge, respectively, while the corresponding means for persons in a negative mood were 5.9 versus 3.3, $F(1,113)=4.73$, $p<.05$. Results indicate that persons in a more positive mood were slightly (effect size = .04) but significantly more influenced in their judgment by the implications of the Foreknowledge information than were persons in a negative mood.

The finding shows a tendency for mood to moderate judgment in a way that is generally consistent with the hypothesis that persons in a negative mood tend to rely on the implications of Motive and Foreknowledge information differently than do persons in a positive mood, but current results do not exactly fit what had been hypothesized. It had been hypothesized that sad persons would rely on the implications of Motive more than would persons in a happy mood, but this effect was not significant ($p>.15$). It is not immediately clear why the relevance of Foreknowledge information should decrease, but the relevance of motive information should remain unchanged for persons in a

negative mood relative to persons in a positive mood. The notion of mood congruence seems more amenable to a result wherein negative mood subjects assume negative motives for targets (i.e., bad feeling are congruent with bad desires and bad intentions). Foreknowledge seems to be an assessment of a person's (cognitive) comprehension of cause-effect relationships, and as such seems relatively less congruent with affect. Why subjects experiencing negative affect seem less sensitive to a cognitive cue but show no change in sensitivity to an affective cue is unclear.

It is also possible to interpret the result as one in which subjects differed in their relative use of Motive and Foreknowledge. Subjects relied proportionately more on Motive and less on Foreknowledge when in a negative mood. This interpretation is more consistent with the original hypothesis that subjects would show a greater preference for the implications of Motive over Foreknowledge information when they were in negative moods.

It is interesting that persons in both mood groups still gave lower intention judgments for the "exonerating" M-F+ condition than they did for the M+F- condition. This suggests that the effect of negating Motive may generally tend to lower attributions of intention (relative to their initial intention judgments), while the effect of negating Foreknowledge does not.

Self-esteem. No specific hypotheses concerning subjects' self-esteem were advanced, but the variable was included because it was expected that self-esteem would correlate with variables such as trust, suspicion, and dogmatism, all of which might have implications for how persons make inferences about intentions. Self-esteem was measured with Rosenberg's (1979) 10-item scale, and subjects were once again trichotomized to enhance differences between high and low self-esteem groups.

Repeated measures MANOVA with Esteem as the between-subjects variable was conducted. The pattern of results paralleled those for the mood variable. Esteem produced no main effects for initial or final intention judgment, but it did interact with Foreknowledge. Mean intention judgments for the positive mood subjects were 6.0 versus 2.9 for positive versus negative Foreknowledge, respectively, while the corresponding means for negative mood subjects were 5.9 versus 3.4, $F(1,105)=4.76$, $p<.05$. Subjects high in self-esteem tended to rate intention as higher when Foreknowledge was positive and lower when Foreknowledge was negative compared to subjects in the low self-esteem group. They were more sensitive to the implications of Foreknowledge information, but again no more or less sensitive to Motive information. This too could be seen as a case in which subjects relied relatively more on Motive over Foreknowledge when esteem was low.

The similarity between this finding and that for mood is not surprising because the two variables were moderately correlated ($r=.32$), suggesting that many of the same persons were in both the high Positive Mood and high self-esteem groups. Nevertheless, the two groups were far from identical. Taken together, these two effects suggest that affect moderated how persons attributed intention. Persons in more positive moods tended to make greater use of the implications of Foreknowledge information relative to persons in less positive moods.¹⁴

There were at least two reasons why it seemed worthwhile to explore this effect of mood and intention in a follow-up experiment. The first, and most important reason, was that the relationship between mood and processing of intention-relevant information was interesting. The finding that persons in a negative mood (and persons with lower self-esteem) made somewhat less use of Foreknowledge information but apparently no more or less use of Motive information was unexpected. If this were replicated, it would strengthen confidence in the effect and further stimulate the search for a good causal explanation.

A second reason was that a second experiment could also provide a replication and test of how accurately the simple additive integration model predicted judgments made by a different group of subjects. For these reasons, a decision was made to conduct a second study and manipulate mood

rather than measure it as a naturally-occurring phenomenon.

Hypotheses for Experiment 2

Based on the results from the first experiment, it was hypothesized that judgments of subjects in a positive mood would reflect proportionately greater reliance on Foreknowledge information than would judgments of subjects in a negative mood. Though no differences in the use of Motive information were found between positive and negative mood subjects in the first experiment, it was hoped that by manipulating mood, somewhat more clearly differentiated mood groups would emerge, and the predicted pattern involving the use of Motive information would be found (i.e., judgments of persons in a negative mood would show proportionately greater reliance on Motive information than would subjects in a positive mood).

It was also expected that judgments of subjects in both mood groups could be adequately predicted with a simple adding integration model, though if the pattern from the first experiment held, a combined model might be a more accurate description. Of course, the predictions in the paragraph above would suggest that the weights afforded the Motive and Foreknowledge components would vary such that positive mood subjects would weigh Motive less and Foreknowledge more than would negative mood subjects.

CHAPTER IV

EXPERIMENT 2

Method

Subjects

Subjects were 34 undergraduates recruited from introductory psychology courses from Indiana University at Kokomo. They participated in exchange for extra credit points. Subjects ranged in age from 18 to 48 years-old, with a mean age of 26.7 years. Females made up eighty-five percent of the subjects. The subject population for Experiment 2 differed from that of Experiment 1 in that subjects for Experiment 1 came from a large research university while subjects for Experiment 2 came from a small commuter-oriented branch campus with approximately 4,000 students. Though subjects for both Experiments 1 and 2 were predominantly female, the student population for Experiment 2 had a higher proportion of older, nontraditional students, as reflected in the mean age of the sample for Experiment 2.

Materials and Procedure

An unrelated studies paradigm was employed for Experiment 2. A mood induction technique was used for the first "study," and this was followed by essentially the same intention judgments study as was reported in Experiment 1.

Subjects were told that they would participate in two brief unrelated studies. It was explained that because both studies were short, they could be conducted on the same day. Subjects were told that the first study was an investigation of the relationship between mood and memory and that the experimenters were interested in people's recall of memories that were associated with certain feelings. After signing a consent form, subjects were asked to recall and write about an event that had made them feel happy (for the Happy group) or sad (for the Sad group). After writing for approximately 10 minutes, the responses were collected, the students were thanked, and the first experimenter departed.

The second experimenter then entered and introduced the "second experiment," a study of how people judge the intentions of others. Subjects were given written instructions (the same as in Experiment 1, except for the absence of the paragraph designed to manipulate heuristic versus systematic processing strategies) and asked to read along as the experimenter read the instructions aloud. After ascertaining that the instructions were clear to everyone, the experiment proceeded from that point just as it had in Experiment 1. The materials for Experiment 2 were identical to those for Experiment 1.

The same Greco-Latin square design was used for Experiment 2. However, because there were significantly fewer subjects, only two replications of the eight different

booklet types, represented by the rows of Table 3 were employed for each of the two groups (i.e., 16 subjects for each group).

One other difference from Experiment 1 should be noted. In Experiment 1 the procedure by which "happy" and "sad" subjects received booklets was assumed to be one that distributed the booklet-types (i.e., rows of Table 3) approximately equally. Since mood was manipulated in Experiment 2, different groups were identified as happy or sad before distribution of the booklets. Thus, an equal number of booklets of each type could be distributed to the two groups (run in two sessions), thereby assuring that neither group received certain booklets (rows) which produced slightly higher or lower intention ratings.

Results and Discussion

The first question of interest was whether the simple additive model could be used to predict the judgments of subjects generally. The second question of interest was whether manipulated mood moderated the manner in which subjects judged intention.

The same analytical strategy that was used in Experiment 1 was applied in Experiment 2. In this experiment, however, there were considerably fewer subjects. Twenty subjects were run in the group that was asked to recall a happy event, and sixteen were run in the group

asked to recall a sad event. One of the persons in each group failed to complete most of the booklet, so those persons' data were not included. As a result, the number of different booklet types (rows of Table 3) was not exactly the same in both groups, though they were nearly so.

Manipulation Checks

The same mood-related terms used in Experiment 1 were again used as an index of subjects' mood in Experiment 2. When the mood-related terms were entered into principle components factor analysis, the solution was similar but not identical to that obtained in Experiment 1. Again the first factor to emerge was Positive mood, composed of the variables Happy, Pleased, and Trusting (with loadings of .84, .84, and .83, respectively). The second factor was Negative mood, composed of variables Sad, Irritated, Angry, and Anxious (with loadings of .65, .76, .78, and .66, respectively). One term, Sociable, did not load significantly on either factor and was identified as a third factor. Given the small number of subjects (34), it is not surprising that the results differed slightly from those obtained in Experiment 1. The results were similar enough, however, to suggest that the same two basic factors, Positive and Negative mood, were being measured.

When those factors were used as dependent measures to gauge the effectiveness of the mood manipulation, results supported its general effectiveness. Though the difference

in Positive mood was negligible between the two groups ($M=20.5$ for the Happy versus 19.5 for the Sad group, $F(1,33)=.46$, ns.), the difference in Negative mood was highly significant ($M=5.4$ for the Happy versus 8.3 for the Sad group, $F(1,33)=8.42$, $p<.01$), as was the difference in a combined Positive-to-Negative mood factor ($M=15.6$ for the Happy group versus 11.1 for the Sad group, $F(1,33)=5.75$, $p<.05$). Thus, there is adequate evidence that the manipulation produced differences in mood between the groups. It is worth noting that the single items for sad and happy approached, but did not quite reach, significance. Subjects exposed to the happy mood manipulation were happier than those exposed to the sad manipulation ($M=5.4$ versus 4.6 , $F(1,35)=.4.11$, $p<.06$), and those exposed to the sad manipulation were sadder ($M=3.1$ versus 2.1 , $F(1,35)=3.6$, $p<.07$). It is difficult to say exactly why these measures did not reach significance while the composite measures did, though unreliability of a single item is certainly one possibility. In any event, some aspect of mood was apparently affected by the manipulation, though it may be more accurate to label the groups as Positive and Negative mood groups rather than Happy and Sad groups.

Mood and The Integration of Motive and Foreknowledge Information

As in Experiment 1, repeated measures MANOVA was performed on these data. Results paralleled those of the

Experiment 1 in that final intention judgment was affected by Motive ($M=6.5$ versus 2.9 ; $F(1,31)=132.8$, $p<.001$, eta squared=.81) and Foreknowledge ($M=5.6$ versus 3.8 ; $F(1,31)=26.2$, $p<.001$, eta squared=.46). The interaction was also significant ($F(1,31)=11.3$, $p<.01$, eta squared=.27). Table 8 lists means for each of the combinations of Motive and Foreknowledge, as well as a breakdown for Positive and Negative mood groups.

Insert Table 8 about here

Order produced no main effects or interactions in Experiment 2. The row variable (in Table 3) produced no significant effects, suggesting that subjects' final intention judgments did not differ significantly as a result of which booklet type they received. This is notable because the lack of an effect for booklet type helps establish that any differences between the Positive and Negative mood groups are not be an artifact of one group receiving booklets whose combinations of Scenario and Information biased judgment in one way or another.

Regression analyses were undertaken to test the extent to which the effects of Motive and Foreknowledge, as well as their interaction, could account for variance in subjects' intention judgments. Table 8 shows how well the adding/averaging and multiplying models predicted final

intention judgments for all subjects, for the Positive mood group, and for the Negative mood group. It is evident that both integration models again approximated the data reasonably well, though it appears that both models were more accurate for the Positive mood group than for the Negative mood group.

Compared with the subjects in Experiment 1, all subjects in Experiment 2 showed a tendency to base judgment proportionately more on Motive information than on Foreknowledge information. This trend was confirmed by multiple regression. In Experiment 1, the percentage of variance uniquely accounted for by Motive, Foreknowledge, and their interaction was 29%, 20%, and 1%, respectively. In Experiment 2, the percentages were 33%, 10%, and 2%. Thus it seems there was an overall difference in the way that subjects in the two experiments used Motive and Foreknowledge information. One possible explanation for this is that there may be differences between the two subject populations unrelated to the mood manipulation. For instance, the subject population from Experiment 2 are generally older and have lower SAT scores than those of Experiment 1. These differences may correlate with a general tendency to use the implications of Foreknowledge information proportionately less than the implications of Motive information. Other interpretations are certainly possible. For instance, something about the fact that

Experiment 2 subjects had mood manipulated while Experiment 1 subjects did not may have produced the effects, or possibly differences in procedure may have contributed. At this point, it is not clear why Experiment 2 subjects showed this general tendency to more heavily rely on Motive information.

Table 8 also suggests that the tendency to rely on Motive information and underutilize Foreknowledge information (relative to subjects in Experiment 1) was more pronounced for the Negative mood group than for the Positive mood group. In fact, for the Positive mood group, the 95% confidence intervals for the raw-score regression weights for Motive and Foreknowledge overlap (Motive=1.5-2.2; Foreknowledge=.9-1.6) but this is not the case for the Negative mood group (Motive=1.4-2.3; Foreknowledge=.23-1.3). This suggests that Motive information was probably significantly more important than Foreknowledge information for subjects in a negative mood, but it may not have been for subjects in the positive mood.

It is interesting that the Beta weights obtained from Experiment 1 closely approximate those from Positive mood subjects in Experiment 2 (.54 and .59 for Motive; .44 and .40 for Foreknowledge; and .09 and .15 for the interaction), suggesting that these two groups weighted information in much the same way. In contrast, corresponding Beta weights, particularly for Foreknowledge, for subjects in the Negative

mood group of Experiment 2 differed from those of subjects in Experiment 1 (.54 and .58 for Motive; .44 and .21 for Foreknowledge; and .09 and .15 for the interaction). The implication of all these is that when subjects were in a negative mood, they tended to utilize Foreknowledge information proportionately less.

This, of course, suggests an interaction between mood and information. The influence of mood and its potential interaction with information were tested by including Mood as a between-subjects factor in MANOVA. The Mood variable had a significant main effect on final intention ($M=4.3$ versus 5.1 for Positive and Negative mood subjects, respectively; $F(1,31)=6.21$, $p<.05$, $\eta^2=.17$). Figure 4 illustrates the pattern of judgments for Positive and Negative mood subjects.

Insert Figure 4 about here

Based on results of Experiment 1, mood was predicted to interact with Foreknowledge such that persons in a negative mood would base their judgments less on the implications of Foreknowledge information than would persons in a positive mood. But the interaction involving Mood and Information in Experiment 2 was not significant ($p<.18$).

Despite the lack of replication of statistical significance of the Mood by Foreknowledge interaction in

Experiment 2, there is reason to believe that the effect was replicated. The reason is this. Since one experiment found the effect and the other experiment did not, one possibility is that one or the other experimental result is in error. The most salient difference between Experiments 1 and 2 is the difference in sample sizes. Experiment 2 had a sample size only about one sixth as large as that in Experiment 1, producing a considerable reduction in statistical power. This makes it more likely that the results of Experiment 2 are a type II error--failure to identify an effect. The argument that the nonsignificant result from Experiment 2 was actually a type II error is further supported by the fact that the means from the two experiments showed a virtually identical pattern, and effect size (eta squared), which are not dependent on sample size, were very similar. In Experiment 1, the "significant" effect size was .04, while in Experiment 2 the "nonsignificant" effect size was .06. It is well known that simply varying sample size can cause an effect to move into or out of the traditional ranges of statistical significance, all else being equal (see Welge-Crow, LeCluyse, & Thompson, 1990; however, see Chow, 1988 for an opposing view). Thus, if one looks only at significance levels, the conclusion would be that the effect was not replicated, reducing confidence in it. However, if one looks at result importance and result generality, the conclusion would be that the effect was

replicated. The replication was almost exactly what one might have predicted had the results of Experiment 1 been been viewed as revealing a small but significant effect. Other explanations for the lack of statistical significance in Experiment 2 are possible (e.g., Type I error in Experiment 1, differences in the subject populations, differences in the way manipulated versus naturally-occurring mood affected judgment), but the explanation based on sample size seems the most plausible and parsimonious in light of the available evidence.

A "mini meta-analysis" was conducted as an attempt to gauge the most probable effect size. Combining the effect sizes (eta-squared), weighted by the means for the two experiments, resulted in an estimated effect size of .044. The standard deviation for the estimated effect size was .008. Taking two standard deviations above and below .044 results in a 95% confidence interval of .028 to .060. Because the confidence interval does not include 0, the conclusion should be that the effect is likely not due to error, but is real (though small). Taken together, the results from Experiments 1 and 2 indicate that the Mood by Foreknowledge effect, wherein subjects in a positive mood made more use of Foreknowledge information than did subjects in a negative mood, is real, but relatively small.

Analysis of initial intention judgments were also undertaken to investigate the extent to which mood might

have influenced earlier stages of processing (i.e., the subjects' first impressions). Repeated measures MANOVA revealed a marginal main effect for Mood such that Negative mood persons inferred initial intention as more likely than Positive mood persons, $F(1,32)=3.81$, $p<.07$. It was interesting to note that the marginal effect produced by Mood on initial impressions became a significant effect on final judgment. As figure 4 illustrates, Negative mood subjects judged final intention as more likely in each of the four conditions (M+F+, M+F-, M-F+, M-F-). This finding suggests that mood may have influenced subjects' initial hypotheses, and it also possibly influenced the way that they weighed intention-relevant information. The effect of Mood at either stage in processing (hypothesis generation or hypothesis testing) was not dramatic, but their cumulative effect resulted in significantly different attributions for Negative versus Positive mood subjects.

CHAPTER V

GENERAL DISCUSSION

As expected, both motive and foreknowledge information had very large significant effects on judgments of intention. Together, they accounted for approximately half of the variance in subjects' judgments. Though probably not surprising, this result is still notable considering that (a) the scenarios differed in many ways, making cross-situational judgment consistencies more difficult to obtain, and (b) the strength of the motive and foreknowledge manipulation--as indicated by pretest subjects' ratings--varied over the eight scenarios, yet the manipulations were dichotomously coded, resulting in some loss of measurement precision. It is clear that inferences related to both motive and foreknowledge are extremely important in judgments of intention.

Results of these two experiments suggest that motive information and foreknowledge information each contributed substantially to judgment. The effect of one source of information changed depending on the state of the other source, as revealed by the significant interaction. But the extent (and generalizability) of this finding is difficult to nail down because its interpretation depends on

assumptions about the credibility of the manipulations, the scale values of the manipulations, and the choice of statistical test.

If we assume that the manipulations were credible, that the manipulations approximated the extremes of potential scale value, and if we examine variance accounted for in the regression equations, the interaction effect should be regarded as quite small. From this point of view, the substantial interaction effect predicted by a normative or rational model of intention (i.e., a 3 versus 1 interaction pattern wherein subjects attribute intention only when both motive and foreknowledge are present) did not materialize. Instead, the absence of either motive or foreknowledge information combined with the presence of the other factor resulted in the attribution of a moderate degree of intention. This moderate degree of attributed intention may well have been an expression of subjects' ambivalence or confusion as much as a partial endorsement of intention. Nevertheless, it was not a judgment of nonintent, as a normative model would suggest.

If we assume that the manipulations were only partially credible, that the scale values were restricted in their range, and if we examine the significant MANOVA interaction, the interaction effect should be regarded as quite substantial. Given these assumptions, it appears that subjects' assessments of the implications of one kind of

information (e.g., Foreknowledge) was partly dependent on the scale value of the other kind of information (e.g., Motive).

Which set of assumptions is correct? The truth probably lies somewhere between the two. The manipulations have face validity and are probably less ambiguous than information often encountered in natural settings, thus they are probably reasonably, but not absolutely, credible. The pretest data suggests that there was some restriction in range in the independent variables, but it was not severe. Given this, it seems fair to suggest that a strict adding or multiplying model should be rejected in favor of a combined model as a mathematical description of subjects' judgment processes. However, translating this mathematical description into a psychological description may be difficult. A simple adding model seems much easier to translate into a parsimonious description of psychological processes. The simple adding model also account for most of the variance in the data. Thus, as a simple predictive device, a simple adding model may be more than adequate.

There was some evidence that the small interaction that did occur (in both experiments) occurred primarily because exonerating motive information slightly diminished the effect of positive foreknowledge information. When foreknowledge was positive (i.e., intention-confirming), negative motive information caused subjects to judge

intention as less likely, relative to their initial impression judgments. But negative foreknowledge information (combined with positive motive information) produced no such change in judgments. In short, take away the motive (while leaving foreknowledge) and you slightly reduce the probability of intention, but take away foreknowledge (while leaving motive) and you do not reduce it. The small interaction effect reflected a general trend for subjects to rely proportionately more on the implications of motive information than on the implications of foreknowledge information.

One possible reason for this greater relative reliance on motive information is that motive may be conceptually closer to how persons normally (heuristically) think of intention. Consequently, when making judgments of intention, persons might be more easily influenced by motive information than by foreknowledge information. There is theoretical evidence for this from developmental psychology and from ordinary language usage, and there are suggestions to support it from attribution theory, as well as from the data.

An alternate possibility is that the greater influence for motive information might be an artifact of the particular stimuli used in these experiments. While this possibility exists, there are reasons to argue that the finding concerning motive's importance is generalizable.

Pretest subjects tended to rate the Motive and Foreknowledge as approximately equal in potency (though motive information was rated as slightly more potent when factors were positive, and foreknowledge was rated as slightly more potent when factors were negative). Experiment 2 found a larger disparity in favor of motive information using identical materials. Finally, corroborative evidence is available from a recent study by Alicke et al. (1990). They examined the effects of foreseeability (high and low), motive (positive and negative) and outcome valence (positive and negative) on judgments of intention and responsibility. By restricting comparisons to their negative outcome valence conditions, a more direct comparison with the present investigation is possible.

Alicke et al. did not examine or report the effect of foreseeability on intentions (they examined it as a moderator for the effect of outcome valence on intention). But it is still possible to examine visually the relative effects of motive and foreseeability on intention from their reported means. Figure 5 shows a table of their reported means (5a), as well as a graph revealing the slopes for motive and foreknowledge on intention (5b). It is clear that motive produced a significantly larger effect on intention judgments than did foreknowledge.

Insert Figure 5 about here

It is probably worth mentioning that Alicke et al. used a manipulation of outcome foreseeability rather than foreknowledge. Though the difference between these may seem inconsequential in some instances (e.g., when actual foreknowledge is unknown, subjects may assume foreknowledge directly from foreseeability), it is nevertheless important. The former tends to emphasize something about the situation while the latter tends to emphasize something about the actual cognitions of a target. It may be that Alicke et al. found less of an effect for foreknowledge than was found in the present experiment (as revealed by a flatter slope for foreknowledge) because they used a foreseeability (as opposed to foreknowledge) manipulation. As legal theorists note, the general foreseeability of outcomes is certainly relevant, but what a target actually foresaw is the critical issue for inferences of intention.

It is possible that Alicke et al. developed and used more potent motive manipulations. But they used entirely different scenarios from the ones used here and did not consider (or at least did not mention) hypotheses relating to the relative importance of motive and foreknowledge. Therefore, it is less likely that they would have been

biased toward constructing weaker foreknowledge manipulations (and as more investigators construct manipulations, it seems less likely that stronger effects for motive over foreknowledge would result from chance). Instead, it may be that experimenters simply have a more difficult time constructing potent and credible foreknowledge manipulations, compared with motive manipulations. It is also possible that perceivers have a more difficult time recalling foreknowledge manipulations or integrating them in judgment. In either case, it says something about the difficulty of cognitively connecting inferences based on another's foreknowledge with intention judgment relative to the difficulty of connecting inferences based on another's wants or motives with intention judgment. The former connection may be more difficult.

The finding that subjects rely proportionately more on motive information and that their judgments could most parsimoniously be modeled by a relatively simple integration process will need further study to establish its generality. The experimental conditions or materials may have helped to promote heuristic processing strategies in subjects. But it is interesting that this effect also seems to have been corroborated by the finding of Alicke et al. Visual examination of Figure 5c shows basically parallel lines for Motive and Foreknowledge, suggesting that these are independent sources of information additively combined.

Alicke et al. did not report significance tests for the interaction of motive and foreknowledge on intention, so we are left with visual examination. However, one other result of theirs is worth noting. The difference between high and low foreknowledge when motive is low is .9, while the difference between high and low foreknowledge when motive is high is 1.1. This at least suggests a monotonic interaction parallel with the one found in the present experiments. It is not known whether their interaction would have reached significance, but it is interesting that their results appear also to corroborate the relatively small interaction effect found in the present experiment.

A question naturally arises whether judgment processes would differ if one were able to create more engaging situational manipulations. For instance, courtroom trials typically provide strong admonitions to consider all evidence, longer periods of time to do so, and an expectation that jurors will have to defend their judgments in front of others. These situations may promote more systematic processing of intention-relevant information and result in patterns of judgment more similar to a normative model. The instruction manipulation in Experiment 1 was designed to do this, but it did not work (not surprisingly, in retrospect, given how it was implemented). Possibly a replication of this study which included an instruction telling subjects they would discuss their attributions in

groups might produce judgment similar to that predicted for the failed instruction manipulation. Others (Kruglanski, 1988; Wells, Petty, Harkins, Kagehiro, & Harvey, 1977) have found that evaluation apprehension can affect processing strategies, and Kramer, Kerr, and Carroll (1990) found that mock jurors expecting to deliberate rendered individual pre-deliberation judgments apparently unbiased by pretrial publicity (judgments more in line with a legal ideal) while those not expecting to deliberate rendered verdicts more biased by the publicity.

The application to courtroom situations raises another interesting possibility as well. In courtroom situations, dichotomous verdicts are the norm; jurors are typically asked to make either-or determinations. Shaver (1985) has argued that when judging intention, perceived think of intention as a dichotomous variable (one either intended or did not intend an outcome), but when judging responsibility or blame, perceived think of intention as a continuous variable. This investigation measured intention as a continuous (probabilistic) variable. It would be interesting to see how judgments clustered for these same materials if the choice for the dependent variable were dichotomous. It is quite possible that subjects in these experiments might have inferred lack of intention for intermediate high/low or low/high Information conditions. On the other hand, it is also possible that many persons

might ultimately have decided that negative outcomes were intended. Because intention is considered a necessary element for many types of crimes, this may be a fruitful area for further study.

The significant interaction of foreknowledge and mood suggested a condition under which foreknowledge information may be relatively underutilized relative to motive information. Commonsense analysis of ordinary social behavior would probably confirm that persons in negative moods seem more likely to overattribute intent. But what commonsense analysis does not reveal is that such persons may overvalue their inferences about motive and partially neglect or undervalue inferences about foreknowledge.

The tendency to rely proportionately less on foreknowledge information was more pronounced for Experiment 2 subjects exposed to the sad mood manipulation than for those exposed to the happy mood manipulation. Though the interaction did not reach statistical significance in Experiment 2, the pattern of judgment was the same as had occurred with naturally-occurring mood states in Experiment 1, and the effect size was approximately the same. Because the strength of a treatment and the power of a test affect the detection of a result, I have argued that the most reasonable interpretation is that the effect is a small but consistent one, at least for the magnitude of mood manipulations discussed here--sad persons underutilize

foreknowledge information relative to happy persons.

The measurement of naturally-occurring moods in Experiment 1 and the manipulation of mood in Experiment 2 were probably both relatively mild compared to many real-world situations in which intentions judgments and negative moods covary. For instance, when intention judgments are made in conflicted relationships, they are often accompanied by negative mood states. More potent manipulations of mood might increase the disparity between motive and foreknowledge. Such situations might produce at least two factors that could moderate how persons infer intentions, One is mood. The other is what Jones and Davis (1967) have termed "hedonic relevance," the extent to which decisions based on the situation have direct implications for oneself. The present investigation suggests that mood may cause persons to underutilize considerations based on foreknowledge relative to motive. The effect of hedonic relevance may be similar. On the other hand, Forgas, (1989) has presented evidence that hedonic relevance tends to override mood-induced tendencies toward more heuristic decision strategies. Obviously, this also could be an area of further study, particularly if mood could be somehow made orthogonal to hedonic relevance.

The results of both experiments raise the question of the underlying mechanism for the mood by foreknowledge interaction. Something about affect might produce the

effect. Mood-congruent recall of particular scripts might make script-consistent information more easy to recall and also more influential in judgment. Or mood may simply act as a source of information in itself (i.e., "if I feel bad, somebody must have intended something bad"), as Schwarz and Clore (1989) have suggested. It is also interesting to note that in Experiment 1, the self-esteem variable, which was positively correlated with mood, produced results parallel to those for mood. In addition to affect per se, it may be that some underlying and perhaps more permanent characterological factors related to mood affect how persons attributed intention.

It may also be noteworthy that foreknowledge involves something about the comprehension of cause-effect relationships (i.e., "did he know that if he did X, Y would occur?"). Motive, on the other hand, involves something about what a person wants, wishes, or desires. Though possibly oversimplified, the former seems to be a cognitive attribution while the latter seems to be an affective or motivational attribution. It may be that certain factors (mood, self-esteem) influence the extent to which perceivers search for and use these two general classes of information when judging intention.

Perceivers' general cognitive ability may be another factor influencing relative use of motive and foreknowledge information in intention judgments. This is suggested by

the probable differences in subjects in experiments 1 and 2 (based on information about SAT scores). It is difficult to say exactly why Experiment 2 subjects generally utilized foreknowledge information less, though it may be significant that subjects from Experiment 2 were older by about 6 years, on average, and many of them are returning students who had been out of school for several years. Subjects in Experiment 1 were a more typical population of late-teen and early-twenties university undergraduates. Perhaps differences in age, experience, or cognitive abilities contributed to the general trend. Developmental research suggests a cognitive interpretation in that the integration of foreknowledge information is developed later than the integration of motive information in judgment of intention.

It seems likely that both characterological factors and transient factors such as mood could influence how persons weigh and process sources of information about intention, but their effects may be indirect in the sense that they influence availability of certain scripts over others and also may differentially influence recall. Of course, further research is needed to establish the actual mechanisms involved.

Conditions promoting the relative importance of motive over foreknowledge in attributions may be particularly interesting if one looks at different judgment domains. For instance, the psychotherapy literature is replete with

references to unconscious motivation and unconscious intention, but relatively devoid of references to unconscious foreknowledge. It is almost as if unconscious motivation and unconscious intention are synonymous. It may be that the more perceivers look for and expect to find intention, the more they look for motives and simply assume the existence of foreknowledge. To some degree we are probably all experts in inferring intention, but it may be that specific kinds of expertise promote focusing on certain causes or correlates of intention to the exclusion of others. Some suggestions of this are provided by Guimond, Begin, & Palmer, (1989), who found that persons who had been exposed to several courses in the social sciences made attributions of blame for negative outcomes to the "system" more than did persons who had been minimally exposed to social science coursework (who were more inclined to "person-blame").

A few other questions are raised by this work. The first involves the issue of variance unaccounted for. Motive and foreknowledge information accounted for approximately half of the variance in intention judgments, and a small amount was accounted for by various moderators such as mood and self-esteem. The effects of the various scenarios were left relatively unexamined because of the intricacy of the experimental design. But results of analyses involving initial impression judgments showed that

different situations produced different judgments.

Probably much of the reason for this lies in subjects' access to culturally-shared knowledge about expected behavior in certain situations (e.g., people would generally like to unload a lemon car if they could get away with it; most people would not intentionally go out of their way to hurt an innocent animal, etc.). Just how or what inferences subjects made from the brief scenarios was not clear. Trope (1986) has argued that attribution researchers have tended to ignore perceptual processes that occur early in judgment and instead provided pre-coded categories of information for subjects. As a result, information about subject's early-stage codings of information is unexamined. Further study of subjects' spontaneous intention inferences for different kinds of situations would be warranted.

It is also possible that scenario effects, as revealed by initial intention judgments were magnified by having subjects commit to an initial impression judgment. Such a procedure might have also caused initial impression judgments to take on somewhat more importance in final judgment than would have been the case if an initial commitment were not required. Whether this was indeed the case could be determined by replicating the experiment but not requesting initial impression judgments. If the results were essentially the same as in the first experiment, the possibility that requesting an initial commitment somehow

biased judgment would be less likely.

A further question raised by this work concerns the relationship among intention judgments and various other judgments. Alicke et al. (1990) have studied how intention judgments mediate responsibility judgments. Investigations of how or whether intention judgments mediate other judgments (e.g. blame, punishment, dispositions, outcome severity, etc.) would be in order. For instance, investigation of the relationship among intention judgments and the traditional causal loci (internal-external, stable-unstable, controllable-uncontrollable) would also be informative. Though Anderson (1982) found that subjects' attributions of intentionality, internality, stability, and controllability all correlated in subjects' judgments, despite researchers' attempts to produce orthogonal manipulations, relationships among these variables are still open to further investigation.

Finally, the relationships among motive, foreknowledge, intention, and several of the other intention-relevant factors are awaiting study. For instance, several theorists have suggested that information about effort and ability are important for attributions of intention. But do these factors influence intention judgments directly, or only through their implications for motive and foreknowledge? A study in which effort and ability are manipulated, and motive, foreknowledge, and intention are measured as

dependent, continuous variables could help address this. (Data for such a study have been collected by this investigator, and analyses are under way.) It is possible, for instance, that the effect of information about effort on intention is significant only because effort implies something about motive (i.e., people try hard at what they want). If so, covarying motive might eradicate the effect of effort on attributed intention. Studies addressing the relationship among several intention-relevant could lead to the development of a more complete model for attribution of intention.

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TABLES AND FIGURES

Table 1

Factors Considered Important for Intention Judgments By
Various Theorists

Heider (1958)	[attribution theory]
Local causality	
Effort (exertion)	
Equifinality	
Foreknowledge	(implicated in Heider's classic levels of responsibility attributions.)
Jones and McGillis (1976)	[attribution theory]
Desirability (Motive)	
Foreknowledge	
Ability	
Behavioral freedom	
Fiske (1989)	[stereotyping and impression formation theory]
Cognitive availability of options or choices	
Selection of the unexpected choice	
Motivated attention	
Marshall (1968)	[legal philosophy]
Motive	
Foreknowledge	
Opportunity	
Effort (trying)	
Ability (can)	
Volitional control	
Sedlak (1979)	[developmental theory]
Wants, Desirability, Motive	(this factor is used first)
Foreknowledge	(this factor is used later)
Shaver (1985)	[attribution theory]
Foreknowledge	
Wants (Motive)	
Perceived ability	
Common language	[American Heritage Dictionary, 1973]
Plan of action, aim, or goal	
On purpose, not by accident	

Table 2

Greco-Latin Square Sequences Used to Construct Booklets For the Intention Study

Sequence of Condition Information								
Row ₁	M+F+	F-M+	F+M+	M-F-	M+F-	F+M-	F-M-	M-F+
Row ₂	F-M-	M+F-	M+F+	F+M+	F+M-	M-F+	M-F-	F-M+
Row ₃	F+M+	M-F+	M-F-	F-M-	F-M+	M+F-	M+F+	F+M-
Row ₄	M-F-	F+M-	F-M-	M+F+	M-F+	F+M+	F+M+	M+F-
Row ₅	M+F-	F+M+	F-M+	M-F+	M+F+	F-M-	F+M-	M-F-
Row ₆	F+M-	M+F+	M+F-	F-M+	F-M-	M-F-	M-F+	F+M+
Row ₇	F-M+	M-F-	M-F+	F+M-	F+M+	M+F+	M+F-	F-M-
Row ₈	M-F+	F-M-	F+M-	M+F-	M-F-	F+M+	F-M+	M+F+

Sequences of Scenario Information

a ₁	a ₂	a ₃	a ₄	a ₅	a ₆	a ₇	a ₈
a ₂	a ₄	a ₁	a ₃	a ₆	a ₈	a ₅	a ₇
a ₃	a ₁	a ₄	a ₂	a ₇	a ₅	a ₈	a ₆
a ₄	a ₃	a ₂	a ₁	a ₈	a ₇	a ₆	a ₅
a ₅	a ₆	a ₇	a ₈	a ₁	a ₂	a ₃	a ₄
a ₆	a ₈	a ₅	a ₇	a ₂	a ₄	a ₁	a ₃
a ₇	a ₅	a ₈	a ₆	a ₃	a ₁	a ₄	a ₂
a ₈	a ₇	a ₆	a ₅	a ₄	a ₃	a ₂	a ₁

Note: Information from this table was used as a guide in constructing the various booklets for the intention study. Each row of cells from the Condition Information Table represents a different within-subjects presentation sequence for the Motive/Foreknowledge/Order variables (a complete 2x2x2). Each row from the Scenario Information Table represents a different sequence in which the scenarios appeared in a booklet (each a_x represents a scenario). The two tables were combined such that every condition sequence was paired with every scenario sequence, resulting in 8 x 8 = 64 replications, or 64 unique booklets.

Table 3

Mean Final Intention Judgments for Reorganized Greco-Latin Square Design

Motive/Foreknowledge/Order Information									Row Means
	M+F+	F+M+	M+F-	F-M+	M-F+	F+M-	M-F-	F-M-	
Row ₁	a1 7.08	a3 7.8	a5 3.0	a7 5.6	a8 2.72	a6 3.96	a4 3.68	a2 1.24	4.4
Row ₂	a2 8.27	a1 7.41	a6 3.23	a5 2.82	a7 5.46	a8 2.14	a3 2.09	a4 2.46	4.2
Row ₃	a3 8.48	a4 7.62	a7 3.9	a8 6.86	a6 4.10	a5 4.24	a2 1.59	a1 1.14	4.7
Row ₄	a4 7.87	a2 8.09	a8 7.13	a6 3.78	a5 4.61	a7 4.7	a1 1.26	a3 2.13	5.0
Row ₅	a5 7.06	a7 8.23	a1 3.82	a3 4.68	a4 3.41	a2 3.41	a8 2.0	a6 2.05	4.3
Row ₆	a6 7.88	a5 7.63	a2 4.0	a1 3.33	a3 5.96	a4 4.67	a7 1.63	a8 2.25	4.7
Row ₇	a7 8.6	a8 8.36	a3 3.32	a4 6.04	a2 3.12	a1 2.8	a6 1.48	a5 1.72	4.4
Row ₈	a8 8.42	a6 8.08	a4 6.83	a2 4.21	a1 2.83	a3 6.67	a5 1.96	a7 1.58	5.1
Column Means:	7.97	7.90	4.38	4.76	4.01	4.10	1.96	1.79	

Note: M+=Positive Motive information, M-=Negative Motive information, F+=Positive Foreknowledge information, F-=Negative Foreknowledge information. Order of presentation is varied in adjacent columns. Within the cells of the table, a_x refers to scenarios 1 through 8. Rows (across) represent different sequences of scenarios. Not included in the table are the eight different serial positions associated with each scenario plus condition.

Figure 1

The Relative Effects of Motive and Foreknowledge
Information on Judgments of Intention

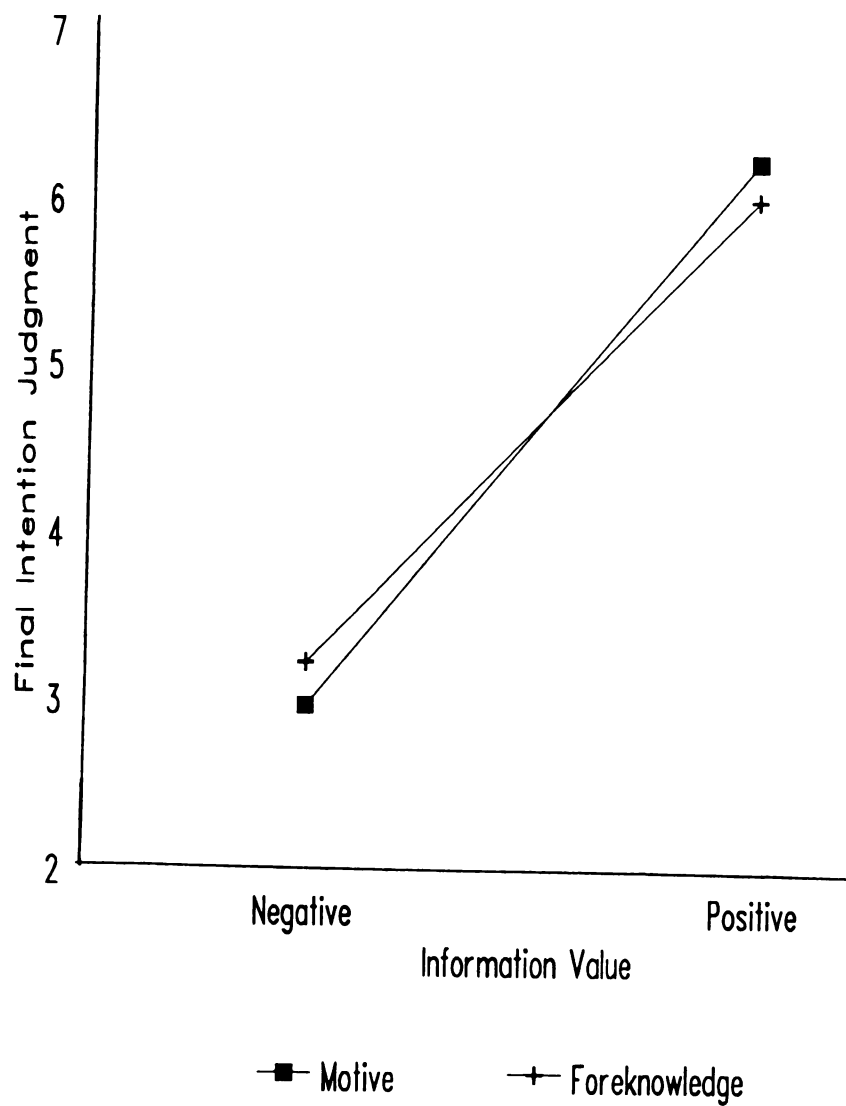


Table 4

Measures of Importance for Motive, Foreknowledge, and Their Interaction

	<u>Motive</u>	<u>Foreknowledge</u>	<u>Mot x For.</u>
F-Value	971.5	607.5	33.2
Partial Eta Squared	.84	.77	.15
Raw-score Regression weight	1.68	1.38	.28
Beta weight	.54	.44	.09
Subject-Estimated Scale Values			
Positive (implying intent)	7.2	5.2	
Negative (implying no intent)	-4.3	-5.3	
Range=Positive-Negative	11.5	10.5	

Note: F-values and effect size (partial eta squared) were obtained from repeated measures MANOVA. Raw-score regression weights and Beta weights were obtained from stepwise multiple regression analysis in which motive and Foreknowledge were coded 1 and -1; the interaction term was a multiplicative combination of these. Subject-estimated weights were obtained from an independent sample of subjects who evaluated the potency and direction of each type of information. Subject-estimated weights for M+, F+, M-, and F- are mean scale weights from a +11 to -11 scale. Higher positive numbers reflect subjects' judgments that the particular sentence-type more strongly indicated intention, while higher negative numbers reflect subjects' judgments of lack of intention (zero indicates uncertainty or neutrality of the information). Subjects who estimated scale values were not asked to estimate combinations of Motive and Foreknowledge information, so no measure of their interaction was obtained.

Figure 2

Judgments of Final Intention for Information Conditions
(Including Comparison with Initial Impression Judgment)

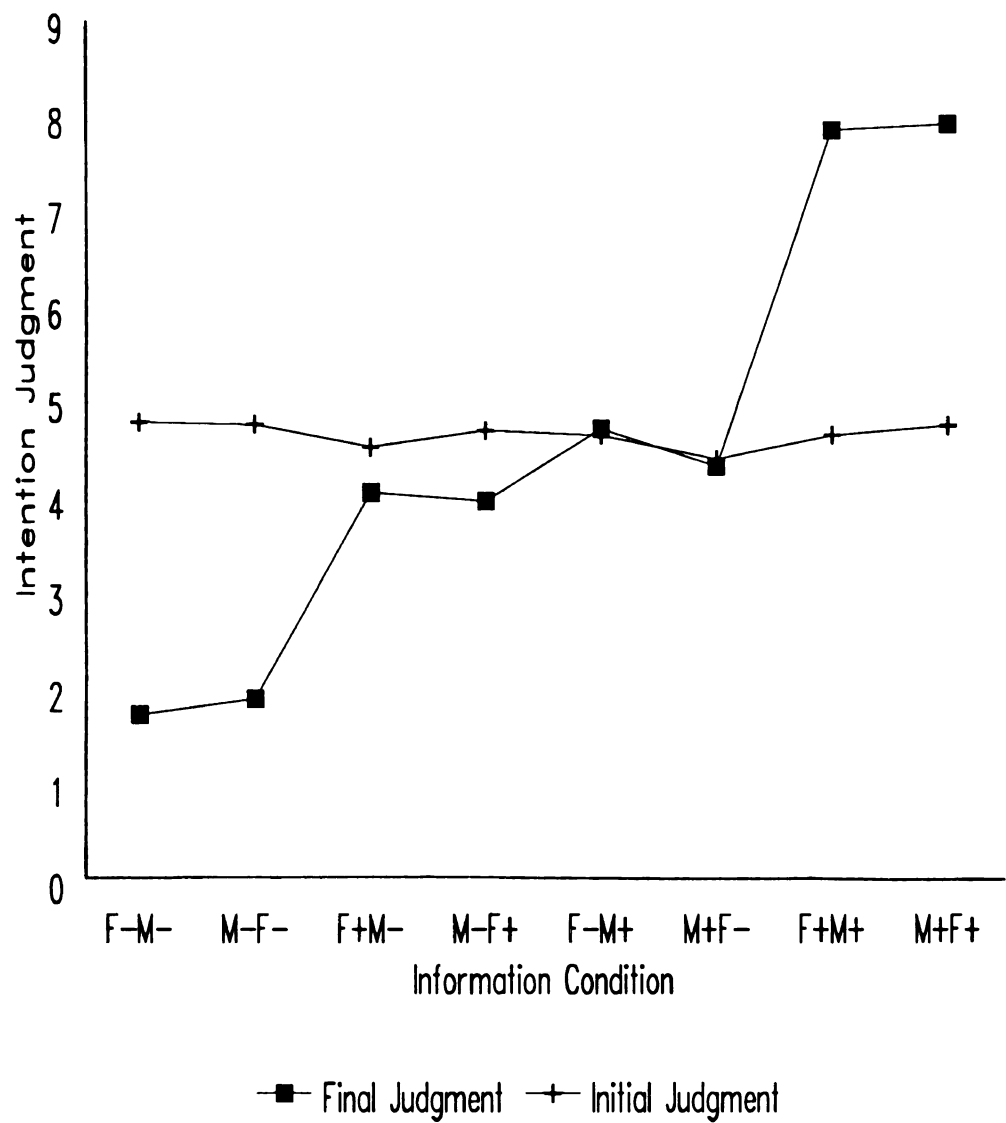


Figure 3

Effects of Positive and Negative Foreknowledge Information
as a Function of Motive Information

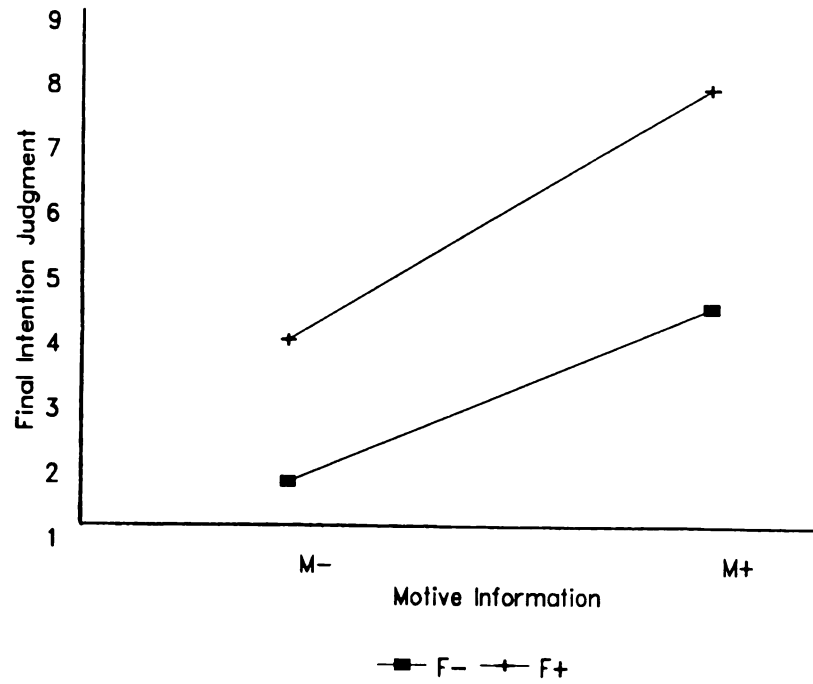


Table 5

Comparison of Theoretical Models of Information Integration

<u>Predicted Values</u>				<u>Observed Values*</u>	
(Negative=1, Positive=2)					
	<u>Adding/ Avg.</u>	<u>Multip.</u>	<u>Combined</u>		
<u>M F</u>	<u>(M+F)/2</u>	<u>MxF</u>	<u>((M+F)/2 + MxF)/2</u>		
2 2	2	4	4	6.06	(7.94)
2 1	1.5	2	1.75	2.69	(4.57)
1 2	1.5	2	1.75	2.18	(4.06)
1 1	1	1	1	0	(1.88)
(Negative=1, Positive=3)					
	<u>Adding/ Avg.</u>	<u>Multip.</u>	<u>Combined</u>		
<u>M F</u>	<u>(M+F)/2</u>	<u>MxF</u>	<u>((M+F)/2 + MxF)/2</u>		
3 3	3	9	6	6.06	(7.94)
3 1	2	3	2.5	2.69	(4.57)
1 3	2	3	2.5	2.18	(4.06)
1 1	1	1	1	0	(1.88)

Note: Observed values in parentheses judgments are actual mean values on the intention 1-9 scale. Observed values not in parentheses are the result of a linear transformation of these values in which 1.88 was subtracted from each to create an arbitrary zero point and facilitate comparison with theoretical models. Predicted values assume equal weight for Motive and Foreknowledge information, an arbitrary scale value 1 for the negative condition, and value of 2 or 3 for the positive condition. Comparison of models is made on the basis of the extent to which the pattern of predicted values corresponds to the observed values.

Table 6

Mean Initial Intention Judgments as a Function of Scenario and Position

<u>Position</u>	<u>Scenario</u>								Mean (N) SD
	a ₁	a ₂	a ₃	a ₄	a ₅	a ₆	a ₇	a ₈	
Row ₁	2.68	4.88	6.25	4.44	4.94	3.97	4.14	4.41	4.47 (277) 2.11
Row ₂	2.29	5.32	6.33	4.82	4.75	4.16	4.09	4.86	4.57 (278) 2.11
Row ₃	2.58	4.62	6.53	4.25	4.14	4.56	4.52	5.18	4.53 (277) 2.18
Row ₄	2.68	5.63	6.64	4.70	4.62	4.89	4.21	4.72	4.72 (276) 2.11
Row ₅	3.91	5.06	6.42	5.47	4.47	4.39	4.91	4.73	4.93 (277) 2.16
Row ₆	3.20	5.30	6.44	4.71	4.91	4.71	4.16	5.30	4.83 (277) 2.10
Row ₇	3.49	5.12	6.51	4.46	4.64	4.76	4.20	4.94	4.79 (277) 2.14
Row ₈	3.65	5.23	6.43	4.54	5.00	4.49	4.68	4.83	4.86 (276) 2.05
Mean (N) SD	3.05 (277) 1.79	5.14 (277) 1.90	6.44 (277) 1.66	4.66 (275) 2.00	4.69 (280) 2.02	4.49 (277) 2.06	4.36 (277) 2.19	4.88 (275) 1.83	4.71 (2215) 2.12

Note: The top number in each cell is the cell mean, the middle number is the sample size, and the bottom number is the standard deviation.

Table 7

Intention Predicted from Motive, Foreknowledge, and Their InteractionResults of Stepwise Regression Analysis

<u>Var.</u>	<u>R²</u>	<u>F</u>	<u>p</u>	<u>B</u>	<u>Beta</u>	<u>Variance Accounted For</u>
M	.29	927	.000	1.69	.54	.29
F	.49	1062	.000	1.37	.44	.20
MxF	.50	730	.000	.28	.09	.01

Note: Predictor variables are M=Motive, F=Foreknowledge, MxF=Motive x Foreknowledge. Final intention judgment is the criterion variable. Variables entered into a stepwise regression are entered one at a time in order of decreasing magnitude. The order in which variables are written above correspond to the order in which they were entered in the equation. To obtain the variance accounted for by each predictor, locate the R² associated with a predictor and subtract the R₂ directly above it (e.g., F accounts for .49-.29=20% of the variance).

Table 8

Use of Motive and Foreknowledge Information is Partly Dependent on MoodA. Comparison of Predicted and Observed Final Intention Judgments

	<u>Predicted Values</u>		<u>Observed Values</u>		
	<u>Adding</u>	<u>Combined</u>	<u>All Subjects</u>	<u>Neg. Mood Group</u>	<u>Pos. Mood Group</u>
M+F+	7.8	8.1	7.8	7.5	8.2
M+F-	5.0	4.7	5.1	4.4	6.0
M-F+	4.4	4.1	3.3	3.1	3.5
M-F-	1.6	1.3	2.5	2.1	3.0

B. Multiple Regression Analyses for All, Happy, and Sad Subjects1. Results of Stepwise Regression Analysis: All Subjects

<u>Var.</u>	<u>R₂</u>	<u>F</u>	<u>p</u>	<u>B</u>	<u>Beta</u>	<u>Variance Accounted For</u>
M	.33	133.3	.000	1.84	.58	.33
F	.43	101.9	.000	1.02	.32	.10
MxF	.45	73.9	.000	.47	.15	.02

2. Results of Stepwise Regression Analysis: Pos. Mood Group

<u>Var.</u>	<u>R₂</u>	<u>F</u>	<u>p</u>	<u>B</u>	<u>Beta</u>	<u>Variance Accounted For</u>
M	.33	75.2	.000	1.83	.59	.33
F	.48	72.3	.000	1.25	.40	.15
MxF	.51	52.2	.000	.45	.15	.03

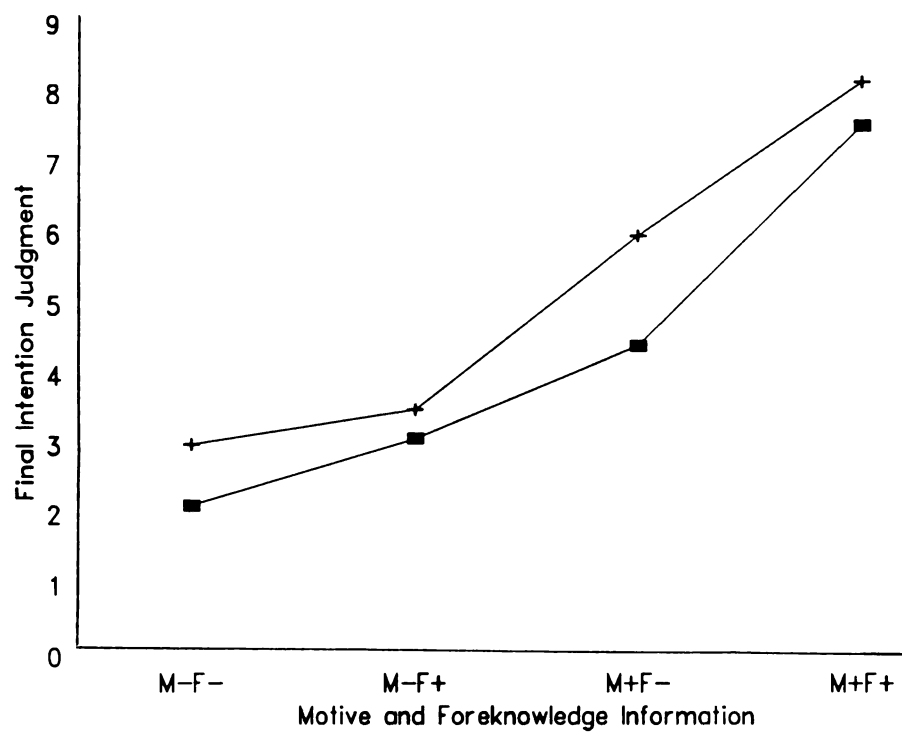
3. Results of Stepwise Regression Analysis: Neg. Mood Group

<u>Var.</u>	<u>R₂</u>	<u>F</u>	<u>p</u>	<u>B</u>	<u>Beta</u>	<u>Variance Accounted For</u>
M	.33	60.4	.000	1.85	.58	.33
F	.38	36.5	.000	.68	.21	.05
MxF	.41	26.5	.000	.49	.15	.03

Note: M=Motive, F=Foreknowledge, MxF=Motive x Foreknowledge. Predictions for Adding and Multiplying integration models were derived from using values estimated from Experiment 1 (i.e., constant=4.7, M=1.7, F=1.4, MxF=.3). To obtain the variance accounted for by each predictor in the regression equations, locate the R² associated with a predictor and subtract the R² directly above it.

Figure 4

The Effects of Motive Information, Foreknowledge Information, and Mood on Final Intention Judgments



—+— Negative Mood

—■— Positive Mood

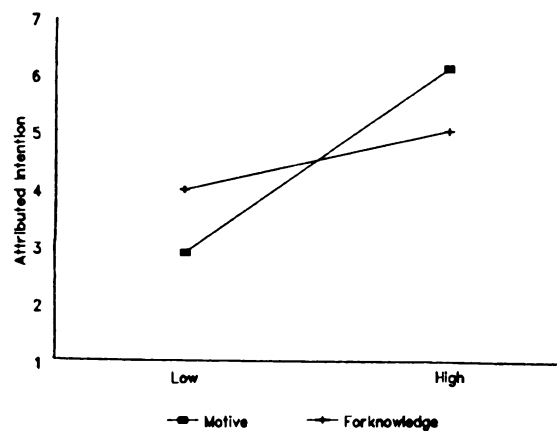
Figure 5

Effects of Motive and Foreknowledge on Judgments of Intention From Means Reported by Alicke et al. (1990)

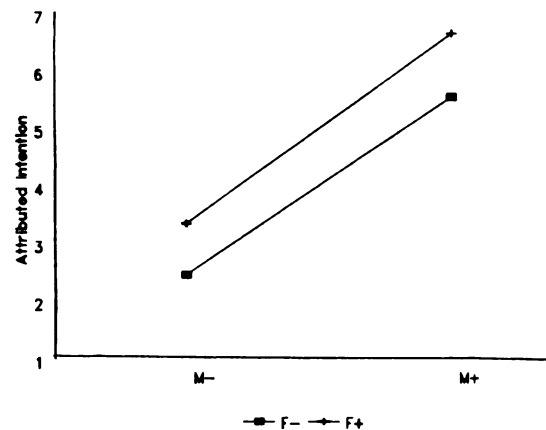
a) Mean Intention Judgments:

	M-	M+
F-	2.5	5.6
F+	3.4	6.7

b) Comparison of Slopes for Motive and Foreknowledge:



c) Parallel Lines Indicate Independent Effects and Little or No Interaction:



FOOTNOTES

FOOTNOTES

¹ According to Koenig (1982), prior to about the 13th century, an actor's intent was rarely considered in making determinations about homicide. People who killed others often paid a fine to the ruling monarch, regardless of whether they killed purposely or not. Koenig suggests that the notion of mens rea developed slowly during the next few centuries, largely as a result of the interplay of Christian theology (dualism) and Anglo-Saxon law.

² Most widely recognized among the cases in which forensic psychologists or psychiatrists testify are the cases involving the insanity defense. Forms of the insanity defense vary from state to state, with a few states (e.g., Idaho) having abolished the defense altogether. In the form most commonly used through the last two decades, psychological assessment and juror decisions are focused around two issues: a) did the defendant appreciate the wrongfulness of his conduct at the time of his act? and b) was the defendant able to conform his conduct to the requirements of the law. The first question has come to be called the cognitive prong of the insanity defense and the

second the volitional prong. In the aftermath of the John Hinkley trial, the American Psychiatric Association and the American Bar Association moved to abolish the volitional prong, maintaining that its determination was more difficult and less scientific. The American Psychological Association maintained that the volitional prong was no less scientifically based and lobbied to keep both prongs (see Rogers, 1987). It is clear that neither prong of the defense is concerned directly with intention; none of the forms of the insanity defense necessarily implicate intention. A defendant can be found not guilty by reason of insanity, yet still be judged to have entertained specific intent (e.g., Hinkley intended to kill Reagan). The U.S. Supreme Court has maintained that insanity is not necessarily the negation of mens rea (Leland v Oregon, 1952; Patterson v New York, 1977).

More relevant to the issue of intention is the defense of diminished capacity. Diminished capacity is concerned with whether a defendant, at the time of a crime, had the mental capacity to form the requisite intent (mens rea). Legal scholars apparently determined that the capacity to form an intention could be impaired by factors that fall short of legal insanity, and that such impairment could result in partial or full negation of the mens rea element. The range of disorders admissible under diminished capacity varies from state to state; some states are conservative and

allow only factors like extreme grief or stress, while others allow a defendant's entire life history to be put in front of the jury (Shapiro, 1984). Like with insanity, the law has assumed or ascribed expertise in diminished capacity cases to behavioral forensic professionals.

Diminished capacity is an intuitively reasonable doctrine, but there are several problems with it. One problem in particular makes psychological assessment of intention in diminished capacity cases quite elusive. That is the question of whether it is possible to judge the capacity to form a specific intent apart from the actuality of having formed it, once an offense has been committed. Clark (1987) argues that, once a person is known to have committed an offense, it generally can not be demonstrated that the requisite intent could not have been formed, only that it is not clear whether or what intention was formed at the time. And mental health professionals, he argues, have no special expertise in this determination. It has even been questioned whether there exist any legitimate cases of diminished capacity that are not a) more properly framed as insanity or intoxication, or b) a mistaken application of diminished responsibility (see Morse, 1984). At a recent convention, Clark (1988) offered a case of Wild Irish Rose to anyone who could produce a legitimate case of diminished capacity. Because the notion of diminished capacity proves so elusive, some states have followed the lead of California

in abandoning the defense.

It should not be surprising that no forensic psychological assessment procedures exist to determine a defendant's intention after the fact. Such judgments are part of the "ultimate question"--they establish the mens rea element necessary for an act to be called a crime. Expert witnesses are strongly discouraged from testifying on the the ultimate issue because this would, in effect, be advancing an opinion on a defendant's guilt. Such decisions are properly left up to the triers of fact to decide. Partly because mental health professionals do not advance opinions about a defendant's intentions at the time of a crime, there has been little call from the courts, or the mental health profession itself, to develop and test models for postdicting intention. Clark (1987) has convincingly argued that there are no guidelines for psychological assessment of intention.

³ Covariation theory did propose criteria that have become fundamental to a number of attribution approaches (consistency, distinctiveness, consensus). These criteria are fundamental because they suggest how perceivers could establish the validity of their impressions of causality. But covariation theory was intended as general causal model, broad in its sweep. It is doubtful whether a model that attempts to account for physical causality, psychological

causality, and criteria of validation can do justice to the intricacies involved specifically in judgments of intention (see Tagiuri, 1969, pp. 395-396 and Ross and Fletcher, 1985, p. 94). Even Kelley himself wondered if it made sense to treat personal and impersonal attribution in the same terms (1972, p. 173).

⁴ Fincham and Jaspars (1980) express the sentiments of many attribution theorists when they criticize the theory for assuming that perceivers search for and use counterfactual information and then combine information in mechanistic ways. They also note, as does Shaver (1985) that Correspondent Inference theory makes explicit statements about the criteria necessary for intention judgment: foreknowledge on the part of the actor and the ability to perform the act. These criteria, they argue are overly restrictive. However the explicit statements about attribution of intention in Correspondent Inference theory are somewhat less detailed than the process they describe leading to attribution of intention and, ultimately, attribution of dispositions. It seems likely that Jones and Davis (1967) and Jones and McGillis (1976) may have been somewhat less thorough in their treatment of attribution of intention than in their treatment of attribution of dispositions because the latter was their primary focus. They also acknowledge that their theory represents an

idealized process, not necessarily a descriptive one. Criticisms notwithstanding, Correspondent Inference theory has made an important contribution to theorizing about intention judgment, as evidenced by the extent to which later theorists have referred to it.

⁵ It is important to note that when two factors exchange ordinal position between first and last, it is extremely difficult to distinguish primacy from recency effects. Primacy is discussed here as the operative effect largely because Jones and Goethals (1975) maintain that the general finding in the literature is that primacy effects are somewhat more frequent.

⁶ Special thanks go to Professor Marianne McGrath of Michigan State University for her assistance, and also to her developmental psychology students who volunteered for this project.

⁷ Ideally subjects would have been run in separate groups so that instructions designed to manipulate processing strategy could be read aloud and made more salient. Alternately, some way of making subjects feel accountable for their judgments (e.g., proposing a future group discussion of judgments) could have been used to make the subjects inclined to invest in the decision process.

However, the opportunity to utilize a group of approximately 300 subjects at once arose, promising convenience and considerable statistical power. The drawback was, of course, that the different instructions could not be read aloud and might not be sufficiently attended to by subjects. It was hoped that asking subjects to attend carefully to the written instructions that they were given would be sufficient to produce some differences in processing strategies. (As it turned out, it wasn't.)

⁸ In pretesting, initial intent ratings revealed that all eight scenarios were within 1.5 points of the midpoint of the nine-point scale. Pretesting also established the informativeness of the Motive and Foreknowledge sentences and the neutrality of the neutral sentences. Motive and Foreknowledge sentences which showed the strongest implications for intention in the expected direction were adopted for use in the experiment. The criteria for adoption was that the sentence achieve a mean rating of at least two scale points in the expected direction above or below zero on the rating scale, and that the standard deviation of subjects' ratings be comparatively low. Neutral sentences were adopted for use if their mean rating was within one point of the zero-point of the scale and if they showed a relatively narrow range (indicating that most all subjects agreed that the information was neutral).

It might be noted that the pretesting procedure could not guarantee that the neutral sentences would be neutral when combined with the other information. During pretesting subjects considered each sentence in isolation, but there remained the possibility that the "neutral" sentences would somehow be perceived differently--and become informative--once they were presented in a configural context--in a paragraph. Though this was a possibility, it was nevertheless reasoned that the neutral sentences would remain at least minimally or inconsistently informative once they were presented in the context of a paragraph.

⁹ MANOVA in SPSSx performs a complete set of orthogonal contrasts involving the 2 x 2 x 2 within-subjects factors. For example, the effect for M+ versus M- is performed by calculating a mean for M+ and M- for each subject and analyzing the difference score. Because each effect is composed from a different subset of the data, this analysis also requires a separate error term for each within-subjects effect.

¹⁰ The reader may notice that the degrees of freedom associated with different effects change. The reasons for this are (a) that several subjects did not complete all the information, and (b) some booklets had either an information condition or a scenario out of order. For effects testing

manipulation checks or initial intention judgments, only subjects missing the essential information were eliminated. For effects testing the final intention judgment, the criteria were more stringent. Only subjects who had completed judgments for all the scenarios and had booklets perfectly consistent with the Greco-Latin square design were included. The result was a reduction of about 80 subjects, leaving 194 subjects for most of the key analyses.

¹¹ Anderson (1982) lists another measure of cue importance, the Relative Range Index, but notes that the measure has met with "near-total disapprobation" among prominent workers in judgment-decision theory (p. 290).

¹² When multiple regressions were performed, Motive and Foreknowledge were coded 1 for positive and -1 for negative; their interaction was the multiplication of them. Correlations among the any pair of factors (Motive, Foreknowledge, and their interaction) were no greater than $r=.02$ for the entire sample (across subjects, across scenarios) and no greater than $r=.08$ for any single scenario. Thus, multicollinearity was not likely to be a problem in the regression analysis.

It is also interesting to note that, had this experimental design been a between-subjects design, very similar results would have been obtained. When the

responses of all subjects to only the first scenario they encountered (i.e., first Position in the booklet) were analyzed using multiple regression, the variance accounted for by Motive was .28, Foreknowledge .24, and their interaction .01; corresponding raw-score regression weights were 1.61, 1.46, and .31.

¹³ There were higher-order interactions involving the rows and columns of Table 2. Results of the MANOVA analyses did indicate that the Information Conditions (represented as columns across the top of Table 2) interacted with the rows of the Table. For instance, the Row x Motive x Foreknowledge x Order effect was significant for final intention judgment, $F(7,186)=11.2$, $p<.001$. This higher-order interaction simply means that some of the variance in the data must be explained by the individual cells of the design. This is not particularly surprising since the scenarios (and their associated positions in the booklet) were what differentiated the cells. We have already seen that the individual scenarios produced noticeably different base-rate initial impression judgments, and these initial judgments affected final intention judgments. The interpretation of the higher-order interaction should be that the information across the top of Table 2 produced more of an effect for some scenarios than for other scenarios. The effect is partly attributable to the fact that initial

judgment differed as a function of scenario and partly attributable to the fact that the strength of the Motive and Foreknowledge information (scale value) varied somewhat across scenarios.

The existence of this higher-order interaction, however, does not negate the findings previously discussed because the design insures that effects associated with Scenario do not systematically influence the column means. As with other Latin square or Greco-Latin square designs, the effects associated with scenario simply contribute in a nonsystematic way to the error term. The only place that this higher-order interaction might produce problems in interpretation is in analysis of between-subjects effects such as mood or self-esteem. It is possible that subjects at one level (of mood, for instance) received a disproportionate number of booklets types (i.e., rows of Table 2) which produced judgments higher (or lower) than the mean. This possibility is relatively small, given the sample size and the way booklets were distributed. The replication of the effects for mood and self-esteem on intention judgments in experiment 2 (where groups received virtually identical numbers of booklet types) also argues against this possibility.

¹⁴ Because self-esteem may be the more global concept--influencing day-to-day mood--it seems plausible that this

variable is closer to the underlying factor moderating how subjects responded to the stimuli. But self-esteem is also somewhat more difficult to manipulate experimentally, so follow-up analyses were conducted with mood instead. The effect for GPA was nonsignificant, though it did correlate positively and significantly with self-esteem ($r=.12$) and marginally with mood ($r=.10$).

APPENDIX

APPENDIX

INSTRUCTIONS FOR EXPERIMENT 1:

(THESE INSTRUCTIONS WERE THE FIRST TWO PAGES OF THE BOOKLETS. SUBJECTS WERE INSTRUCTED TO READ THE INSTRUCTIONS VERY CAREFULLY, THEN BEGIN WORKING THROUGHT THE BOOKLET.)

INSTRUCTIONS:

In real life, one is often faced with a need to make a judgment before having all possible information.

[The ability to form rapid judgments under such circumstances is strongly related to general social intelligence. Studies have shown that people who are able to form quick, decisive judgments are typically high in social reasoning and mental concentration.]

[The ability to form thoughtful judgments under such circumstances is strongly related to general social intelligence. Studies have shown that people who are able to form careful, thoughtful judgments are typically high in social reasoning and mental concentration.]

They also tend to be perceptive about interpersonal relationships and successful in everyday social interactions.

Today, we are interested in people's ability to make decisive judgments in situations where another's motives or intentions are unclear. You will be asked read a series of brief social events. Each event will be covered in 3 pages. On the first page, you will read the basic facts of the story or event. It will be very breif, usually consisting of a very few sentences. Following the statement, you will be asked to make a judgment by circling a number on a scale such as the one below.

How likely is it that Carl intended to steal the pen?

1	2	3	4	5	6	7	8	9
Definitely								Definitely
NOT								Intended
Intended								

continue on the next page

You will also be asked to rate how confident you are of your judgment. After you make your initial judgments, turn the page. The next page will provide you with more information about the characters or the event. You should assume that the information on this page is true. Read it, then turn to the third page where you will be asked to make final judgments about the event.

To review, you will consider a series of events. Each event or story will cover three pages--the first page will present the basic event and ask for your initial interpretations; the second page will give you additional information; and the third page will ask you for a series of final interpretations about the event. There will be 8 events in all. Once you have finished the first story or event, this 3-page sequence will be repeated for the next story. It is important to point out that there are no right or wrong answers for this task; your judgments are the ones that count.

It is important that you go through the pages in order without turning back. Though some of the questions on the third page may seem redundant, it is important that you consider and respond to each question.

Do not begin until instructed to do so. Once you begin, if you have questions, raise your hand and an experimenter will come to you. After you have completed the booklet, please write down the time you finished. The booklets will be collected at the end. Thank you.

continue on the next page

FIRST PAGE OF BOOKLET (AFTER INSTRUCTIONS):

Your Age: _____ Sex: Male Female (circle one) GPA: _____

Number of Social Science courses (not hours) taken: _____
(includes Psychology, Sociology, Social Work, Anthropology, and Criminal Justice.)

Below are several descriptive adjectives. Indicate how much each term describes you at this time. Do this by circling the number on the scale from 1 (not at all) to 7 (extremely much).

	Not at all					Extremely much	
Happy	1	2	3	4	5	6	7
Conservative	1	2	3	4	5	6	7
Liberal	1	2	3	4	5	6	7
Sad	1	2	3	4	5	6	7
Trusting	1	2	3	4	5	6	7
Irritated	1	2	3	4	5	6	7
Pleased	1	2	3	4	5	6	7
Anxious	1	2	3	4	5	6	7
Sociable	1	2	3	4	5	6	7
Angry	1	2	3	4	5	6	7

PLEASE TURN TO THE NEXT PAGE, READ THE BRIEF STORY, AND ANSWER THE QUESTIONS THAT FOLLOW. WORK THROUGH THE PAGES IN ORDER WITHOUT TURNING BACK.

THE EIGHT BRIEF SCENARIOS AS PRESENTED ON THE FIRST PAGE OF EACH 3-PAGE SEQUENCE:

a₁
While driving his car, Paul ran over a snake in the road, killing it.

a₂
Robert swung his arm and struck Bret, who was hurt by this.

a₃
Mr. Simms sold his car and bought a new one. He sold the car (through a newspaper want ad) to Carlos Ramerez. Within a month, Mr. Ramerez found that the car needed very expensive major repairs. Mr. Simms had not told Mr. Ramerez about the car needing any major work.

a₄
Pam did not acknowledge her husband's birthday, which left him wondering if she was mad about something and "trying to tell him something."

a₅
J.J. fired a gun. The bullet struck and killed Keith, who was standing across the fence at the time.

a₆
Jennifer and Brenda were walking past some apartment buildings in the late evening. As they passed, a man stood naked in his apartment next to the window. His apartment was fully lit. The women called the police, and the man, F. C. Jones, was picked up for "flashing".

a₇
Wendy and Rachel were roommates. After a discussion between them, Rachel left. She told Wendy that she did not have her key with her. Wendy left soon after, and she locked the apartment door. When Rachel returned, she found that she was locked out of the apartment.

a₈
Samuel Jenkins applied for a job in the Rand Corporation. Mr. Jenkins, a black male, was qualified for the job, but he was not hired. Andrew Blake, the person who hired for Rand, chose to hire someone else instead. Jenkins felt that this was a clear act of discrimination.

**QUESTIONS, INITIAL INTENT RESPONSE SCALE, AND CONFIDENCE RESPONSE SCALE
FROM THE FIRST PAGE OF EACH 3-PAGE SEQUENCE:**

How likely is it that Paul intended to kill the snake?

How likely is it that Robert intended to strike and hurt Bret?

How likely is it that Mr. Simms intended to conceal information that the car would soon need expensive major repairs?

How likely is it that Pam was really "trying to tell her husband something" when she did not acknowledge his birthday?

How likely is it that J.J. actually intended to seriously injure or kill Keith?

How likely is it that Jones actually intended to "flash" the women?

How likely is it that Wendy actually intended to lock Rachel out of the apartment?

How likely is it that Blake actually intended to discriminate against Jenkins on the basis of race?

1	2	3	4	5	6	7	8	9
Definitely NOT Intended					Definitely Intended			

How confident are you of this judgment?

1	2	3	4	5	6	7	8	9
Completely Unconfident					Completely Confident			

INFORMATION MANIPULATIONS FROM THE SECOND PAGE OF EACH 3-PAGE SEQUENCE FOR SCENARIOS A₁-A₈ (NEUTRAL PARAGRAPH INFORMATION IS PROVIDED ONLY FOR THE FIRST COMBINATION OF MOTIVE, FOREKNOWLEDGE, AND ORDER):

While driving his car, Paul ran over a snake in the road, killing it.

[M+F+]

Paul hates snakes and has run over them before. Paul was driving an American Motors car. The car was a 2-door model that handled well. Paul was aware that the snake was in the road and might be run over. He had driven along road several weeks earlier.

[F+M+]

Paul was aware that the snake was in the road and might be run over. Paul hates snakes and has run over them before.

[M+F-]

Paul hates snakes and has run over them before. Paul did not know that the snake was in the road and might be run over.

[F-M+]

Paul did not know that the snake was in the road and might be run over. Paul hates snakes and has run over them before.

[M-F+]

Paul is very fond of all animals and does not like to see them hurt. Paul was aware that the snake was in the road and might be run over.

[F+M-]

Paul was aware that the snake was in the road and might be run over. Paul is very fond of all animals and does not like to see them hurt.

[M-F-]

Paul is very fond of all animals and does not like to see them hurt. Paul did not know that the snake was in the road and might be run over.

[F-M-]

Paul did not know that the snake was in the road and might be run over. Paul is very fond of all animals and does not like to see them hurt.

Robert swung his arm and struck Bret, who was hurt by this.

[M+F+]

Robert did not like Bret and wanted to hurt him. At the time of this incident, Bret was wearing tennis shoes. There were a few other people present. Robert knew that Bret was standing in front of him. Bret was not a student.

[F+M+]

Robert knew that Bret was standing in front of him. Robert did not like Bret and wanted to hurt him.

[M+F-]

Robert did not like Bret and wanted to hurt him. Robert did not know that Bret was standing behind him.

[F-M+]

Robert did not know that Bret was standing behind him. Robert did not like Bret and wanted to hurt him.

[M-F+]

Robert liked Bret and did not want to hurt him. Robert knew that Bret was standing in front of him.

[F+M-]

Robert knew that Bret was standing in front of him. Robert liked Bret and did not want to hurt him.

[M-F-]

Robert liked Bret and did not want to hurt him. Robert did not know that Bret was standing behind him. Bret was not a student.

[F-M-]

Robert did not know that Bret was standing behind him. Robert liked Bret and did not want to hurt him.

Mr. Simms sold his car and bought a new one. He sold the car (through a newspaper want ad) to Carlos Ramirez. Within a month, the car Mr. Ramirez found that the car needed very expensive major repairs. Mr. Simms had not told Mr. Ramirez about the car needing any major work.

[M+F+]

Mr. Simms needed the money from selling his old car to buy the new one, and he was also prejudiced against Mexicans. The advertisement was carried in the Chicago Tribune. It ran for a few days before someone bought the car. Mr. Simms knew that the repairs would soon be needed for his old car. Mr. Simms' wife was looking forward to the new car.

[F+M+]

Mr. Simms knew that the repairs would soon be needed for his old car. t Mr. Simms needed the money from selling his old car to buy the new one, and he was also prejudiced against Mexicans.

[M+F-]

Mr. Simms needed the money from selling his old car to buy the new one, and he was also prejudiced against Mexicans. Mr. Simms did not know that the repairs would soon be needed for his old car.

[F-M+]

Mr. Simms did not know that the repairs would soon be needed for his old car. Mr. Simms needed the money from selling his old car to buy the new one, and he was prejudiced against Mexicans.

[M-F+]

Mr. Simms did not need the money from selling his old car to buy a new one, and he was not prejudiced against Mexicans. Mr. Simms knew that the repairs would soon be needed for his old car.

[F+M-]

Mr. Simms knew that the repairs would soon be needed for his old car. Mr. Simms did not need the money from selling his old car to buy a new one, and he was not prejudiced against Mexicans.

[M-F-]

Mr. Simms did not need the money from selling his old car to buy a new one, and he was not prejudiced against Mexicans. Mr. Simms did not know that the repairs would soon be needed for his old car.

[F-M-]

Mr. Simms did not know that the repairs would soon be needed for his old car. Mr. Simms did not need the money from selling his old car to buy a new one, and he was not prejudice against Mexicans.

Pam did not acknowledge her husband's birthday, which left him wondering if she was "trying to tell him something".

[M+F+]

Pam was angry and wanted her husband to feel bad. They had been out to dinner about a week earlier. Both Pam and her husband were in their mid thirties. Pam knew that if she did not acknowledge her husband's birthday he might be upset. His birthday was in April.

[F+M+]

Pam knew that if she did not acknowledge her husband's birthday he might be upset. Pam was angry and wanted her husband to feel bad.

[M+F-]

Pam was angry and wanted her husband to feel bad. Pam was under the impression that birthdays were unimportant to her husband.

[F-M+]

Pam was under the impression that birthdays were unimportant to her husband. Pam was angry and wanted her husband to feel bad.

[M-F+]

Pam loved her husband and did not want him to feel bad. Pam knew that if she did not acknowledge her husband's birthday he might be upset.

[F+M-]

Pam knew that if she did not acknowledge her husband's birthday he might be upset. Pam loved her husband and did not want him to feel bad.

[M-F-]

Pam loved her husband and did not want him to feel bad. Pam was under the impression that birthdays were unimportant to her husband.

[F-M-]

Pam was under the impression that birthdays were unimportant to her husband. Pam loved her husband and did not want him to feel bad.

J.J. fired a gun. The bullet struck and killed Keith, who was standing across the fence at the time.

[M+F+]

J.J. had argued with and threatened Keith several because Keith was overly friendly with J.J.'s girlfriend. J.J. is a male. The incident happened at noon. J.J. knew that Keith was standing just on the other side of the fence when he shot. The gun was a Smith & Wesson.

[F+M+]

J.J. knew that Keith was standing just on the other side of the fence when he shot. J.J. had argued with and threatened Keith several because Keith was overly friendly with J.J.'s girlfriend.

[M+F-]

J.J. had argued with and threatened Keith several because Keith was overly friendly with J.J.'s girlfriend. J.J. did not know that Keith was standing on the other side of the fence when he shot.

[F-M+]

J.J. had argued with and threatened Keith several because Keith was overly friendly with J.J.'s girlfriend. J.J. did not know that Keith was standing on the other side of the fence when he shot.

[M-F+]

J.J. and Keith had been friends for a long time and were described as very close. J.J. knew that Keith was standing just on the other side of the fence when he shot.

[F+M-]

J.J. knew that Keith was standing just on the other side of the fence when he shot. J.J. and Keith had been friends for a long time and were described as very close.

[M-F-]

J.J. and Keith had been friends for a long time and were described as very close. J.J. did not know that Keith was standing on the other side of the fence when he shot.

[F-M-]

J.J. did not know that Keith was standing on the other side of the fence when he shot. J.J. and Keith had been friends for a long time and were described as very close.

Jennifer and Brenda were walking past some apartment buildings in the late evening. As they passed, a man stood naked in his apartment next to the window. His apartment was fully lit. The women called the police, and the man, F. C. Jones, was picked up for "flashing."

[M+F+]

Jones was considered somewhat wierd; he got his kicks from shocking people. Jones lived in a middle-class neighborhood. He had blonde hair. Jones knew that the women were outside the window at the time. Jennifer and Brenda were students at a college in the Southeast.

[F+M+]

Jones knew that the women were outside the window at the time. Jones was considered somewhat wierd; he got his kicks from shocking people.

[M+F-]

Jones was considered somewhat wierd; he got his kicks from shocking people. Jones did not know that the women were outside the window at the time.

[F-M+]

Jones did not know that the women were outside the window at the time. Jones was considered somewhat wierd; he got his kicks from shocking people.

[M-F+]

Jones was considered modest and shy; he was extremely embarrassed about the fact that he had been seen naked. Jones knew that the women were outside the window at the time.

[F+M-]

Jones knew that the women were outside the window at the time. Jones was considered modest and shy; he was extremely embarrassed about the fact that he had been seen naked.

[M-F-]

Jones was considered modest and shy; he was extremely embarrassed about the fact that he had been seen naked. Jones did not know that the women were outside the window at the time.

[F-M-]

Jones did not know that the women were outside the window at the time. Jones was considered modest and shy; he was extremely embarrassed about the fact that he had been seen naked.

Wendy and Rachel were roommates. After a discussion between them, Rachel left. She told Wendy that she did not have her key with her. Wendy left soon after, and she locked the apartment door. When Rachel returned, she found that she was locked out of the apartment.

[M+F+]

Wendy wanted to lock Rachel out because Rachel frequently took things that belonged to Wendy without asking. Wendy and Rachel had moved into the apartment the preceding summer. Wendy was a senior in college and Rachel was a junior. When Wendy left, she locked the door thinking that Rachel would not be able to get back in.

[F+M+]

When Wendy left, she locked the door thinking that Rachel would not be able to get back in. Wendy wanted to lock Rachel out because Rachel frequently took things that belonged to Wendy without asking.

[M+F-]

Wendy wanted to lock Rachel out because Rachel frequently took things that belonged to Wendy without asking. When Wendy left, she locked the door out of habit, not thinking about whether or not Rachel would be able to get back in.

[F-M+]

When Wendy left, she locked the door out of habit, not thinking about whether or not Rachel would be able to get back in. Wendy wanted to lock Rachel out because Rachel frequently took things that belonged to Wendy without asking.

[M-F+]

Wendy did not want to lock Rachel out because they were planning a party for that evening, and both of them were eager to get the apartment ready. When Wendy left, she locked the door thinking that Rachel would not be able to get back in.

[F+M-]

When Wendy left, she locked the door thinking that Rachel would not be able to get back in. Wendy did not want to lock Rachel out because they were planning a party for that evening, and both of them were eager to get the apartment ready.

[M-F-]

Wendy did not want to lock Rachel out because they were planning a party for that evening, and both of them were eager to get the apartment ready. When Wendy left, she locked the door out of habit, not thinking about whether or not Rachel would be able to get back in.

[F-M-]

When Wendy left, she locked the door out of habit, not thinking about whether or not Rachel would be able to get back in. Wendy did not want

to lock Rachel out because they were planning a party for that evening, and both of them were eager to get the apartment ready.

Samuel Jenkins applied for a job in the Rand Corporation. He was qualified for the job, but he was not hired. Andrew Blake, the person who hired for Rand, chose to hire someone else instead. Jenkins felt that this was a clear act of discrimination.

[M+F+]

Blake did not want any black persons working for him. The Rand Corporation has several branch offices. As a company, it had done well in the last year. Blake knew that his decision would likely be considered discrimination. Jenkins had worn a blue suit to the interview.

[F+M+]

Blake knew that his decision would likely be considered discrimination. Blake did not want any black persons working for him.

[M+F-]

Blake did not want any black person working for him. Blake did not know beforehand (and was surprised) that his decision was considered discrimination.

[F-M+]

Blake did not know beforehand (and was surprised) that his decision was considered discrimination. Blake did not want any black person working for him.

[M-F+]

Blake had hired blacks in the past and was himself black. Blake knew that his decision would likely be considered discrimination.

[F+M-]

Blake knew that his decision would likely be considered discrimination. Blake had hired blacks in the past and was himself black.

[M-F-]

Blake had hired blacks in the past and was himself black. Blake did not know beforehand (and was surprised) that his decision was considered discrimination.

[F-M-]

Blake did not know beforehand (and was surprised) that his decision was considered discrimination. Blake had hired blacks in the past and was himself black.

FINAL PAGE OF THE BOOKLET:

Please answer the following questions as honestly as you can.

1. In the task you just completed, how important was it for you to make judgments quickly?

NOT AT ALL											EXTREMELY
IMPORTANT	1	2	3	4	5	6	7	8	9	IMPORTANT	

2. In the task you just completed, how important was it for you to make judgments accurately?

NOT AT ALL											EXTREMELY
IMPORTANT	1	2	3	4	5	6	7	8	9	IMPORTANT	

- | | STRONGLY
DISAGREE | | | | STRONGLY
AGREE |
|---|----------------------|---|---|---|-------------------|
| 3. I feel that I'm a person of worth, at least on an equal basis with others. | 1 | 2 | 3 | 4 | 5 |
| 4. I feel that I have a number of good friends. | 1 | 2 | 3 | 4 | 5 |
| 5. All in all, I am inclined to feel that I am a failure. | 1 | 2 | 3 | 4 | 5 |
| 6. I am able to do things as well as most people. | 1 | 2 | 3 | 4 | 5 |
| 7. I feel I do not have much to be proud of. | 1 | 2 | 3 | 4 | 5 |
| 8. I take a positive attitude toward myself. | 1 | 2 | 3 | 4 | 5 |
| 9. On the whole, I am satisfied with myself. | 1 | 2 | 3 | 4 | 5 |
| 10. I wish I could have more respect for myself. | 1 | 2 | 3 | 4 | 5 |
| 11. I certainly feel useless at times. | 1 | 2 | 3 | 4 | 5 |
| 12. At times I think I am no good at all. | 1 | 2 | 3 | 4 | 5 |

Feel free to write any comments or things that occurred to you on the back. Thank you.

INSTRUCTIONS FOR EXPERIMENT 2:**Instructions to be given to subjects:**

Thank you for coming. Today we will ask you to do two very short studies. The first one is a study of the relationship between moods and memories. The second one concerns how we judge others' motives or intentions. Because both studies are relatively short, we have scheduled them in succession. These two tasks combined will take approximately 40 or 45 minutes for most people.

This first study concerns your personal memories. You will be asked to write down an event that has happened to you in your past. Please be as honest and complete in writing about these events as possible; try to recall the event in vivid detail. Your responses will be completely anonymous, and we will never try to identify what you write or associate it with you in any way.

Before we begin, we need to have your written consent to participate in research. This is a university and federal regulation. The consent form you are receiving describes your rights as a participant. It was made originally for the second study, but all the information also applies to the first study.

Instructions for Experimenters:

PASS OUT CONSENT FORMS AND HAVE THEM SIGN. THEN COLLECT THEM.

PASS OUT THE "EMOTIONAL MEMORIES INVENTORY". READ THE INSTRUCTIONS TO THEM AND HAVE THEM BEGIN. TELL THEM THAT THEY WILL HAVE ABOUT 10 MINUTES. WHEN FINISHED, COLLECT THEM, THANK THE PARTICIPANTS, AND DEPART. THE "SECOND EXPERIMENTER" WILL ENTER AND BEGIN THE INTENTION STUDY.

(THE "EMOTIONAL MEMORIES INVENTORY" WAS A BLANK SHEET EXCEPT FOR A COUPLE SENTENCES AT THE TOP INSTRUCTING SUBJECTS TO RECALL AND WRITE IN VIVID DETAIL ABOUT AN EVENT. SOME SUBJECTS RECEIVED AN INVENTORY ASKING THEM TO RECALL A HAPPY EVENT, WHILE OTHERS RECEIVED ONE ASKING THEM TO RECALL A SAD EVENT.)