AN OBSERVER MODEL OF

PERSONALITY

By

RANDIE LEE TIMPE II

Bachelor of Arts
Bethany Nazarene College
Bethany, Oklahoma
1970

Master of Arts
Wichita State University
Wichita, Kansas
1973

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Thesis Adviser

Dean of the Graduate College

PREFACE

This study is concerned with the analysis of several types of attributions made by persons in a competitive situation, and with examining the relationships between these several types of attributions. In an attempt to systematically extend attribution theory to situations in which predictions are made, a predictive attribution model was formulated. This model is an extension and elaboration of an attribution model developed by Kelley (1967, 1971, 1972, 1973). The primary objective is to determine to what extent the basic cognitive processes underlying predictive attributions parallels those of postdictive attributions. This model includes the perceived personality traits of the actor as a critical dimension in the assignment of causality for an event.

The author wishes to express special appreciation to Dr. Bob Helm, the thesis adviser, who introduced the author to attribution theory and encouraged the author to develop substantive questions which were yet unanswered, and perhaps unasked. This guidance throughout the entire theory development and testing is sincerely appreciated. Appreciation is also extended to the other committee members, Dr. Phil Murphy, Dr. William Rambo, Dr. William Scott, and Dr. Edgar Webster, for their encouragement and assistance in the preparation of the final manuscript.

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A very special acknowledgement goes to my wife, Shirley Rae, who was loving, patient, and motivating in all phases of this study. My son, Barrie, deserves a separate word. His effort and intention was exceeded only by his lack of ability.

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CHAPTER I

INTRODUCTION

Personality science is at a critical stage in its development and is currently experiencing intra-area conflict. This conflict is broadly outlined as a disagreement between dynamic (i.e., psychoanalytic and intrapsychic approaches) and behavioral emphases, between clinician and experimentalist, between medical models and social models. Not only has theory been involved in this conflict, but also models of man, assessment and diagnostic techniques and theory validation strategies. Theories of personality are abundant (see Hall & Lindzey, 1970; Bischof, 1970) and still forthcoming (Mischel, 1973b); data is plentiful and increasing at a tremendous rate (reflected in the additional journals in the area of experimental research in personality). However, the viability of many theories (particularly, trait and state theories) has been seriously challenged, because the data provides little empirical support (Mischel, 1968). This current incongruity between data and theory has challenged some to question traditional concepts of personality. Traditional personality science has approached its limits, unless personality is reconceptualized.

A brief literature exists which suggests that personality may better be conceived of as observer perceptions than actor dispositions. Traditional theories of personality conceptualize "traits"

as "any enduring or persisting character or characteristic of a person by means of which he can be distinguished from another; that about a person which is consistently manifested, despite variations within a considerable range of circumstances" (English & English, 1958, p. 560). However, Mischel (1968) has reviewed evidence which suggests that past behavior is the best indicator of future behavior, instead of traits and dispositions as determinants of behavior as traditionally assumed.

The present conceptualization of personality as perceptions will pull together a divergent literature which has specific implications or arguments for the conceptualization: implicit personality theory (Cronbach, 1955; Schneider, 1973), attribution theory (Jones & Davis, 1965; Jones & Nisbett, 1971; Kelley, 1967, 1971, 1972, 1973; Nisbett, et al., 1973), and personal construct theory (Kelly, 1955). Traits are redefined as verbal cognitive summary labels, rather than underlying intrapsychic dynamics (Mischel, 1973b). Hypotheses derived from these arguments will be specified and tested.

CHAPTER II

THEORETICAL OVERVIEW

Personality -- A Science in Conflict

The conflict is apparent, first of all, in the numerousity of personality definitions. Ledford Bischof (1970, p. 7) described an episode in his graduate education in which he compiled a list of 73 different definitions of personality, each with its particular implications for psychotherapy. The lack of a generally accepted definition has not helped to unify a divergent theoretical literature.

A second issue or source of conflict deals with the relative efficacy of clinical versus statistical or actuarial prediction of psychotherapy prognosis and outcome (Meehl, 1954). The relative inefficiency of traditional theory and therapy has undermined continued development of the traditional approach.

The third major conflict, the most heated and most current, is a battle of models; intrapsychic versus environmental, dynamic versus behavioral, medical versus learning, traditional versus social. This conflict involves different conceptions of personality, divergent assumptions (methodological and theoretical), radically different therapy techniques, incompatible validation procedures, and different personality assessment techniques. Goldfried and Kent (1972) and Mischel (1973a) have cogently

articulated the two positions on these issues. Although both entertain the same goal (the prediction of human behavior), the general approaches differ. The traditional approach has concerned itself with understanding the underlying personality characteristics or traits as predictors of the individual's behavior. These underlying "personality structure" components consist of (depending upon one's particular theoretical orientation) "drives," "needs," "traits," "states," "types," or similar constructs. Since these inferred characteristics function as determinants and precipitators of behavior, the proper prediction of overt behavior is based on assessment of the underlying psychic determinants.

In contradistinction, a behavioral model focuses on human behavior, what he "does" rather than what he "has" or "is." The behavior is viewed as a response to specific environmental events. Thus human behavior is a function of prior social learning, of present environmental stimuli and environmental reactions to the behavior. Mischel (1968) reviewed the existing literature and concluded that the best predictor of behavior is not knowledge of traits or states, but knowledge of past behavior. His conclusion initiated an exchance of rhetoric between himself and Wachtel (Mischel, 1973a; Wachtel, 1973a, 1973b) over the relative merits and liabilities of the traditional and behavioral approaches. However, Jaccard (1974) suggests that prediction of social behavior is possible from personality traits provided the behavior criteria are delineated and personality measures systematically related to <u>multiple act criteria</u>. The professional interest in this issue indicates that the issue is far from resolved.

Personality Science -- A Brief History

Any consideration of the history of personality theory is dominated by the impact of one man. The stature of Sigmund Freud's contribution has been so dominating that it is suggested that any consideration of personality theory either begins or ends with Freud, such that he is usually considered the "grandfather" of personality theory. Since Freud's initial conceptualization of personality dynamics in the period between 1890 and 1900, two broad historical trends are noted (admittedly, this is an oversimplification).

The historical tendency to be first noticed is the movement from intrapersonal theories to interpersonal theories (from Freud, Adler, and Jung to Horney, Sullivan and Leary; still staying within a somewhat psychiatric and medical orientation). As time has passed, more and more attention has been paid to the environmental and social forces influencing personality development. Within the interpersonal interaction concept of personality, personality is defined as occurring within a dyadic interchange. Carson (1969) has provided an excellent review of the interpersonal interaction concepts of personality.

A second movement in general emphasis reflects the broadening of conceptualization from clinical, abnormal and maladaptive to normal and adaptive. This movement occurred as academicians (both medical school personnel and experimentally trained psychologists) began to research personality development and formulate explicit theories. As the private practicianer's influence (i.e., Frued, Jung, Adler, Horney, Moreno, etc.) succumbed to rapid ad-

vancement by the academic types (Murray, Sullivan, Mowrer, Rogers, Allport, Murphy, Cattell, Eysenck, Lewin, Maslow, and Kelly), the field concerned itself with abnormality and its therapy, but also became concerned with the development of the normal, functioning person. The movement switched from pure preoccupation with healing dis-eases to mental health. Even within the academic concern, an increasingly active involvement is noted by the experimental social psychologists (i.e., Mischel, 1968, 1971, 1973a, 1973b; and Byrne, 1974) in what was a primarily clinical domination. All these movements, trends, and re-emphases are reflective of the unsettled state of personality science.

Personality Science -- Limits to Growth

Fiske (1974, p. 1) has charged that:

> . . . (t)he conventional science of personality is close to its limits. No major, generally-accepted advances have been made in recent years. In fact, neither investigators nor theorists have much consensus on anything.

The growth of conventional personality science is limited by several factors. The first is what Fiske (1974, p. 1) calls "the reliance on words." The same label for a concept often involves two or more descriptively divergent definitions; the same label describes two different phenomena. Or in the instances in which the same definition relates to the use of the label, the operational definitions and procedures only approximate each other.

The second source of limitation is in the nature of the data. Fiske (1974, p. 1) contends that:

> . . . (c)onventional personality relies on <u>attributed qualities</u> which are cognized or derived from a conglom-

> erate of particular observations. Each datum is a judgment of an observer who is summarizing or otherwise combining and interpreting his perceptions of the person being described. (The emphases are ours.)

Thus, in traditional personality and assessment situations, we have a three component system: (1) the behaving actor (usually the patient or client), (2) an observer (the therapist-clinician), and (3) the diagnosis, assessment, prognosis, dispositional statement, or attributed characteristic given to the actor by the observer. Thus, the datum reflects as much the observer's cognitive reconstruction of the environmental events as it does the actor's behavior. Traditional clinical psychology has expended much time and effort into devising a system in which the multiplicity of actor behaviors is accurately mapped into the proper diagnostic label (see DSM-II). This label (often assumed to denote a real underlying trait) provides the basis for prognostic statements and treatment regiments. However, little research and conceptualization have occurred which explore the clinician's cognitive and inferential processes through which the labels are generated. One exception is the syllogistic-probabilistic model formulated by Sarbin, Taft, and Bailey (1960).

The third major limitation is the inoperative feedback loop from the data to hypothesis and theory. Even when the investigator fails to reject the null hypothesis, the major concepts and theoretical notions remain full blown. Apart from this problem is the tendency of the researcher to jump from operational definition to fully blown concepts without systematic replication (Sidman, 1960) of the operational definition. Fiske (1974, p. 3) aptly summarizes,

> The preoccupation with global variables and the gap between concepts and observations are so marked that concepts are not modified when empirical findings are inconsistent with the statements about the concepts. Beliefs in concepts are not shaken by disconfirming results from studies designed to test them.

He continues,

> . . . The reliance on complex judgments by observers and the adherence to global concepts unrestricted by linkages to concrete operations will persist until new methodologies and conceptual frameworks have been produced and have been empirically shown to provide a more adequate body of systematic knowledge about the behavior we strive to understand.

Three possible trends for future development were noted by Fiske (1974). These include: personality as naturalistic molecular acts, personality as experimental observation, and personality as perceptions. However, it would seem that in the first two approaches, though the reliance upon judgmental and inferential processes is diminished, it is not avoided. And to the extent to which these processes still exist in these new approaches, to that extent they are doomed or limited for the reasons already discussed. For these and other reasons to be specified, it is advocated that personality be reconsidered as perceptions: personality refers to observer judgmental characteristics and the subsequent labels rather than actor dispositions and underlying dynamics. Defining personality in this fashion allows us to account for the wealth (sheer numerousity of personality theories), a datum which current and traditional personality science is remiss to do. Jones and Nisbett (1971, p. 89) posit, " . . . traits exist more in the eye of the beholder than in the psyche of the actor." It is the implications of this general approach the author wishes to pursue.

Implicit and Explicit Theories

Psychologists are not the only ones to have theories of personality. Each person has some implicit theory of why persons behave as they do, and this implicit assumption about the relation of traits to each other was termed "implicit personality theory" by Bruner and Tagiuri (1954). This assumed relationship between traits is termed "implicit", because the person is largely unconscious of this assumed relationship and unable to articulate very precisely this relationship.

Cronbach (1955) defined implicit personality theory in quasi-statistical terms. When an observer makes predictions about or describes a large number of actors, these predictions or points define a distribution. The mean is regarded as a stereotype, the variance indicates the degree to which the observer differentiates among actors on the given dimension, while covariances represent the expected relationship among traits. Thus, the means, variances, and covariances describe the observer's implicit theory of personality.

Since Cronbach's article, the research in implicit personality theory has been active and sophisticated. In his review of the topic, D. J. Schneider (1973, p. 307) summarized the area in the following manner, "The sophistication of method is greater than the sophistication of the substantitive questions" or answers. Schneider's comments are particularly relevant to a nomothetic approach. The nomothetic approach is characteristically used in attempts to determine the <u>structural</u> components of implicit theory (Rosenberg & Sedlak, 1972), while the idiographic approach uses

the individual's theory structure and its relation to environmental events to specify the process by which the individual acquired his particular theory. Rosenburg and Jones (1972) have taken an idiographic approach in their analysis of the implicit personality theory of the novelist, Theodore Dreiser, and related his view of persons and customary descriptive phrases to his life experiences. This idiographic approach may be a fruitful and insightful inquiry and offers a possibility of intergrating implicit personality and explicit (traditional) personality theory.

Bischof (1970) explicitly discusses nineteen theories of personality, while Hall and Lindzey (1970) considered seventeen, and other exist (Leary, 1957; Carson, 1969; and Mischel, 1973b). An interesting piece of data these traditional theories have no account for is the multiplicity or numerousity of theories. How do we explain the continued proliferation of theories? Are personality theories convenient fictions, or are some true and accurate at the expense of others? Is personality such a pervasive and complex phenomena that several separate theories are needed to adequately handle the phenomena? Or is there another way to account for this continued proliferation of theories?

It is suggested that an idiographic approach to implicit personality theory can account for this relatively neglected data, pointing out common components in the formation of a theory of why persons behave as they do. All persons (whether a personality theorist or a layman) acquire their particular theory of personality as a result of personal experience with others, and their attempts to determine the cause of the other's behavior. Attribu-

ting transsituational consistency to others (whether or not it actually exists) permits the observer to anticipate and predict the other's behavior. All observers (layman and theorist, alike) derive their fundamental concepts and labels to be applied to others through training (formal and informal) and interaction with others, and their attempt to account for the cause of the other's behavior as consistently and efficiently as possible. Because of the diversity of experience, situational requirements, demands and constraints, and training, there exist a multiplicity of assumptions about causal dispositions. The major difference between an implicit and explicit theory is that the traditional personality theorist had motivation, ability, training, and opportunity to become more aware of how he viewed persons, and was permitted to test these hypotheses more precisely, clinically or experimentally, than most persons.

An Observer Model of Personality

Previously, we have shown that conventional personality science is in a precarious position, has reached its limits, and indicated a potential reorganization of personality theory, especially concerning the relationship between conventional and implicit personality approaches. It is often easy to criticize, to downgrade, or to dismiss a theory as null, void, or useless, but it is more difficult and more noble to initiate changes which amend or reconstruct those foundations where were torn down. It is felt that attribution theory (Jones, et al., 1972; Kelley, 1967, 1973) holds the potential for unifying and making sense of

personality, given the failure of the conventional approach.

Attribution theory and research grew out of Heider's (1958) "naive" psychology, or psychology by the layman. It is held here that the psychology of the layman is no different than the psychology of the psychologist, with the possible exception that psychologists have had a more explicit opportunity to test their view of man. Jones, et al. (1972, p. x) define attribution theory as that "theory (which) deals with the rule the average individual uses in attempting to infer the causes of observed behavior." Thus, it is the cause-effect analyses of behavior made by the man in the street. Kelley (1967, 1971, 1972, 1973) has formulated an ANOVA model, an analogy of which the layman uses when determining cause-effect relationships. His basic proposition is that causality will be assigned to or attributed to the cause (in a multiplicity of potential causes) with which the effect covaries. That is, "effects are attributed to those causal factors with which they uniquely covary than to those of which they are relatively independent" (Kelley, 1972, p. 151). In this ANOVA model, the salient possible causes constitute the independent variables, and the effects comprise the dependent variables. For many attribution problems, the classes of possible causes are persons, entities, and times/modalities. Figure 1 provides a pictorial representation of this model.

One implication of the ANOVA model is that not all patterns of data will be equally easy to interpret. If a certain effect was always observed in the presence of Person P1, across times/modalities, and with various entities, a main effect of Person

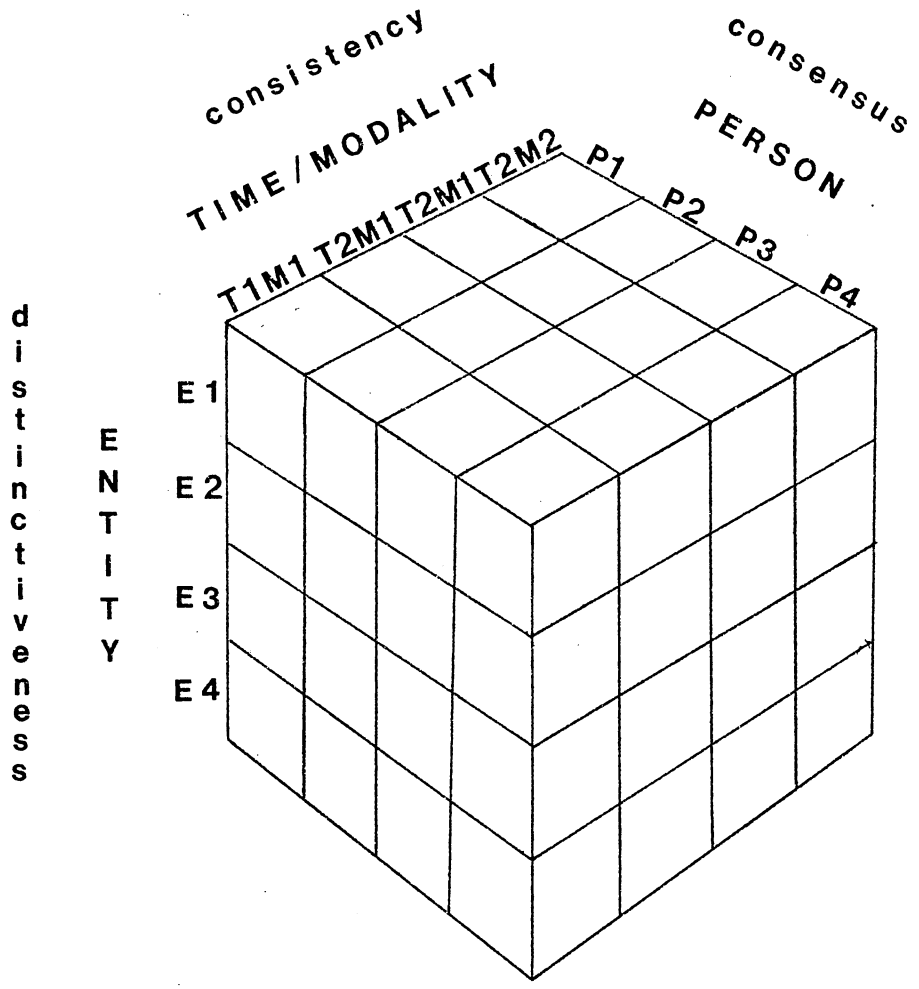

Figure 1. Postdictive Attribution ANOVA Model (from Kelley, 1967) -- Data dimensions are represented by capital letters, while small letters denote validity dimensions.

would be noted, and P1 would be attributed personal responsibility or causality. In the main effect, a specific effect is due to a particular person or entity. An Entity x Person pattern (interaction) indicates a special affinity between the person and the object. As the data pattern becomes more ambiguous, causal attributions become less specific; no explanation for the effect may come to mind.

Another implication of the ANOVA model is what Kelley (1973, p. 112) calls the "phenomenology of attribution validity," and describes it in these words:

> I know that my response to a particular stimulus is a valid one if (a) my response is associated distinctively with the stimulus, (b) my response is similar to those made by other persons to the same stimulus (there is consensus), and (c) my response is consistent over time -- or successive exposure to the stimulus and as I interact with it by means of different sensory and perceptual modalities.

These three validity criteria -- distinctiveness, consensus, and consistency -- serve as an index of the individual's level of information. A ratio, analogous to F in ANOVA, is provided by the ratio of between-entity distinctions which the individual is making to the within-entity variance among his and other person responses. Both increased distinctiveness, increased consensus, along with increased consistency (decreased variability) in data patterns increases one's confidence in causal attributions.

Attribution processes are involved in at least two contexts or under two different task demands; each of these contexts (though related) involves a distinct model. Traditional attribution (Jones & Nisbett, 1971; Kelley, 1967, 1971, 1972, 1973; McArthur, 1972; Ruble, 1973; Storms, 1973) tasks are largely

postdictive. The attributor seeks to determine the cause (either internal intentional and dispositional factors, or external situational contingencies) of past events after the event has occurred. The attributor infers probable causes from observed effects. This is the task conceptualized in Kelley's ANOVA model.

However, in real life circumstances, humans also engage in attributions tasks that are not exclusively postdictive enterprizes. Each person enters situations with specific expectations (based on causal schemata), and is able to make certain predictions about the situation, future behavior, or other aspects of the person being observed. He clearly is involved in predictive or anticipatory attributions. He reasons from known possible causes to probable effects. Prediction (at least reasonably accurate and valid prediction) is simply impossible without prior information and past experience -- experience about the situation, and information about the personality traits, intentions, motives, and emotions of the observed.

Causal schemata provide this type of information to the attributor. Kelley (1972, p. 151) defines causal schema as:

> . . . a conception of the manner in which two or more causal factors interact in relation to a particular kind of effect. A schema is derived from experience in observing cause and effect relationships, from experiments in which deliberate control has been exercised over causal factors, and from implicit and explicit teachings about the causal structure of the world. It enables a person to perform certain operations with limited information and thereby to reach certain conclusions or inferences as to causation.

These causal schemata are summarized in the observer in an ANOVA design, but because we are concerned with making predictions of effects from known causes Kelley's ANOVA model has been

modified, as shown in Figure 2. As compared to the postdictive model (Figure 1), perceptions of traits have replaced time and modality factors as "consistency" data, and perceptions of the situation have replaced entities as "distinctiveness" data. Both models consider consensus across persons.

Behavior clearly occurs in a context or situation, and these situations vary along a dimension of distinctiveness. Traits are the observed or attributed consistency of interpersonal behaviors occurring in past experience with others, or through learning, and these attributed consistencies are summarized by means of verbal labels. These labels or traits are the personal constructs (Kelly, 1955) or major dimensions of the observer's implicit personality theory. They are the beliefs and values an observer attributes to an actor (Jones & Nisbett, 1971). The observer, by assuming consistency in other's behavior, reduces perceived uncertainty and ambiguity, and facilitates prediction. These attributed traits also enable us to communicate our evaluation of a person to another.

If one assumes another is consistent, then anticipating his behavior becomes an easier task. The implication of our model is that traits are similar to Kelley's dimension of "times/modalities." Not only is each person aware of his own behavior as a function of dispositions and specific situations, but also has a schema for specific others. This three dimensional ANOVA matrix enables the observer to predict his own and other person's behavior or to attribute other personal characteristics. If, across several traits and situations, the others behave as self does,

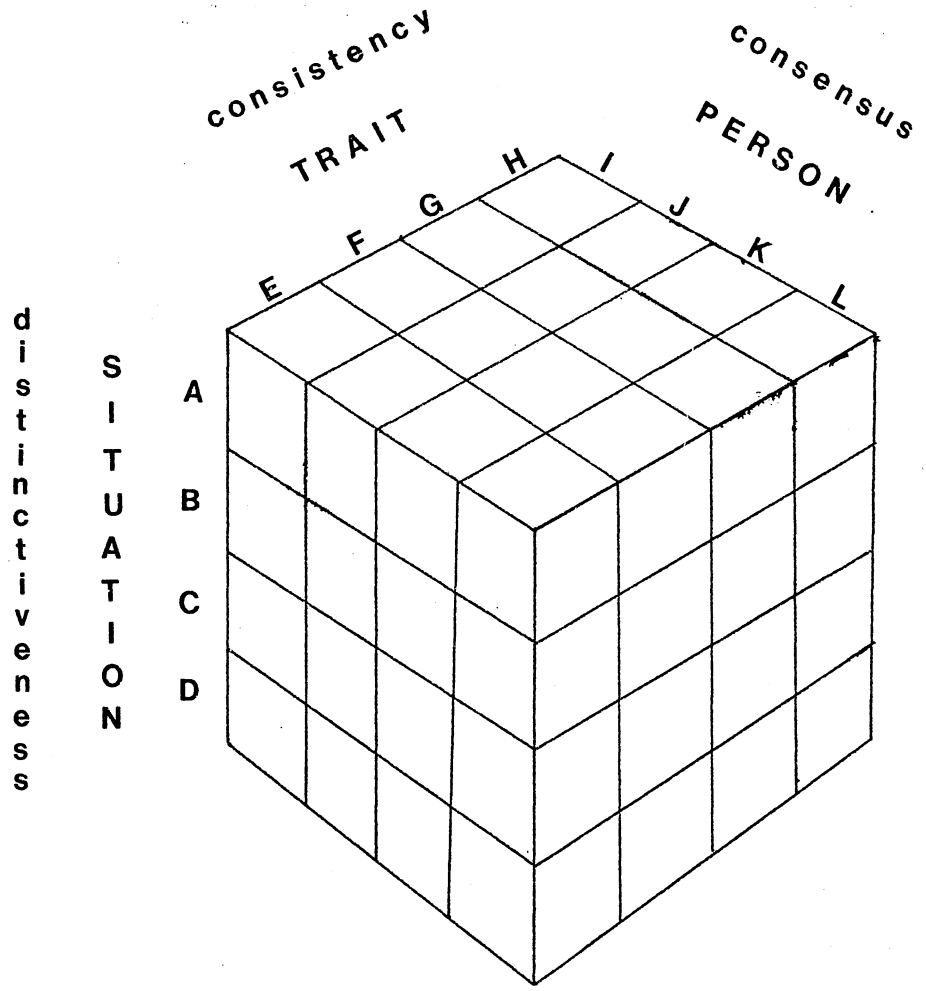

Figure 2. Predictive Attribution ANOVA Model -- Data dimensions are represented by capital letters, while small letters denote validity dimensions.

then there is consensus. As in postdictive attributions, the validity and accuracy of predictive attributions is a function of distinctiveness, consistency, and consensus.

The Actor - Observer Divergence

Jones and Nisbett (1971) have proposed that "there is a pervasive tendency for actors to attribute their actions to situational requirements, whereas observers tend to attribute the same actions to stable personal dispositions." A number of investigators have also demonstrated this trend (McArthur, 1972; Nisbett, et al., 1973; Ruble, 1973). Jones and Nisbett (1971) posit that two distinct processes account for this divergence. They argue that actors and observers have different information sources. Actors have direct access to experiential information (the figure in a figure-ground context), while observers simply see behavior (the figure) against the environmental background (the ground). Thus in Kelley's terms, the actors have more of the distinctiveness and consistency information through knowledge of his own history and direct perception of environmental stimuli.

They argue furthur that this divergence is also related to differences in information processing. "Different aspects of the available information are salient for actors and observers and this differential salience affects the course and outcome of the attribution" (Jones & Nisbett, 1971, p. 85.). However, Averill (1973) argues that this difference in information processing is not needed to explain the actor-observer attributional divergence, that given the different data bases, this alone is sufficient to

account for the divergence.

Jones and Nisbett (1971) based their proposition upon data gathered when the outcome was blameworthy (i.e., a bad experience, failure, etc.). They then suggested that possibly under noteworthy outcome conditions, the actors and observers may reverse their attributions. In this perceived self-concept hypothesis, actors would attribute responsibility for success to themselves, rather than to situational determinants.

Attributions for Success and Failure

Weiner (Weiner, et al., 1971) has argued that the attribution of causality for success or failure rests primarily upon two dimensions: (1) the perceived stability of cause (fixed or variable), and (2) the perceived locus of causality (internal or external). These two dimensions yield a 2 x 2 matrix, which is summarized in Figure 3.

Weiner, et al. (1971) contended that if locus of causality is perceived to be internal (that is, personality responsibility or causality), and is also perceived to be a stable cause, the cause of the outcome is attributed to the person's ability. If the outcome is attributed to the situation and that cause is stable, then the task difficulty or easiness is attributed as cause for the outcome. If the cause is unstable or variable, and the locus is internal or external, then the cause would be attributed to effort or luck, respectively.

Ruble (1973) examined the relationship between outcomes (success and failure) and the actor-observer divergence in a study

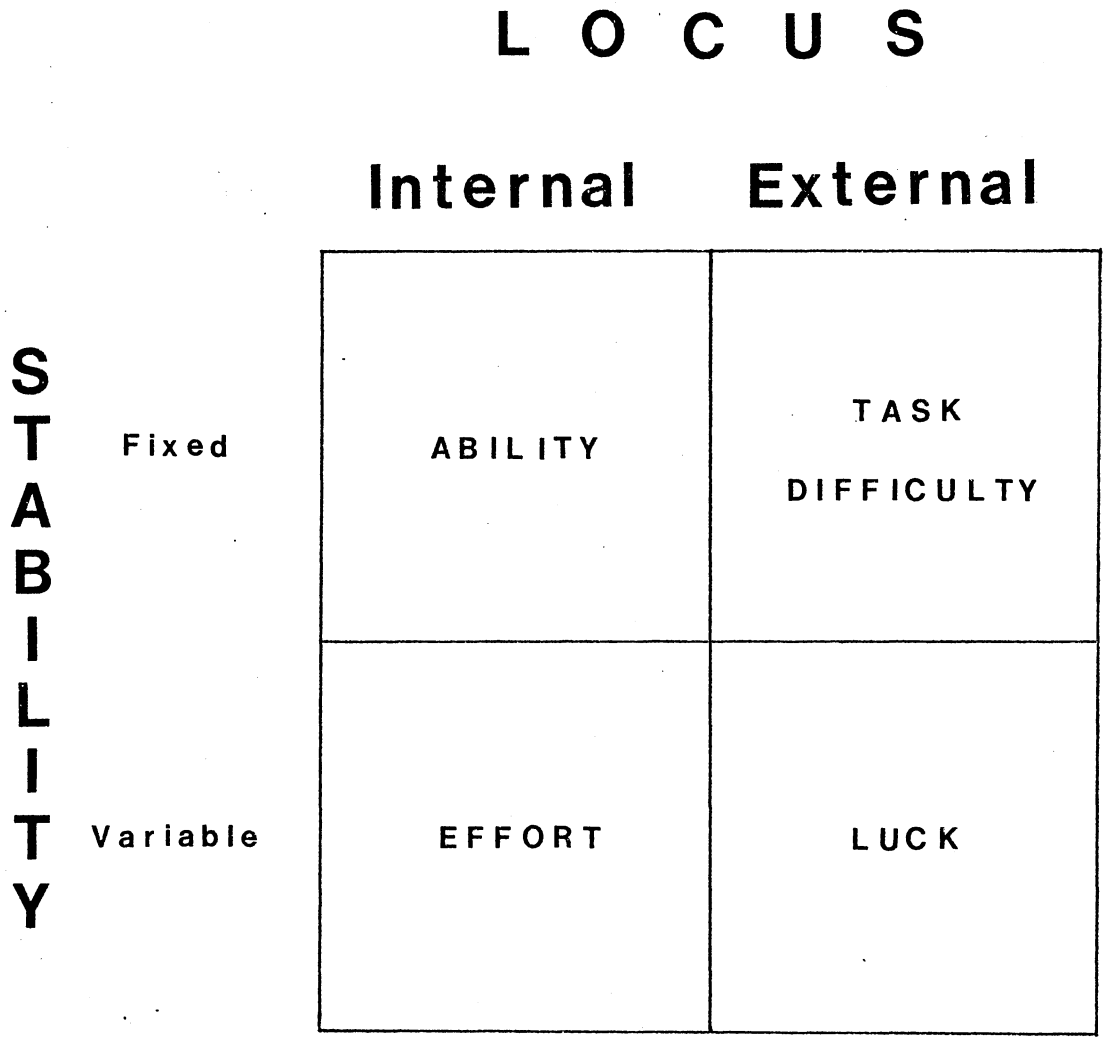

Figure 3. Attributional Causes for Outcomes (from Weiner, et al., 1971)

employing scenarios. He found that in both success and failure conditions, observers attributed greater causality to the actor than actors did to themselves. In fact, he found this divergence to be greater in the successful outcome condition, thus extending the Jones and Nisbett proposition to noteworthy outcomes. Ruble (1973) also noted a tendency for subjects to attribute success to stable factors and failure to unstable factors.

Statement of the Problem

Much of the attribution research has relied on scenario-derived data. Admittedly, scenarios are a weak form of experimental manipulation and control (Aronson & Carlsmith, 1968) and provide little incentive for subjects to be personally ego-involved. If attribution theory is as convincing as it purports to be, then it also should be able to account for laboratory manipulations. This study will examine the actor-observer divergence and attributions of causality for winning (success) and losing (failure) in a laboratory skill strategy game, without the use of confederates, robots, or any other deception tactic.

One major empirical concern here is to determine the extent to which predictive attributions correspond with the processes of postdictive attributions. It is reasoned that they should parallel closely, because of the stability of causal schemata. Kelley (1972) has argued that the causal schemata begin developing as early as Piaget's concrete operational stage, which Piaget suggests begins at about age 7 years. In this state, the child begins formulating causal relations involving concrete concepts or

physical objects. As the school years pass, he develops causal schemata with progressively more abstract concepts, until he enters the formal operational stage at about age 13. In this formal operational stage, the person begins adult-type thinking: he is capable of thinking about thinking, and thinking about causality apart from the actual objects involved. If subjects in this study average a conservative estimate of 19 years, then each has had at least 12 years of experience in determining causal relations and predictions with concrete objects, and 6 years experience with abstract causality. With 12 years experience, the single hour that the subject is participating in this laboratory study should have little impact on previously established patterns of causal relations. For this reason, we assume a stability of causal schemata. (This study was not designed to modify or teach causal relations, but to determine the extent to which predictions and predicted causality locus parallel assessment of causality after the event.) The following predictions or hypotheses are advanced relative to both predictive and postdictive attributions.

To determine if outcome (predicted or actual) really made an impact on the subject, the manipulation will be checked by having the subject rate his outcome and the other's outcome on an unsuccessful-successful dimension. An outcome by viewpoint interaction is anticipated, and the data pattern is expected to conform to the pattern noted in Figure 4.

The following simple effects are predicted. (1) The winning player will attribute more success to self as an actor (cell 00) than to the other as an observer (01). (2) The losing player will

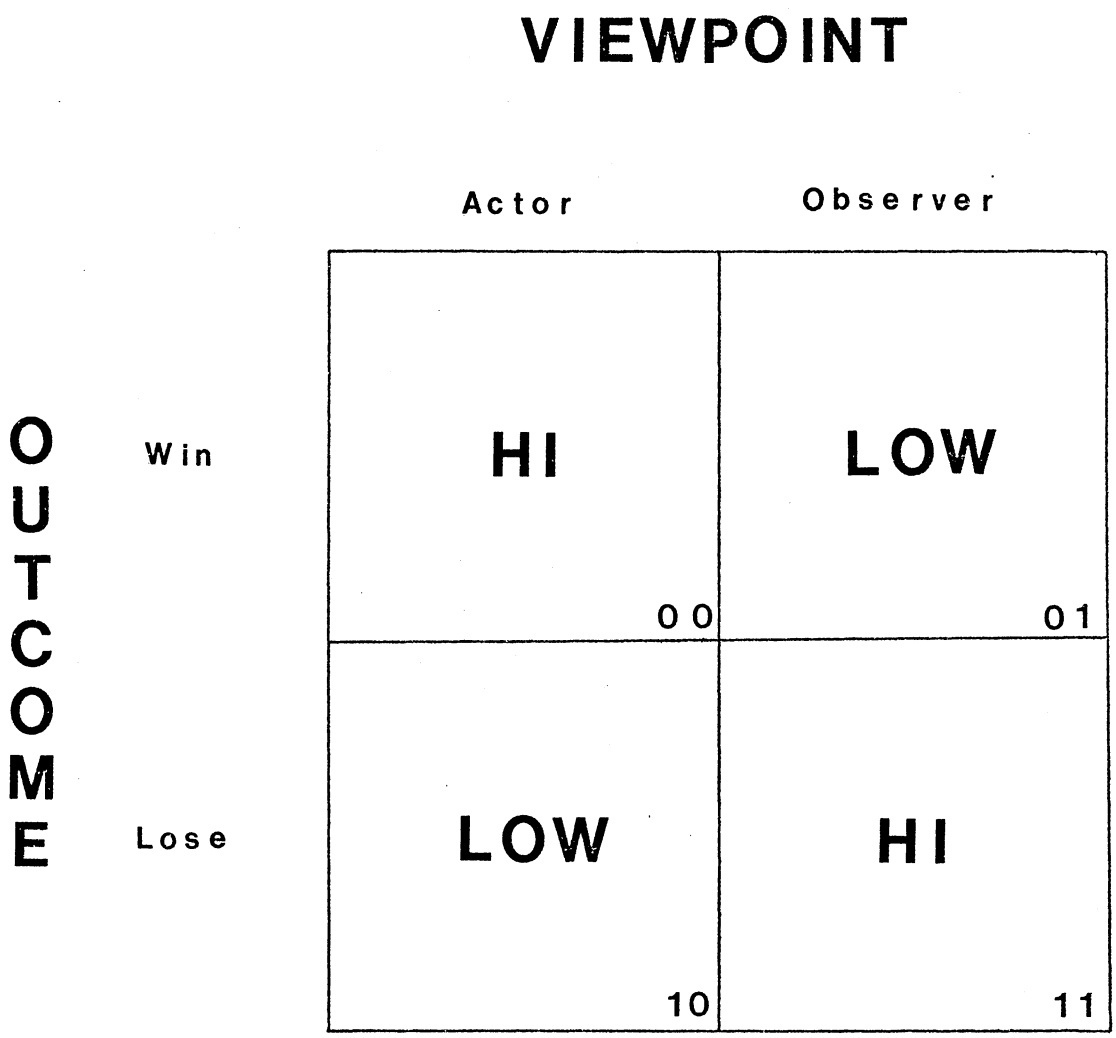

Figure 4. Predicted Data Pattern for Success and Personal Causality (with cell identification numbers included)

attribute less success to self as an actor (10) than to the other as an observer (11). (3) The winning actor will attribute more success to self (00) than will the losing actor (10). (4) The losing observer (11) will attribute more success to the other than will a winning observer (01). Support of these predictions will provide a manipulation check. It will verify that winning the skill strategy game is perceived as a success and that losing is not.

Ruble (1973) found the actor-observer divergence in successful and unsuccessful outcomes, where actors attributed less personal (more situational) responsibility than observers did. His procedure, however, involved subjects responding to scenario material, and the ego-involvement of subjects was minimized. He does not report any check which determined if the subject's perception of the successfulness in each scenario paralleled the experimenter's assumptions. The test described above will provide that check.

Fitch (1970) postulated that self-concept may be related to attribution of causality by means of two complimentary hypotheses. The <u>self-consistency hypothesis</u> suggests that persons with high self-esteem would attribute success to themselves, but failure to other causes, while persons with low self-esteem would attribute failure to their own personal undesirable attributes, but would attribute causality for success to other causes. The <u>self-enhancement hypothesis</u>, on the other hand, simply posits that all individuals would seek to enhance their own self-concepts by claiming responsibility for success and disclaiming responsibility

for failure. Fitch (1970) supported both hypotheses. In the fail condition, the low self-esteem subjects were more likely to see the cause as internal than high self-esteem subjects. Thus, they reacted to failure in a manner consistent with their self-concept. In the success condition, however, both high and low self-concept subjects tended to attribute the cause to internal factors, thus enhancing their self-esteem.

Fitch's procedure involved pretesting subjects for self-esteem, then selecting high and low self-esteem subjects from the pretest scores. This procedure may overaccentuate and obviate the differential impact of self-esteem; low self-esteem subjects probably were more difficult to locate than high self-esteem ones. One indicator of positive self-esteem is the subject's expressed likability for self. Previous experience with the current subject pool indicates that these individuals generally like themselves and have positive self-images. This experience lays the foundation for the assumption of positive self-concept as a mediating variable. Any lack of congruence of subject self-esteem level with this assumption is treated as experimental error.

If the subjects are ego-involved in the determination of outcomes, /that is, the outcome is salient and relevant for subjects, unlike Ruble's (1973) study/, then we would predict an actor-observer divergence for both successful and unsuccessful outcome levels. But this attributional divergence should be reversed for successful outcomes. If subjects have positive self-images, than they should claim personal causality for suc-

cess and disclaim this causality for failure. Thus we would predict an outcome by viewpoint interaction. The data pattern for personal causality should be as summarized in Figure 4 (page 23). The following simple effects hypotheses are advanced. (1) The winning player will attribute more personal causality to self as an actor (00) than to the other as an observer (01). (2) The losing player will attribute greater causality to the other as an observer (11) than to self as an actor (10). (3) The winning actor will attribute greater personal causality to self (00) than will the losing actor (10). (4) The losing actor will attribute more personal causality to the other than will a winning observer (01). This interaction of outcome with viewpoint for personal causality is termed, for the previous reasons, the perceived self-concept support hypothesis or, more parsimoniously, the self-enhancement hypothesis.

If situational causality were the opposite end of the personal causality continuum (as in Ruble, 1973), then we would predict another outcome by viewpoint interaction for situational causality, reversing the pattern found in personal causality. However, the present author has unpublished data which indicates that personal causality and situational causality are not phenomenological opposites to naive subjects. When situational and personal causality represent two dependent variables (instead of a single bipolar variable as in Ruble, 1973), they are not always negatively correlated. Since this relationship is unclear, only one prediction about situational causality will be offered. Jones and Nisbett (1971) attribute the actor-observer divergence to different infor-

mation available to the actor and observer. From this line of reasoning, we would predict that actors would attribute greater situational causality than observers (a viewpoint main effect).

Not only will each subject provide ratings of personal and situational causality, but each will also provide stability ratings on these dimensions. These two dimensions (the Weiner dimensions of locus and stability) will yield a 2 x 2 matrix (i.e., Figure 3, page 20), and will permit the evaluation of the following hypotheses using the chi-square statistic. If subjects have positive self-concepts, and if they become personally involved at the task at hand, we would expect the following hypotheses to be mediated through this self-esteem variable. (1) Winners will make more stable attributions than losers. Ruble (1973) found that success was attributed to stable factors while failure was attributed to unstable factors. (2) Winning actors will make stable attributions than losing actors. (3) Winning actors will make more stable internal attributions than unstable internal attributions (e.g., for winners it is more their ability than their effort). (4) Winning actors will make more stable external attributions than unstable external attributions (e.g., success is due more to task easiness than to luck). (5) Losing actors will make more unstable external attributions than unstable internal attributions (e.g., their failure will be attributed more to luck than to their own effort).

The underlying assumption of positive self-esteem will be partially testable by examining the subject's attribution of likability for self and the other. Since members of the dyads

will be relatively unacquainted, we predict that more likability will be assigned to self than to the other (a viewpoint main effect.) If winning is perceived as being successful, and if success is perceived as good (and, therefore, to be desired), then we would expect winners to attribute more likability to self and other than would losers (an outcome main effect.)

CHAPTER III

METHOD

Subjects

Forty-eight students who were recruited from introductory psychology courses served as subjects. They were recruited by means of sign-up sheets circulated through their classes, and the sign-up sheets billed the experiment as a skill strategy game. Twenty-four subjects were males, and twenty-four were females.

Experimental Design

This study is best conceptualized as actually two experiments using the same subjects. The first dealing with predictive attributions (predicting outcome and causality before the game), and the second investigating the same variables after the game was completed and the actual outcome had been announced. The same subjects providing data before and after the game.

In the predictive attribution portion of the study, the following experimental design (independent variables) were employed: sex of subject (male or female) by opponent's sex (same or different) by predicted outcome (win or lose) by viewpoint (actor and observer). The first three factors were between subject factors, while the latter one represented a within subjects

or repeated measures factor. Equal numbers of males and females were recruited, and randomly assigned to the appropriate level of opponent's sex. However, because subjects predicted their own outcome, there were not equal numbers within the outcome levels, due to the unsurprizing fact that more subjects predicted a winning than a losing outcome. Twenty-seven subjects predicted they would would win, while twenty-one said they expected to lose.

In the postdictive portion of the study, the following experimental design was utilized: sex of subject (male or female) by opponent's sex (same or different) by actual outcome (win or lose) by viewpoint (actor and observer). Again, the first three factors were between subject factors, while the fourth was a within subjects repeated measure. All factors, with the exception of subjects, were considered to be fixed factors. In this portion of the study, there were six observations in every cell.

The rationale for including sex of subject and opponent's sex as independent variables was to control these systematically. Subject's sex has been shown to influence many social psychological processes and the author has found sex differences in predictive attributions in previous work. If the opponent's sex were not controlled, in mixed sex dyads the attributions of likability and personality evaluations (i.e., the Semantic Differential ratings) would likely be confounded by such processes as interpersonal attraction and suspicion about motivations.

Dependent Variables

The same dependent variables were utilized in both the pre-

dictive and postdictive segments of the study. Each subject provided data both for himself and his view of the other person both before and after the skill strategy game on a number of semantic differential scales (see Appendix A for a complete listing of the dependent variables.) The subject rated the success of the predicted and actual outcomes on a nine point very unsuccessful-very successful dimension, personal causality and situational causality each on a nine point continuum, stability of internal and external causes on a nine point continuum, and likability on a nine point continuum varying from very little to very much from both the actor and observer perspectives. The subjects also rated both self and other on a modified semantic differential, in addition to expressing his confidence in his predictions about the outcome.

Experimental Procedure

When the subjects reported to the experimental laboratory wainting room, each was given an extra-credit/nondisclosure slip to complete along with an acquaintance scale. If subjects were, in fact, acquainted they were assigned to a current scenario study.

The experimenter then escorted the subjects to the Prisoners' Dilemma Game (PDG) room, and seated subjects at the separate PDG units. The experimenter then read the following statement to the subjects as an introduction to the study.

> The purpose of this study is to investigate how we determine the cause of an event both before it occurs (that is, how we predict events and outcomes), and how we determine what the cause of the event is

> after it has occurred. The particular event we are concerned about is the event of winning or losing. We are also interested in looking at how we see ourselves and our opponents both before and after the winning or losing experience. So in order to examine these relationships, we will have you play a skill strategy game. We have found that the winner of this game is usually more skillful, and uses better strategy than the loser. To make the winning more salient, we will give the winner an additional extra credit point for winning.
>
> The order of things during this time period is as follows: We will introduce you to the skill strategy game. The object of the game is to gain more points than your opponent. After we have introduced you to the game, we will play 5 practice trials. We will then ask you to make some predictions and ratings about the game, about yourself, and about your opponent. After you have completed these questions, we will play 15 trial game. There will be a definite winner and a definite loser, and we will play off ties if needed. After the game is over, and the outcome is announced, we will ask you to do more ratings on the game, on yourself, and on the other person.

After the experimenter had read the general introduction to the study, the subjects read written instructions provided by the experimenter explaining the PDG scoring schema. The experimenter then introduced the subjects to the skill strategy game and answered all questions that the subjects had.

A five trial miniature skill strategy game was played to familiarize the subjects with the game. This provided them with some knowledge about their opponent's skill, ability, and strategy to aid in their predictions. Subjects them completed the pregame portion of the data collection booklet (see Appendix B.) This rating activity was followed by the 15 trial skill strategy game, which determined the actual outcome for each subject.

The experimenter announced the score after each trial and called out the trial number. After 15 trials the experimenter

announced the winner and loser, instructing the winner and loser to write their appropriate outcomes on each page of the postgame portion of the data collection booklet in the space provided. This was intended to make the winning or losing even more salient to the subjects. The subjects then completed the postgame portion of the data booklets. Subjects were then thoroughly debriefed and informed of the pilot data findings. After the data was analyzed, the experimenter composed a memorandum outlining the major results and invited subject inquiries which was circulated to the participating classes.

CHAPTER IV

RESULTS

The data analyses were primarily accomplished by ANOVA procedures and simple effects tests (Kirk, 1968) unless explicitly stated otherwise. The general discussion will follow the following format. For each dependent variable, the stated hypotheses will be discussed; first from the predictive perspective, and then from the postdictive perspective. After the stated hypotheses are discussed, significant, but unhypothesized, findings will be discussed. These univariate statistical procedures will be followed by a multivariate analysis. The factor analysis will help determine the patterning of attributions made by the subjects.

Success

To determine if winning was perceived as successful and losing as unsuccessful, subjects provided ratings of success on both self and other (i.e., from both the actor and observer perspectives) on predicted and actual outcomes. This is construed as a manipulation check. An outcome x viewpoint interaction was hypothesized, where winning actors and losing observers attributed high success and losing actors and winning observers attributed low success. The predicted data pattern was shown in Figure 4 (page 23). Table I presents the means and number of observations

TABLE I

MEANS FOR SUCCESS FOR OUTCOME X VIEWPOINT INTERACTION FOR BOTH PREDICTIVE AND POSTDICTIVE ATTRIBUTIONS

	Predictions		Postdictions	
	Viewpoint		Viewpoint	
Outcome	Actor(self)	Observer(other)	Actor(self)	Observer(other)
Win	6.26 n=27	5.04 n=27	7.29 n=24	4.42 n=24
Loss	4.81 n=21	6.10 n=21	3.21 n=24	7.42 n=24

for this interaction for both predictions and postdictions.

Predictions

For predictions, a significant outcome by viewpoint interaction was noted, $F(1,38) = 14.58$, $p < .0008$. A simple effects breakdown revealed that, as predicted, (1) those anticipating a win attributed more success as an actor to self than as an observer to the other, $F(1,38) = 7.92$, $p < .01$; (2) those anticipating a loss attributed less success as an actor to self than as an observer to the other, $F(1,38) = 6.52$, $p < .05$; (3) those expecting to win attributed more success to self than did those expecting to lose, $F(1,78) = 13.78$, $p < .001$; and (4) those observers who expected the other to lose were more likely to attribute less success than observers who expected the other to win, $F(1,78) = 7.34$, $p < .01$. These findings support the assertion that for predictive attributions winning the skill strategy game is perceived as successful, while losing is not.

Postdictions

For postdictions, a significant outcome x viewpoint interaction occurred, $F(1,40) = 70.90$, $p < .0001$. These means are also presented in Table I. The simple effects tests also show support for the predictions which were supported by the above comparisons. (1) The winning player attributed more success as an actor to self than as an observer to the other, $F(1,40) = 23.36$, $p < .0001$; (2) the losing player attributed less success as an actor to self than as an observer to the other, $F(1,40) = 50.50$, $p < .0001$; (3)

the winning player attributed more success as an actor than did the losing actors, $F(1,80) = 59.58$, $p < .0001$; and (4) the losing observer attributed more success than did the winning observer, $F(1,80) = 32.16$, $p < .0001$.

These postdictive attributions were patterned as predicted, and were statistically more reliable than those for predictive attributions, but show remarkable parallels to the predicted outcomes. Thus, it can be concluded that the outcome manipulation produced the intended effect. It is important to show that winning is a success, because the attribution research that deals with outcomes is based on success and failure instead of winning or losing.

Personal Causality

Self-Enhancement Hypothesis

For both predictive and postdictive personal causality attributions, an outcome x viewpoint interaction on personal causality ratings was predicted, as indicated in Figure 4 (page 23). This self-enhancement hypothesis states that winning actors and losing observers would attribute more personal causality than winning observers or losing actors. The means for personal causality for both predictive and postdictive cases are presented in Table II.

For predictive attributions a marginal trend was noted, $F(1,38) = 3.68$, $p < .06$. Even though the statistical interaction was only marginally significant in the expected direction, simple effects tests were computed to permit an explicit evaluation of the stated hypotheses. Only one of the four hypotheses was sup-

TABLE II

MEANS FOR PERSONAL CAUSALITY FOR OUTCOME X VIEWPOINT INTERACTION FOR BOTH PREDICTIVE AND POSTDICTIVE ATTRIBUTIONS

	Predictions		Postdictions	
	Viewpoint		Viewpoint	
Outcome	Actor(self)	Observer(other)	Actor(self)	Observer(other)
Win	5.52 n=27	4.89 n=27	4.79 n=24	4.25 n=24
Loss	4.95 n=21	5.14 n=21	5.50 n=24	5.50 n=24

ported. Winning actors attributed more personal causality than winning observers, $F(1,38) = 4.96$, $p < .05$. Thus, winning actors did not attribute more personal causality than losing actors, nor did losing observers attribute more personal causality than losing actors or winning observers. However, the means occurred in the predicted direction.

Table II also presents the personal causality means for the postdictive outcome x viewpoint interaction. The hypothesized interaction did not occur, $F(1,40) = .98$, ns. Simple effects tests also revealed that these means were not significantly different, and the pattern of means did not conform to that predicted nor those found in the predictive attribution data. Two explanations for the failure to support the self-enhancement hypothesis with the postdictive data are suggested. (1) Situational effects may have been so strong that personal causality effects were obliterated. (2) Since predictive attributions and postdictive attributions were repeated measures on the same subjects, carry-over effects can not be ruled out. No other effects were noted in the postdictive data.

Unhypothesized Findings

A sex x opponent's sex x outcome interaction occurred in the predictive data, $F(1,38) = 6.09$, $p < .017$. Table III presents the means. This interaction was broken apart by computing simple interaction effects (opponent's sex x outcome) at each level of subject's sex. Opponent's sex did not interact with outcome for male subjects, $F(1,40) = 1.25$, ns; simple simple effects tests

TABLE III

MEANS FOR SEX X OPPONENT'S SEX X OUTCOME INTERACTION FOR PREDICTIVE PERSONAL CAUSALITY ATTRIBUTIONS

	Sex			
	Male		Female	
	Outcome		Outcome	
Opponent's Sex	Win	Lose	Win	Lose
Same	5.05 n=20	5.50 n=4	5.80 n=10	3.79 n=14
Different	6.00 n=16	4.75 n=8	3.25 n=8	6.19 n=16

supported this finding that males did not allocate personal causality different when playing males or females, nor when they predicted themselves to win or lose. Males were indiscriminant in their attribution of personal causality. But for females, the opponent's sex x outcome interaction was significant, $F(1,40) = 7.97$, $p < .01$. Simple simple effects tests demonstrated (1) that females who expected to win tended to attribute more personal causality (to self and other combined) when playing other females than when playing males, $F(1,40) = 3.13$, $p < .08$; (2) females who predicted themselves to lose attributed less personal causality (to self and other) when they played females than when they played males, $F(1,40) = 4.66$, $p < .05$; and (3) females who predicted themselves to win when playing males attributed less personal causality than females who predicted themselves to lose when playing males, $F(1,40) = 4.98$, $p < .05$. Hence, females attributed personal causality when they expect to win or when they play males, but not both. When females play females and expect to lose, each is viewed as somewhat cooperative ($M = 4.14$); but when females play males and expect to win, they view themselves and their opponents as less cooperative (more competitive, $M = 2.50$). When females who expect to win interacted with males, the females defined the situation as volatile. Further arguments paralleling this interpretation of their ratings are presented later in the factor analytic discussion.

Predicted Outcome -- Sex-related Effects

Only two sex-related effects were noted relative to the

subjects' predicted outcomes. More males predicted themselves to win (10) than to lose (2) when their opponents were males, $\chi^2(1) = 5.33$, $p < .05$; and more males (overall) predicted themselves to win (18) than to lose (6), $\chi^2(1) = 6.00$, $p < .02$. These trends were not noted for females, nor for males and females combined.

Situational Causality

The Actor-Observer Divergence

Because situational causality is not the phenomenological opposite (as Ruble's bipolar measurement schema suggests) of personal causality, only one prediction was generated: actors could be expected to attribute greater situational causality than observers (i.e., a viewpoint main effect). (The correlation between situational causality and personal causality across all independent variables was $r = .36$ for predictive attributions; the same correlation for postdictive attributions was $r = .16$. Neither of these are the high negative correlation expected if situational and personal causality were phenomenological opposites, as suggested in Ruble's 1973 procedures.)

A marginal trend confirming the actor-observer divergence was observed in the predictive attribution data. Actors attributed greater situational causality ($M = 7.083$) than observers did ($M = 6.625$), $F(1,38) = 3.59$, $p < .06$. Thus, Jones and Nisbett's (1971) attributional divergence hypothesis received some support in predictive situations. However, in the postdictive attributions, this hypothesis was not supported, $F(1,40) = .02$, ns. The actors ($M = 7.15$) attributed the same situational causality as observers

($\underline{M}$ = 7.10). The failure to reverse the attributional pattern described in Figure 4 (page 23) supports, again, the previous contention that situational causality is not the observe of personal causality, unless so constrained by the measurement system. In predictive circumstances (and postdictive scenario circumstances) it seems that the actor is able to envision and interpret anticipated situational stimulation, while the observer takes a more panoramic view, incorporating the behaving actor (but not his perceptions) into the phenomenal field. In postdictive in situ circumstances, however, where both the actor and the observer directly experience the situation (that is, the observer is a participating observer) the view one takes does not influence the attribution of situational causality. The observer under these circumstances appears to anticipate the actor's experience of the situation. It may also be interpreted as an inability of subjects to separate the two views, or as an heightened salience of the immediate situation.. Having experienced the situational stimuli, the observer empathizes with the actor and makes attributions from that viewpoint.

If this logic is sound, then one would expect situational causality to be greater in postdictive, actually experience situations than in predictive or projective circumstances. The grand means for the predictive data and the postdictive situational causality data were subjected to a significance test. The nature of this test requires comment. Some subjects had their predicted outcomes confirmed, while others did not. Since all subjects did not receive the same experience during the experimental procedures,

a correlated t would have been difficult to calculate or interpret. Thus, an independent t was calculated; the zero-covariance assumption seems reasonable and also provides a conservative test if the covariance is actually positive. The predictive situation was attributed less situational causality (M = 6.85, SD = 1.90) than the postdictive rating situation (M = 7.13, SD = 1.74), $t(190) = 1.03$, $p < .30$. While the difference did occur in the anticipated direction, the null hypothesis can not be rejected. Hence, this post hoc hypothesis will be held in abeyance, pending a direct, planned test.

Attributed Stability of Cause

Each subject rated both personal and situational factors on a very unstable-very stable dimension scaled from 1 (very unstable) to 9 (very stable). Thus each subject made two attributions: either a stable or unstable internal (personal) attribution and a stable or unstable external (situational) attribution. This procedure does not permit many comparisons between internal and external attributions, but does emphasize contrasts between perceived stability. (Let it also be recognized that the winner versus loser comparisons in the predictive data are confounded with the sheer frequency of predicted winners and losers. This is not a problem for the postdictive data, since outcome was zero-sum, with equal numbers of winners and losers.)

In the following analysis, if the subject chose the theoretical midpoint of 5 on the stability scale, that observation was discarded since it denoted neither or both unstability and

stability. If the rating was less than 5, it was considered unstable, and ratings greater than 5 were taken as indicating that the subject perceived that cause as being stable.

Five predictions were made. From Ruble's (1973) data, it was hypothesized that winners would make more stable attributions than losers. In the predictive data, this was the observed trend. Winners did make more stable attributions (70) than losers (44), $\chi^2(1) = 5.93$, $p < .025$; whereas in postdiction, winners made the same number of stable attributions (59) as losers (63), $\chi^2(1) = .13$, ns.

The second hypothesis, which is a subset of the first one, stated that winning actors would make more stable attributions than losing actors. This tendency was confirmed in the predictive data. Winning actors tended to make more stable attributions (40) than losing actors (25), $\chi^2(1) = 3.46$, $p < .07$. However, in the postdictive portion this was not observed. Winning actors made the same number of stable attributions (30) as losing actors (31), $\chi^2(1) = .02$, ns. It was also hypothesized that winning actors could be expected to make more stable internal attributions than unstable internal attributions. Predicted winning actors made more stable internal attributions (23) than unstable internal attributions (2), $\chi^2(1) = 17.64$, $p < .001$. Actual winning actors also made more stable internal attributions (16) than unstable internal attributions (5), $\chi^2(1) = 5.76$, $p < .025$. Thus, for both predictive and postdictive cases, winners attributed success to self more because of their ability than their effort. This suggests a feeling that they just could not help but win.

It was also predicted that winning actors would make more stable external attributions than unstable external attributions. For both cases this was true. Winning (or those who predicted themselves to win) actors did make more stable external attributions (17_{pre} and 14_{post}) than unstable external attributions (7_{pre} and 3_{post}), $\chi^2(1)_{pre} = 4.17$, $p < .05$ and $\chi^2(1)_{post} = 7.12$, $p < .01$. Winners thus appear more willing to attribute their success to task easiness than to luck. This may be interpreted as an avoidance of the threatening implications of a belief in a capricious universe or as a need to believe in stability or consistency (Lerner, 1965).

If Fitch's (1970) self-consistency hypothesis is correct, we might expect losing actors (who are presumed to hold positive self-images) to attribute their failure to the unstable external factor of luck rather than to the unstable internal factor of effort. However, this happened neither in predictions nor in postdictions. Perhaps a positive self-image is not associated with the experience nor the anticipation of losing.

There was a pervasive tendency for both winners and losers, for both actors and observers to make stable internal and stable external attributions (116_{pre} and 132_{post}) rather than unstable personal (internal) and unstable external attributions (29_{pre} and 30_{post}), $\chi^2(1)_{pre} = 52.20$, $p < .001$, and $\chi^2(1)_{post} = 64.20$, $p < .001$. This pervasive tendency to attribute stability to oneself and one's opponent in terms of personal and situational causality can be taken as evidence supporting Fitch's (1970) self-enhancement hypothesis and the underlying positive self-esteem

assumption. In seven of nine experimental groups, Fitch's (1970) subjects attributed more causality to the stable internal factor of ability than to effort (the internal unstable factor), a striking parallel with the present data. This suggests that in Western culture, superior performance is more likely to be taken as evidence of high ability than of tremendous effort. On the other hand, the tendency to fail for lack of ability receives fewer societal sanctions than for failure due to a lack of effort. It seems that high ability is more commendable than high effort, but that low ability is less reprehensible than low effort.

Stability of Personal Factors

The stability ratings were also subjected to ANOVA. In the predictive data for stability of personal causality, a significant viewpoint main effect was noted. More stability was attributed to personal causality as an actor ($\underline{M}$ =6.85) than as an observer ($\underline{M}$ = 5.90), $\underline{F}(1,38) = 9.08$, $p < .025$. It indicates that persons view their own personal dispositions as more stable causal agents than other's dispositions. However, this interpretation is subject to an observed sex x viewpoint interaction, $\underline{F}(1,38) = 10.22$, $p < .003$. Table IV presents these means.

Simple effects tests revealed (1) that male subjects attributed more stability to self as a causal agent than females did, $\underline{F}(1,78) = 5.41$, $p < .05$, and (2) that male subjects attributed more stability to self than to other as a causal agent, $\underline{F}(1,38) = 19.28$, $p < .001$. Stated in other terms, male actors attributed more personal stability than did either female actors and obser-

vers or male observers. This is somewhat reminiscent of the commonly held stereotype which both sexes hold about the male personality being more stable than its female counterpart.

TABLE IV

MEANS FOR SEX X VIEWPOINT INTERACTION FOR STABILITY OF PERSONAL CAUSATION

	Viewpoint	
Sex	Actor(self)	Observer(other)
Male	7.13	5.70
Female	6.04	6.08

However, these findings were not replicated in the postdictive data. The only statistically significant observation was that males attributed more personal causal stability ($\underline{M}$ = 6.90) than did females ($\underline{M}$ = 5.98), $\underline{F}(1,40) = 5.38$, $p < .025$. One implication of this difference is that males may be less situation-oriented than females. Timpe, Merrifield, and Helm (1975) support this interpretation in a study which found attributional differences between males and females. However, Luginbuhl, et al. (1975) and Regan, et al. (1974) both report no attributional differences between males and females. In fact, Jones and

Nisbett (1971) do not even describe their subject pool relative to sex. These sex differences appear to occur with great regularity in this geographical region, but are not even reported elsewhere! They deserve an investigation of their own.

Stability of Situational Factors

When situational stability was analyzed, only one significant F test was observed, and that was in the predictive or anticipatory data. A significant outcome x viewpoint interaction was observed, $F(1,38) = 5.22$, $p < .03$. These means are presented in Table V.

TABLE V

MEANS FOR OUTCOME X VIEWPOINT INTERACTION FOR ATTRIBUTED SITUATIONAL STABILITY

	Viewpoint	
Outcome	Actor(self)	Observer(other)
Win	5.70	5.29
Lose	5.71	6.40

However, simple effects tests failed to isolate any significant differences. Though actors attribute similar situational

stability regardless of outcome, the outcome seems to have had an effect upon observer-attributed situational stability. This finding is interesting in the light of the Ruble (1973) finding that actors attributed more situational causality irrespective of outcome and the association of stability success and instability with failure. Neither of these findings have been replicated here. The operation of the underlying positive self-concept seems to have reversed the actor-observer divergence for success in this case, and contributed to the attribution of stability in-spite of outcome.

Likability

Positive Self-Esteem Assumption

It was hypothesized that a viewpoint main effect should occur, where more likability is attributed to self than to other. As predicted this effected was noted in the predictive data. Actors attributed more likability ($\underline{M}$ = 7.83) than observers ($\underline{M}$ = 6.17), $\underline{F}(1,38) = 19.68$, $p < .0002$. The viewpoint main effect was again observed in the postdictive data. Actors attributed more likability ($\underline{M}$ = 7.29) than observers ($\underline{M}$ = 6.63), $\underline{F}(1,40) = 4.99$, $p < .03$. No other significant effects were noted in either the predictive or postdictive data in the attribution of likability. These findings lend credence to out underlying assumption of positive self-esteem operating as a mediational variable. It would be expected that when members of an unacquainted dyad assessed their liking for self and other, more liking for self would be attributed or expressed than for the unknown other.

This should be especially true for subjects who hold positive feelings and evaluations about themselves, as the present data indicates.

Confidence

Each subject rated how confident he was in his own predicted outcome and in his prediction about the opponent's outcome. A significant outcome main effect was observed. Those who predicted themselves to win attributed more confidence in that prediction ($\underline{M}$ = 5.90) than those who predicted their own loss, ($\underline{M}$ = 4.93), $\underline{F}(1,40) = 5.06$, $p < .03$. However, when these confidence ratings were analyzed relative to actual outcome, a surprizing reversal occurred. Those who actually won the game attributed less confidence to their predictions ($\underline{M}$ = 5.10) than the actual losers had ($\underline{M}$ = 5.85), $\underline{F}(1,40) = 2.83$, $p < .10$. Neither of these outcome main effects were subject to higher order interactions.

Semantic Differential Ratings

Little systematic interpretable variance was found in the predictive or anticipatory data which shows any influence of predicted outcomes on personality evaluations. Several sex x opponent's sex x viewpoint interactions (e.g., on accommodation, affect, evaluation, motivation, and frustration ratings) were observed in the predictive attributions. But because these relate more to the person perception process of sex role stereotypes than to correlates of success and failure, they are not discussed here. (Factor clusterings among these concepts are described below.)

Two significant outcome x viewpoint interactions were noted for the dependent variables of "aggressive," $F(1,40) = 11.64$, $p < .0002$, and "cooperative," $F(1,40) = 14.58$, $p < .001$, in the post-game data. These means are presented in Table VI.

Simple effects tests were used to break down these interactions. Winning actors attributed more aggressiveness than losing actors, $F(1,80) = 6.12$, $p < .05$, while losing observers attributed more aggressiveness than losing actors, $F(1,40) = 9.09$, $p < .01$. Thus, there was a trend for aggressiveness to be associated with successful outcomes, as would be expected in the PDG paradigm.

Winning actors attributed less cooperativeness (more competitiveness) than losing actors, $F(1,80) = 16.33$, $p < .001$, but winning actors also attributed less cooperativeness than winning observers, $F(1,40) = 4.10$, $p < .05$. Losing actors attributed more cooperativeness than losing observers, $F(1,40) = 11.39$, $p < .002$. Hence, aggressiveness was attributed to winners and cooperativeness to losers in this PDG interaction. This pattern is as expected, given the competitive instruction set under which the subjects participated.

Factor Structure of Predictive Attributions

Since subjects have been shown to make several different types of attributions (i.e., confidence, success, causality, liking, personality evaluations, etc.) the interesting question arises as to interrelationships among these perceptions. The non-mathematically-dependent dependent variables were subjected to a principle components factor analysis with a subsequent

TABLE VI

POSTDICTIVE MEANS FOR OUTCOME X VIEWPOINT INTERACTION FOR AGGRESSIVENESS AND COOPERATION

	Aggressiveness		Cooperation	
	Viewpoint		Viewpoint	
Outcome	Actor(self)	Observer(other)	Actor(self)	Observer(other)
Win	5.42	4.92	2.08	2.83
Loss	4.62	5.46	3.75	2.50

varimax rotation toward simple structure. The independent variables were also entered as marker variables. The seven factors extracted from the correlation matrix accounted for 65.27 percent of the total variance. Salient loadings were considered to have a value of $|.40|$ or greater. Table VII presents the varimax structure of predictive attributions.

Factor 1 -- Bravado

This factor loaded on the marker variable of view and on likability, inhibition, and potency. Before the skill strategy game, players viewed their opponents as being more inhibited, less potent and less likable than themselves. Conversely, they expressed positive liking for themselves, and saw themselves as less inhibited and more potent and powerful in this interaction than their opponents. However, this attributed potency was independent of either predicted outcome or confidence in that prediction. Thus, the term "bravado" seems appropriate to describe this pretended courage or defiant confidence, even when there was really little or none. Something akin to bravado is also implicated by the post-game reversal of confidence ratings, reported on p. 51.

Factor 2 -- Self-Reliance

Three variables loaded on this factor with a slight tendency for a fourth. Those who expressed greater confidence in their predictions also expected greater success, attributed greater personal causality, and tended to attribute greater situational

TABLE VII

ROTATED FACTOR STRUCTURE OF PREDICTIVE ATTRIBUTIONS

Variable Name	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Sex of Subject*	-.05	-.05	.16	.04	.83	-.17	-.02
Opponent's Sex*	.18	.06	.10	-.69	.13	-.07	-.07
Outcome*	.01	-.24	-.16	-.22	.71	.23	-.07
View*	.51	-.13	-.05	-.15	-.14	-.26	-.19
Confidence	-.07	.76	.15	-.09	-.18	-.13	.07
Success	-.03	.60	.26	.04	-.01	.11	-.04
Personal Causality	-.01	.72	-.27	-.05	.02	.17	-.21
Stability of Personal Causality	-.21	-.04	.05	.10	-.08	.81	-.05
Situational Causality	.10	.36	.16	-.40	.03	.62	.13
Stability of Situational Causality	.01	.29	-.26	-.59	.00	.31	.14
Likability	-.57	.28	-.10	.00	-.10	.15	.54
Activity	-.06	.05	.79	.10	-.02	-.10	.04
Accommodativeness	.21	.13	.12	.67	.08	.01	.24
Affect	-.21	-.07	.10	.04	-.01	-.01	.85
Aggressiveness	-.11	.20	.72	.00	.04	.28	.08
Cooperativeness	.28	.24	-.46	.12	.52	-.14	.05
Evaluation	.10	-.11	.03	.14	-.03	.00	.88
Inhibition	.67	.05	-.24	-.10	.15	-.05	-.04
Potency	-.67	.01	.00	-.45	.07	-.10	-.10
% of Extracted Variance	14.35	15.92	14.32	14.46	12.68	12.06	16.21

*Marker variables were coded such that high reflects female, opposite sex opponent, lose, and other, respectively.

stability. Although outcome did not reach the salience criterion of $|.40|$, it loaded in such a way as to indicate that winning was the predicted outcome (-.24). This factor describes those individuals who through self-reliance and self-assuredness were confident in their upcoming success and claimed personal causality for the win.

Factor 3 -- Aggressive Determination

The three components of this layman style aggressiveness (i.e., super salesmanship) factor were high activity, high aggressiveness, and low cooperativeness (high competitiveness.) This pattern would seem to be the behavioral style associated with the attitude of self-reliance of Factor 2. However, the fact that aggressiveness and self-reliance are separate factors indicated that the "I can do it" attitude is relatively independent of the behavioral action, "I am doing it."

Factor 4 -- Heterosexual Alertness

When subjects entered the competitive skill strategy interaction with an opponent of the opposite sex, an explosive and volatile situation was defined. Subjects perceived the situation as stable and attributed situational causality, with both self and other being seen as exploitative and potent. In mixed sex dyads, the situation seems to demand particular alertness and attention. Similarity between self and one's opponent can not be assumed, and when assumed personal stability is suspect, the situation takes on added significance. Conversely, in a same

sex dyad, the situation as a causal agent is de-emphasized, and the situation is defined as unstable and probably unimportant; each player is seen as accommodative and impotent.

Factor 5 -- Sex Role Stereotype

When the subject was female, there was a tendency to predict failure for oneself and to see both self and other as cooperative. However, males expected to win more often and they saw themselves and others as more competitive. This tendency for males to be seen as success oriented, and consequently, more competitive, and for females to be viewed as unsuccessful and cooperative parallels the common stereotype of masculine individualism and feminine submission. This relation between failure and attributed cooperativeness is expected under the competitive instruction set used.

Factor 6 -- The Undefined

Periodically in factor analytic work, factors appear for which no reasonable explanation exists. This is one of those factors. Though it accounts for 12.06 percept of the extracted variance it precludes reasonable interpretation. Subjects tended to attribute personal causal stability and situational causality together. But this tendency is independent of attributed personality traits, except for aggressiveness. There was also a slight trend for this pattern to appear in predicted failure self-view situations. But the co-occurance of perceived aggressiveness with a prediction of failure for self was unexpected, and remains yet unexplained.

Factor 7 -- Liking

Three variables had salient loadings and characterize the predominant influence on this factor. It was characterized by high evaluation, high affect, and moderate liking. When subjects expressed liking, they also consistently provided ratings of high evaluation and high affect. However, liking was not dependent upon sex of subject, upon the opponent's sex, upon predicted outcome, not upon personality evaluations.

Byrne (1971) has summarized research which systematically links interpersonal attraction with similarity on a number of dimensions. This relationship between attraction (of which likability is but one component) and similarity affords an explanation of this finding that liking is unrelated to sex, to outcome, and particularly, to personality attributions. Liking is unrelated to personality evaluations (at least layman personality impressions) for the following reason. So long as abnormality is not implicated, each individual should be attracted to self (perfect similarity) and to others who are viewed as being similar to oneself. But because of the heterogeneous population and random assignment of individuals to dyads, matches pairs (in terms of similar personalities) did not systematically occur. The divergent similarities among dyads should leave attraction, evaluation, and liking relatively free of systematic personality influences. Each dyad was similar or dissimilar on different dimensions, and averaging across these dyads removes the similarity influence. Thus attraction, here, remains independent of the influence of systematic personality similarities.

Factor Structure of Postdictive Attributions

As in the predictive attributions, the postdictive attributions were factor analyzed by a principle components procedure and rotated to the varimax criterion. The same variables which were entered in the predictive attributions were also entered in this analysis. Such an approach enables a judgment concerning the pervasiveness of basic attribution processes, permits an investigation into the replicability of these processes, and allows a predictive-postdictive comparison.

Six factors were extractef from the correlation matrix, and these factors accounted for 60.60 percent of the total variance. Table VIII presents the rotated factor matrix for the postdictive data.

Factor 1 -- Elements of Success

Five variables contributed to and defined this factor. In a postgame situation, high success ratings are accompanied by attributed activity, high aggressiveness, competitiveness, and potency. Coversely, in low success situations, a low level of activity couples with cooperation is viewed as being associated with low aggressiveness and low potency. There was also a slight tendency for both outcome and confidence to contribute to this patterning. High success tends to be associated with the actual outcome of winning and with a moderate amount of confidence in predictions. This factor seems to be a merger of the predictive factors of self-reliance (factor 2) and aggressive determination (factor 3). Actual success is a function of both

TABLE VIII

ROTATED FACTOR STRUCTURE OF POSTDICTIVE ATTRIBUTIONS

Variable Name	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Sex of Subject*	.02	-.07	.04	.08	.88	.08
Opponent's Sex*	-.19	.00	-.62	.13	.14	.18
Outcome*	.21	.18	-.19	.31	.02	-.67
View*	-.12	.04	-.03	.54	-.10	.03
Confidence	-.35	-.07	.10	-.15	-.09	-.72
Success	-.58	-.19	.25	.25	.08	-.06
Personal Causality	-.01	.08	-.32	-.30	.37	-.41
Stability of Personal Causality	-.15	-.40	-.51	-.08	-.33	-.34
Situational Causality	.07	.04	-.69	.05	-.05	-.09
Stability of Situational Causality	.07	.05	-.45	-.27	-.13	-.30
Likability	-.07	-.52	-.03	-.53	-.18	-.27
Activity	-.61	.10	.07	-.26	.14	-.14
Accommodativeness	.21	-.60	.37	.18	.24	-.07
Affect	-.09	-.91	-.03	-.02	-.02	.12
Aggressiveness	-.77	-.17	-.21	.09	-.19	.00
Cooperativenss	.66	.05	.07	-.11	.41	-.26
Evaluation	-.06	-.93	-.03	.01	.02	.08
Inhibition	.12	-.10	.02	.70	.13	-.08
Potency	-.55	.29	-.32	-.18	.13	-.11
% of Extracted Variance	20.48	23.45	15.99	13.82	12.40	13.86

*Marker variables were coded such that high reflects female, opposite sex opponent, loss, and other, respectively.

ability or "can" and effort or "try" (Heider, 1958); actual success depends on having ability plus effort.

Factor 2 -- Interpersonal Esteem

This factor is a replication and extension of the predictive liking or evaluation factor (factor 7). High evaluation, high affect, and high kikability are associated with moderately high attributions of accommodation and moderate attributions of stability concerning personal dispositions as causal factors. Persons who were considered somewhat accommodative after the interaction were also seen as a stable and predictable cause. Their consistency and stability were rewarded by positive evaluation; high esteem is accorded those (both self and others) seen as stable, predictable, and consistent.

Factor 3 -- Heterosexual Alertness Revisited

This factor is essentially a replication of a pre-game factor (factor 4), with a notable exception. This exception is the addition of attributed stability of personal causality. Even after the game is played and the outcome announced, mixed sex dyads define the situation as volatile. The situation is attributed causal potency, and in addition, it (along with personal dispositions) is seen as stable. Again, in these mixed sex dyads, exploitativeness and potency are attributed as salient personal dispositions. In opposite sex situations, post-game ratings revealed a tendency to supplement situational causality with personal causality.

Factor 4 -- Sore Loser Syndrome

In the attraction literature, one of the many noted antecedents of attraction is competence. When all other things are equal persons like competent persons more than incompetent ones. However, this "sore loser" factor sheds additional light (and qualifications) on this proposition. When a loser makes attributions about the winner, the winner is seen as possessing less likability and more inhibitions than self and is viewed as slightly more inactive. These are not usually considered as socially desirable qualities. But when a winner views himself, he expresses liking for himself and thinks of himself as uninhibited. Under the extra credit for winning provision, losers could view their loss as failure and retaliate or avenge this outcome by scapegoating. They responded negatively to their victors. This interpretation is reasonable, since the research was conducted in a segment of the semester in which "A" students had already earned their grades, but "B" and "C" students were presumable scrapping for every additional point possible. With the addition of the outcome loading and the deletion of the potency loading, there is a good parallel between this sore loser factor and "bravado" (predictive factor 1).

Factor 5 -- Sex Role Stereotype Confirmed

Female subjects tended to attribute personal causality to both self and other, yet viewed these personal dispositions as unstable and changeable. They also saw themselves and others as cooperative. This parallels the sex role stereotype of the

fifth predictive factor. Yet, there are deviations. Prior to the game, females were more likely to expect failure and loss, but after the game, outcome and success were no longer pertinent. The sex role stereotype of feminine submission and cooperation was confirmed, regardless of outcome, while males were more likely to express expectations of competitiveness.

Factor 6 -- Apologetic Winner Complex

Four variables define this factor. Those who won the skill strategy game were those who originally expressed less confidence in their predictions. They avoided attributing personal causality (to self and other), and tended to view personal dispositions as unstable. Winners did not expect to win, and when they did, they still viewed the outcome as a function of unstable forces. This instability of personal dispositions was associated with expressed disliking. Thus winners effaced self and other after winning. They seemed glad, however, to accept the extra credit for winning, but declined any determination of blame for the other's outcome.

Summary of the Factor Analyses

Of the thirteen factors extracted (i.e., seven in predictive attributions plus six in postdiction), twelve were readily interpretable. This alone is encouraging considering the novelty of this uncharted doman. Four of the postdictive factors were essentially replications of four factors in the predictive data. This is an encouraging and exciting finding for at least two reasons. (1) The varimax rotational procedure used determines the

best factor solution according to a statistical criterion (e.g., maximizing the squared variance associated with each factor, thus distributing factor variance about equally) instead of a subject matter criterion. This statistical criterion does not rely upon predicted relations between subject matter. Even when two unrotated factor matrices have similar structure and pattern loadings are subjected to the varimax rotation, the resultant factor matrices need not have similar factor structures due to minute differences in variance patterns. Yet, in this data, two-thirds of the postdictive factors were replications of predictive factors. (2) It has traditionally been unusually difficult to replicate factor solutions (particularly low order factors.)

How should this high percentage of replication be interpreted? Recall that the same sample of subjects contributed both sets of data. With this in mind, it would suggest two possible interpretations. (1) This replication may be a function of carry over effects. That subjects gave similar responses before and after the game might suggest that demand characteristics of desired stability and consistency operated. (2) This replication may also be a testimony to the robustness and pervasiveness of basic attribution processes. However, only alternative methodology, such as a between-subjects design, may resolve the question. If there were substantial replication using one sample of subjects for the predictive attributions and another sample for the postdictive attributions, the possibility of carry over effects would be eliminated. The degree of replication would then confirm or disconfirm the robustness of these processes.

One experiment has never been definitive in science, but one experiment can surely affect one's confidence in his current approach. It can also provide a glimpe of light on a previously featureless domain. It can provide an impetus for additional inquiry with questions begging to be answered. It is hoped that this study can fulfill some of the steps necessary for completing the journey from theory construction to theory validation to theory reconstruction.

CHAPTER V

DISCUSSION

Attribution theory (really a collection of theories) is possibly the most rapidly developing facet of social psychology or personality science (if the position is granted that personality is indeed a social phenomenon) today. One major characteristic of attribution theory is its phenomenological data base. It is not so much concerned with the real-world-out-there properties, as with the person's perception and interpretation of that world and of his experiences in it. Not only is man a social animal (Aronson, 1972), but man is a thinking, analyzing, and labelling social animal. In the broadest sense of the word, attribution theory is that theory which describes and explains how a person assigns or ascribes perperties, characteristics, and dispositions to events, objects, and persons.

The term "attribution" is currently used in the personality and social psychology literature in at least three contexts. A majority deals with causal attributions (i.e., determining the causes of behavior or events.) This particular literature is voluminous. A second growing area concerns itself with the attribution of personality traits or labelling (Messick & Reeder, 1972; Gormly & Edelberg, 1974). The third is a catch-all category dealing with other types of attributions. This is exemplified in

work done by Deci (Deci, et al., 1974) on attributing motives from a knowledge of outputs and rewards. All three types of attributions were required of the subjects providing the data in the present study.

A major portion of the study was designed to determine if predictive causal attributions correspond to postdictive causal attributions. A segment of the following discussion directly addresses and evaluates the current status of the concept of predictive attributions. Inconsistency in the present data and other data has lead to the development of a taxonomy of attribution tasks. This taxonomy is presented and a theory of attribubiasing processes is advanced.

Status of the Predictive Attribution Concept

Since a major concern of this study is an appraisal of the validity of the predictive attribution concept as presented in Chapter 2, the present discussion is intended to determine if the concept of predictive attributions has continued merit and deserved additional experimental investigation. The concept rests squarely on Kelley's (1973) principle of covariation; effects are attributed to causes with which they covary. One implication of covariation is that once the relation of cause-effect is established, one piece of information (causes or effects) can be used to specify or predict the other piece of information (effects or causes, respectively). Traditional attribution tasks have provided attributors with effect information and the attributor assigns the probable cause. This is what we have conceptualized

as postdictive attributions. If the covariation principle behaves as its statistical cousins, correlation and covariance, then the opposite relation should also occur. In predictive attributions, the attributor predicts effects from a knowledge of potential causes.

Studies of predictive attribution processes are practically non-existent. The only known exception is one by Timpe, Merrifield, and Helm (1975). The major purpose of that study was to examine the relationship between attitudes and beliefs, and attributions. Their study asked low and high Just World (JW) belief subjects, who were given scenarios presenting trait information about a stimulus person (SP) and a situation description, to predict the most likely response to be emitted by SP, and then to assign situational and personal causality for the behavior predicted. One of their findings was that high JW observers assigned greater likability than low JW observers to the SP, but the Just World belief did not differentiate actor attributed likability. The author suggest that beliefs and attitudes may provide observers with mediational information which serves as backup data in ambiguous situations. This interpretation will be reconsidered and extended in a latter part of this chapter.

Success and failure perceptions have been shown to underly the postdictive attribution process (Weiner, et al., 1971; Ruble, 1973; and Luginbuhl, et al., 1975). In the present predictive data, the outcome of winning was perceived as a success, and losing as failure, a necessary precondition for the present comparison of predictive and postdictive attribution. Marginal support for

the self-enhancement hypothesis for personal causality was found. Actors and observers made different causal attributions depending upon their outcomes. Thus, the actor-observer divergence (Jones & Nisbett, 1971) was extended; winning actors and losing observers attributed more personal causality than losing actors or winning observers. This attributional divergence changes as a function of several other variables. Ruble (1973) has shown that actors attribute more situational causality than observers for both unsuccessful and successful outcomes; though the divergence is greater for success than failure. Storms (1973) replicated the Jones and Nisbett proposition and found a new wrinkle in the proposition. When subjects were re-oriented to the situation by means of a video tape recording, the attributions were re-oriented accordingly. The actors then attributed more personal causality than they had before. In the present study, this attributional divergence was mediated by self-enhancement tendencies and an incentive for success.

When situational causality was the dependent variable, marginal support for the actor-observer divergence was also found. The actors tended to attribute greater situational causality than observers, a second confirmation of the actor-observer divergence. However, attributions of situational causality are unaffected by outcome or success manipulations. This is additional support for the contention that situational causality and personal causality are not the phenomenological opposites implied in some measurement systems. Further work is clearly needed to identify under what conditions they are or do behave as opposites.

The direct comparisons between predictive and postdictive attribution findings within this study are not as clear and unambiguous as hoped. The failure to support previous findings regarding postdictive attributions may cast doubt upon the pervasiveness of the attribution process or it may cast doubt upon the current methodology. The possibility of carry over effects or fatigue effects cannot be ruled out. However, predictive attributions did behave in a manner consistent with logic and previous postdictive studies. The predictive findings are encouraging enough for the suggestion that additional studies be conducted to clarify the assertion that information summarized in the causal schemata can be used both to predict and to postdict.

Liking and personality evaluations behave in a fairly consistent form in both predictive and postdictive situations. The patterning of various attributions follows a consistent and understandable form in both predictive and postdictive contexts. But since the semantic differential contains only a limited number of personality assessment potentials, exploratory and definitive work is needed relating other possible traits (Anderson, 1968) to perceptions of success and failure and causal attribution patterns. It should be noted that the semantic differential was intended to measure meaning, but "meanings" have not been mapped onto personality attributions.

Decisions to accept conceptualizations as valid or to reject them as having little utility should always rely on two criteria: statistical support and the body of knowledge in general. Even though statistical support was not as strong as desired, the trends

observed herein occurred in the predicted directions, which were consistent with other data, and they made logical sense. It appears reasonable to recommend that the concept of predictive attributions be ascribed the status of deserving additional consideration; it is not yet doomed, or dead.

A Taxonomy of Causal Attribution Tasks

There is an inconsistency between the present data and other data. The present study found a reversal of the causal attribution pattern suggested by Ruble (1973). The causal attributions for successful actors in the Ruble (1973) study were largely situational, but in our study they were more personally oriented. In addition to this inconsistency, several potential biases or mediational variables have been suggested. Timpe, Merrifield, and Helm (1975) have claimed that belief in a Just World influences attributions. Collins (1974) argues that internal-external locus of control is related to attribution patterns, and Fitch (1970) found that self-concept mediates causal attributions. How can this inconsistency and these biases be accounted for? Are they related in some fashion to the type of cognitive activity required of subjects who provide our data? The following discussion and taxonomy is an attempt to make sense of several different tasks required in attribution theory.

When an investigator asks a subject to provide causal attribution data, the cognitive processes may vary depending upon the sort of attribution required. It is suggested that these experimental tasks parallel or are similar to ones encountered in real

life. At least three types of causal attribution tasks can be specified: predictive, postdictive scenario, and postdictive in situ (postdictive real life). By noting similaries and contrasts between these, the processes underlying all types of attributions will become more explicit. Figure 5 presents a taxonomy of causal attribution tasks and provides comparisons and contrasts on several dimensions. After each of the basic attribution tasks is described, a comparison of these tasks will be undertaken on each of the dimensions noted in Figure 5.

Task Description

In a predictive attribution task, the attributor is supplied with information about the upcoming situation (salient aspects of that situation) and personal dispositional information about the actor. This personal data may take two forms: personality trait data or a behavioral history. Given this information, the attributor is asked to predict the outcome or a specific behavior to be emitted by the actor. The attributor must locate potential causes, determining which of these is (or are) most salient, and then predict the outcome. Thus, the attributor reasons from potential causes to probable effects. A scenario form of predictive attribution was reported by Timpe, Merrifield, and Helm (1975) and the present one took the form of requiring predictions in situ.

In a postdictive attribution task, the attributor is supplied with some information about the actor, certain aspects of the situation surrounding the actor, and the outcome (effect) is also given. The postdictive scenario task is most likely to occur when

TASK	PREDICTIVE	POSTDICTIVE SCENARIO	POSTDICTIVE IN SITU
Type of Experience	previous experience	previous experience	direct & immediate experience
Cognitive Process	projective	projective	retrospective
Type of Information	internal & external	internal & external	internal & external
Information Provided to Attributor	potential causes	effect & potential causes	effect & potential causes
Information Provided by Attributor	probable effect	probable cause	probable cause
Information Processing Sequence	from ANOVA cube marginals to cell entries	from ANOVA cube cell entries to marginals	from ANOVA cube cell entries to marginals
Loci of Biases	Observer (Actor if self esteem implicated)	Observer	Actor (if self-esteem implicated)

Figure 5. Comparison of Types of Causal Attribution Tasks: A Taxonomy

the attributor is given written (or oral) information about the actor and the situation. The attributor's task is to determine which possible cause covaries with the noted effects, as required by McArthur (1972) and Ruble (1973).

The postdictive in situ case is characterized by the attributor actually living through or experiencing the situation in which the outcome has already occurred. The attributor must sort through the possible causes and determine which cause covaried with the outcome; thus, he reasons from observed effects to probable cause.

The primary characteristic of predictive attribution is that the subject must determine (predict) the outcome, while postdictive attribution required the subject to determine the most probable cause of an event which has already occurred. The current study employed an in situ postdictive phase. Fitch (1970) and Storms (1973), described in Chapters 2 and 4, also employed the postdictive in situ attribution circumstance.

Type of Experience

When a subject is required to make a causal attribution, he must draw upon his own previous experience to make that attribution. For predictive and postdictive scenario attribution tasks, since the subject does not have direct experience of the event, he must rely solely upon previously accumulated experience to determine the covariation between causes and effects. Thus, predictive and postdictive scenario attributions are each based upon previous experience. The reliance, however, upon previous experience is

diminished in the light of the immediate sensory data available in postdictive *in situ* tasks. Since the experience of the event is current (or immediately preceding the present), past experience furnishes less salient information. But, for all cases, causal schemata which represent patterns of covariation among impressions experienced in the past must be used.

Cognitive Processes

The information available to the attributor in predictive and postdictive scenario tasks is likely to be minimal. In a typical postdictive scenario task, the total information presented to the attributor may be only several sentences or a paragraph. Seldom, if ever, is an extensive description of the situation or a behavioral history of the actor presented. With this lack of information and with the nondistinctiveness of cues, the stimuli are ambiguous. To interpret these ambiguous stimuli, the attributor must project himself into the situation, supplementing this apparent lack of information with data from his past experience. In predictive and postdictive scenario attribution, the task is therefore *projective*, in the same sense of the word as in projective personality tests (e.g., Thematic Apperception Test, and Rorschach inkblots). However, instead of assessing projective cognitive processes, postdictive *in situ* tasks involve the *retrospective* determination of cause. The subject must look back over his direct and immediate experience to gain the information necessary to make the attribution required.

Type of Information

A common characteristic of all causal attributions is that two types or sources of information exist. Two of the dimensions of Kelley's (1967; see Figure 1, page 13) ANOVA cube are "entities" and "times/modalities," representing external and internal information, respectively. This "times/modalities" source could be considered behavioral history information. The two sources of information which are internal and external for the predictive attribution ANOVA (Figure 2, page 17) are "traits" and "situations," respectively. Even in the Weiner, et al. (1971) conceptualization, these two types of information are available, in addition to a stability dimension. These, however, may change in relative proportions depending upon the attribution task and the presentation of details, or the viewpoint taken.

Information Provided to the Attributor (Input)

The information input varies according to the attribution task. In predictive attribution, information about potential causes is given to the attributor. He must then weigh this information and predict the effect. In both postdictive cases, however, the attributor is provided with potential cause data plus the effect or outcome. The attributor must then determine which potential cause is the probable one. In postdictive tasks the attributor has been supplied with relatively more information than in predictive tasks.

Information Provided by the Attributor (Output)

Once the attributor is given the potential cause information in predictive tasks, he must determine what is the most likely outcome or behavior. In postdiction, however, as noted above, the output required of the attributor is a determination of probable cause. Is it internal or external, stable or unstable? proportion of the outcome (noted effect) is due to ability, effort, task difficulty, and luck (Weiner, et al., 1971)?

Information Processing Sequence

The information processing sequence is related to the data given to the attributor and to the nature of the attribution task. Recall that in predictive attribution tasks, the attributor is provided with both situational and trait data. These two sources of information constitute two dimensions of the predictive ANOVA cube (Figure 2, page 17). Thus, the subject is provided with the marginals of the cube, and it becomes his task to determine the cell entry (the effect) defined by the given marginals. The predictor reasons from the ANOVA cube marginals to the ANOVA cube cell entries.

But a reverse sequence characterizes postdictive tasks. The attributor must consider the cell entry (i.e., the given effect), and determine what combination of causes (the marginals) would be most likely to yield the effect. He therefore must use the ANOVA cube cell entries to determine the most appropriate combination of marginals, the reverse of a predictive task.

Loci of Biases

Luginbuhl, et al. (1975) have summarized the research which examines the role of self-concept or self-esteem as a mediational influence in the attribution process. They note that Fitch (1970) and other have found support for the mediational role of self-esteem, while others (Chaikin, 1971; Feather, 1969) have not. The present study was initially conceptualized with the underlying construct of positive self-esteem mediating all attributions. However, another interpretation exists; self-esteem may be a factor which biases some attributions under certain conditions, rather than an intervening variable mediating all attributions. This interpretation, which follows below, constitutes an hypothesis (an hypothesis in search of validation) of attribution biasing processes. Let it be fully recognized that this hypothesis has not been fully or directly tested. It currently represents one possible organization and conceptualization of an attribution process.

Biases in Observers. Research which examines the influence of attitudinal variables and personality characteristics upon attributions is scanty. In a study which investigated the effects of belief in a just world upon the predictive attribution process, Timpe, Merrifield, and Helm (1975) observed that this belief differentiated observer attributions, but not actor attributions. High and low just world observers made attributions consistent with their belief, but relative belief did not affect the attributions of actors. Thus, belief in a just world appears as an

observer bias. Collins (1974) has reviewed evidence which suggests that the personality variable of internal-external locus of control (Rotter, 1966) may also bias observer attributions.

When and under what conditions or circumstances will observer attributions be biased? Figure 6 presents a graphic illustration of the proposed observer biasing process. Before the observer biasing hypothesis is discussed, two preliminary comments need to be made.

Previous experience (and its memory) get coded and summarized in several forms (e.g., beliefs, attitudes, implicit personality theory, and causal schemata). (1) Causal schemata represent the accumulated experience of what causes and which effects occur together. Causal schemata may be thought of as occurring within a cognitive correlation matrix, summarizing cause-effect relations. Like a correlation coefficient, once the causal schemata exists (once the $\underline{r}$ is computed), one new piece of data (score X) will permit us to predict another datum (score Y). And symmetry is preserved; X can also be predicted from Y. Once causal schemata are formed, the subject or individual attributor can anticipate probable effects from potential causes (i.e., predictive attribution) or determine the cause given the effect (i.e., postdictive attribution). (2) In the following discussion, the terms "unbiased causal attribution" and "biased causal attribution" will be used. "Unbiased" and "biased" are meant as relative and descriptive terms, not as absolutes. Biased attributions are those which are mediated and influenced by other variables (e.g., belief in a just world and locus of control).

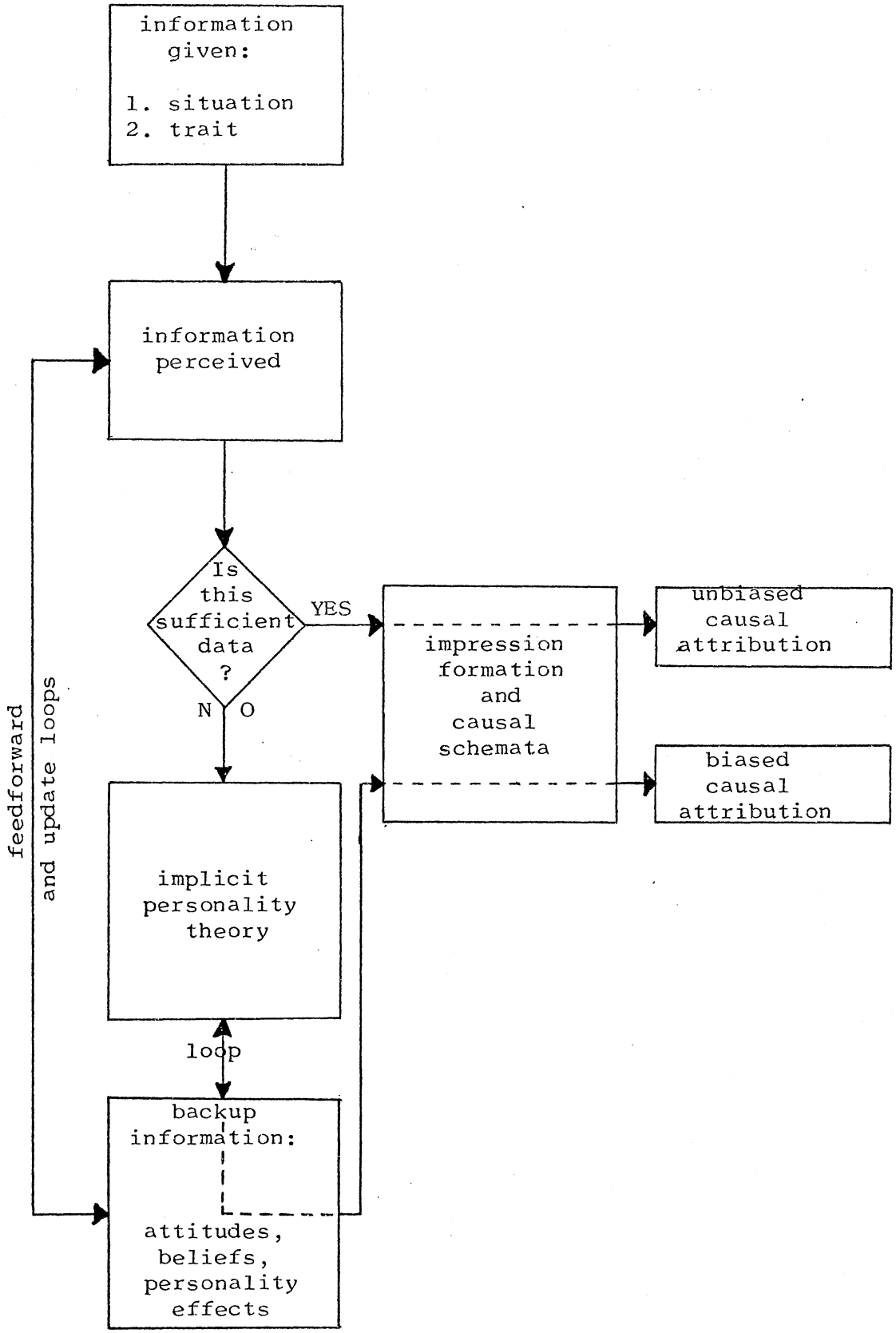

Figure 6. The Observer Biasing Process Model

When an observer is presented with information about the situation and trait information in an attribution setting, the portion that is perceived is influenced by the feedforward biasing influence of expectancies, attitudes, beliefs and personality effects (Pribram, 1971). The information perceived also provides for an automatic updating of expectancies, etc., with the new data by means of an information loop. After the observer perceives the available information, a decision must be made. "Is the information gathered during the perception process sufficient information about the current circumstance to permit a valid inference of causality? Is the data distinctive (Kelley's use of the term; see Chapter 2)?" If the observer can answer affirmatively, then the new data is considered in light of the established causal schemata, and a relatively unbiased attribution or inference of causality is made.

But if the data is not distinctive enough, other information must be brought to bear on the current information to permit a valid inference or attribution. This is done by adding backup information which raises distinctiveness, or combines distinctivesnes with consistency or consensus. A valid inference is possible without sufficient information distinctiveness if the entity behaves the same way over different observations, that is, if it behave consistently, or if other attributors concur with the observer's inference, thereby producing consensus.

Why must the observer use backup information? What is the nature of this information? In predictive and postdictive scenario attribution tasks, the observer does not have direct and

immediate experience or direct, sensory situational data. The ambiguity of the cues (the lack of distinctiveness) demands that the observer use a projective response, where the response is a partial function of the observer's attitudes, beliefs, and personality characteristics. Thus, attitudes become important in understanding behaviors in novel or ambiguous settings.

Once the validity of the inference has been increased, the original information and the backup information are juxtaposed with the causal schemata to yield a biased causal attribution. The observer bias hypothesis may be stated as follows: When observers encounter ambiguous situations and are forced to make attributions, the attributions will be biased, reflecting the systematic influence of observer characteristics.

Biases in Actors. The disputed role of self-esteem as a mediational factor has already been briefly discussed. In fact, self-esteem probably does not mediate all causal attributions of actors. It is advocated here that it is a potential influence, but its biasing effects may be triggered by situational implications. Figure 7 presents a schematic representation of the biasing process in actors. The parallel between Figure 6 and Figure 7 is intended, and was planned, if only for parsimony.

The actor is provided with internal (trait) and external (situational) information, but the proportion of each is probably different from that of observers. As with observers, perceptions are biased by a feedforward influence of expectancies, attitudes, beliefs, and personality (the traditional definition), and the information loop updates these internal considerations with data

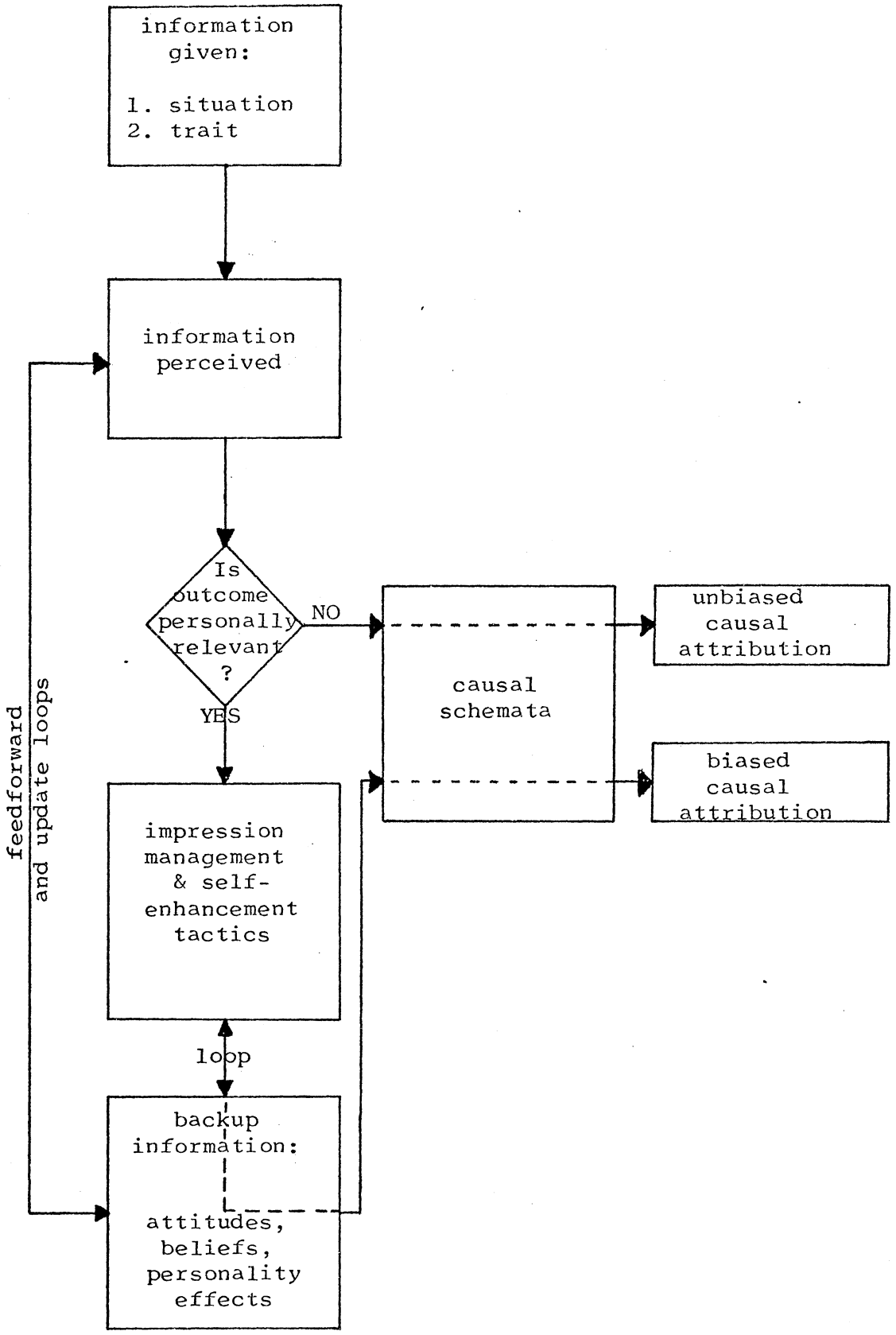

Figure 7. The Actor Biasing Process Model

from the current experience. But the actor must make a different decision than the observer. He must decide if the outcome (anticipated or real) can raise or lower his self-esteem or someone else's evaluation of himself. "Does the outcome have personal relevance? Can he be rewarded or punished for his performance?" If the outcome has no significance, he can take the perceived information and the established causal schemata, and make an unbiased attribution of causation. The unbiased causal attribution of actors is likely to be more situationally oriented than are unbiased observer attributions (Jones & Nisbett, 1971).

But what if the outcome does have personal relevance to the actor? How then are the actor's attributions biased by rewarding or punishing outcomes? If the outcomes can affect or reflect upon the actor's self-esteem, he will the begin impression management tactics (Goffman, 1969; Tedeschi, et al., 1971) or self-enhancement maneuvers (Fitch, 1970). The currently perceived information interacts with the causal schemata and causal attributions are made in such a way as to preserve or enhance the perceived status of the actor (to himself or to another person). This biasing concept of self-esteem may account for the finding that in this study and in Fitch's (1970) study, self-esteem influenced the actor's causal attributions, while in others (Luginbuhl, et al., 1975) it did not. The studies which have found self-esteem to operate on causal attributions either pretested and selected high and low self-esteem subjects or rewarded good performance. The studies which have not found self-concept influences have made experimental participation mandatory for subjects (Luginbuhl, et al., 1975), or

rewarded mere participation in research activities, not good performance. Hence self-esteem consideration are not activated in the subjects who participated in these studies.

Self-concepts should be relevant and active in predictive and postdictive *in situ* tasks, when subjects realize good outcomes are rewarded and undesirable behaviors are to be avoided. But in postdictive scenario studies, the actor is not likely to perceive a personal investment or ego-involvement in the studies' outcomes, even though the successfulness or unsuccessfulness of the outcomes is clearly specified.

The actor bias hypothesis therefore states: *When actors encounter a situation in which the outcome can reflect upon the personal character of the actor, the actor's attributions will be biased, reflecting the systematic influence of self-enhancement or impression management maneuvers.*

Ruble (1973) observed the actor-observer divergence in both success and failure conditions in a postdictive scenario study. Our findings, relative to predictive attributions, also confirmed an actor-observer divergence. In Ruble's data, actors attributed less personal causality than observers did in a failure outcome condition. The same trend was also noted in our predictive data. In Ruble's data, actors attributed less personal causality than observers did for successful outcomes; this trend was even more pronounced for success than for failure. This tendency, however, reversed in the present data; the successful actors attributed more personal causality than successful observers. How can this discrepancy between the present data and that observed by Ruble

be explained? The actor bias hypothesis offers an explanation. Ruble's subjects made their attributions under non-incentive conditions, but the present subjects knew about the extra credit for success provision, and needing the extra credit, they became ego-involved. Thus, Ruble's subjects made unbiased causal attributions, while ours made biased ones.

Unanswered Issues

During the course of this study several questions were raised, several hypotheses were generated (which attempt to account for contradictory findings) which could not have been anticipated and which remain untested. The following is a brief description and listing of areas in which additional experimentation seems warranted.

(1) In predictive and postdictive scenario attribution tasks, since the subject or attributor does not yet have direct and immediate situational, sensory information, it is expected that less situational causality will be attributed than in postdictive *in situ* circumstances. A slight tendency confirming this hypothesis was found, but due to the nature of the test, it was only approximate, and deserves a direct, planned comparison.

(2) In this study and the one reported by Timpe, Merrifield, and Helm (1975), attributional differences were found between males and females. Luginbuhl, *et al.* (1975) and Regan, *et al.* (1974), however, reported no sex differences, and others have not even included sex as an independent variable. It may be that sex role stereotypes operate as observer biases. It is proposed that

the feminine experience requires heightened situational awareness as females are often in control of interpersonal interactions. These experiences possibly operate as actor biases. These sex differences need to be examined systematically.

(3) It has already been suggested that the concept of predictive attribution has enough merit for additional consideration. As the robustness of a phenomenon is always judged by its replicability, even so with this concept.

(4) An observer bias hypothesis and an actor bias hypothesis were formulated to account for inconsistencies in various attribution data. At present these are only post hoc interpretation. A direct test of each is needed to determine the validity of each biasing model.

(5) It was observed that most personality evaluations were independent of attributed causality. Except for aggressiveness and cooperativeness ratings, they were also independent of outcome. But the traits assessed in this study provide only a minute sample (and an unrandom one, at that) of possible personality traits. Other traits may be more directly related to outcomes or to other interpersonal behaviors. This is a relatively novel area. It is still necessary to establish the relationship between attributed traits and outcomes in order to validate implications of the observer model of personality.

CHAPTER VI

CONCLUSIONS AND SUMMARY

Personality science has been marked by a lack of theoretical progress over the past fifty years. Some (e.g., Fiske, 1974) suggest that a reformulation of the personality concept is needed. In the present paper, an observer model of personality was formulated. An essential element of this formulation is the observation that personality is a three component system. Not only is there a (1) behaving actor, there is also an (2) observer who ascribes (3) traits and dispositions to the actor. This attribution reflects the observer's reconstruction of the actor and his behavior, somewhat independent of the actor's actual characteristics. The observer interprets his observations of the actor in terms of personality traits or labels. Personality does not exist without these labels.

These three components (actot, observer, and attribution) permit a consideration of personality within a well developed attribution theory. Kelley's ANOVA model has provided a starting point for the development of this observer model of personality. One implication of Kelley's ANOVA model is that causal schemata are much like a cognitive correlation matrix, summzarizing cause-effect relations. If this matrix is, indeed, correlational in form, then information can be used in two fashions: predictively

and postdictively. Cause can predict effect, or effect can postdict cause. A model for predictive attributions is presented, tested, and evaluated. It was concluded that the concept of predictive attributions is useful, and the data is consistent with the assumption that the causal schemata are correlational. Predictive attributions behave in much the same manner as postdictive attributions. It was predicted that outcome and viewpoint would interact. This interaction was termed the self-enhancement hypotheis; winning actors and losing observers were expected to attribute more personal causality for the outcome of the skill strategy game than were the losing actors or winning observers. This interaction was confirmed. It was also hypothesized that the actor-observer divergence would be noted relative to situational causality; a marginal tendency confirmed this hypothesis.

A multivariate analysis was used to examine the patterns of attributions made by attributors. Personality evaluations were independent of causal attributions. Only two personality attributions were related to the actual outcome of the game. Postgame perceptions of winners were characterized by attributions of aggressiveness and competitiveness, while losers were viewed as cooperative.

It was assumed that under the incentive-for-winning emphasis, positive self-esteem would mediate causal attributions. The predictive attribution data is consistent with this proposition, but this mediational assumption does not account for other research findings. An observer biasing model and an actor biasing model are presented which specifies under what conditions attribu-

tions are likely to be biased by other variables. Finally, several suggestions as to issues which remain unanswered or unresolved are presented.

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APPENDIX A

DATA COLLECTION INSTRUMENT

Your Sex: Male or Female (circle one)

What do you predict your outcome will be? Win or Lose

Rate how confident you are in your prediction.

very unconfident	1	2	3	4	5	6	7	8	9	very confident

Rate your predicted outcome on the following scale, by circling the number which best represents your estimate.

very much a failure	1	2	3	4	5	6	7	8	9	very much a success

What is the probable cause for your outcome? (1) your ability or lack of it, (2) your effort of lack of it, (3) task difficulty easiness, or (4) luck

How important will be your personality, traits, character, personal style, attitudes, moods, skills, and so on in causing you to have the outcome you predicted?

very unimportant	1	2	3	4	5	6	7	8	9	very important

How stable is your personality, etc., as a cause for your predicted outcome?

very unstable	1	2	3	4	5	6	7	8	9	very stable

How important will such factors as the nature of the game, chance, the way the other person played, and so on in causing you to have your predicted outcome?

very unimportant	1	2	3	4	5	6	7	8	9	very important

How stable are these situational factors as a cause for your predicted outcome?

very unstable	1	2	3	4	5	6	7	8	9	very stable

How much do you like yourself?

very little	1	2	3	4	5	6	7	8	9	very much

Your Opponent's Sex: Male or Female (circle one)

What do you predict your opponent's outcome will be? Win or Lose

Rate how confident you are in this prediction?

very unconfident	1	2	3	4	5	6	7	8	9	very confident

Rate your predicted outcome for your opponent on the following scale, by circling the number which best represents your estimate.

very much a failure	1	2	3	4	5	6	7	8	9	very much a success

What is the probable cause for your opponent's outcome? (1) his ability of lack of it, (2) his effort of lack of it, (3) task difficulty or easiness, or (4) luck

How important will be your opponent's personality, traits, character, personal style, attitudes, moods, skills, and so on in causing him to have the outcome you predicted?

very unimportant	1	2	3	4	5	6	7	8	9	very important

How stable is his personality, etc., as a cause for his predicted outcome?

very unstable	1	2	3	4	5	6	7	8	9	very stable

How important will such factors as the nature of the game, chance, the way you played, and so on in causing him to have the outcome you predicted?

very unimportant	1	2	3	4	5	6	7	8	9	very important

How stable are these situational factors as a cause for his predicted outcome?

very unstable	1	2	3	4	5	6	7	8	9	very stable

How much do you like your opponent?

very little	1	2	3	4	5	6	7	8	9	very much

The postgame segment of the previous questionnaire was identical to the pregame portion with two exceptions. (1) The confidence rating scales were deleted. (2) The verb tenses were changed to reflect the after-the-fact nature of the assessment. The verbs were changed from future tense to past tense.

The following is the modified version of the Semantic Differential used in this study. The left blank of each bipolar scale contains the numeric value of that extreme on the scale; in the center blank is an abbreviation which identifies which items contribute to each listed variable (see Appendix B.) On the following page the specific instruction sets are provided for actor and observer attributions for both pregame and postgame data collection.

Hard	7	:	:	: P :	:	:	:	Soft
Caution	1	:	:	: P :	:	:	:	Rash
Friendly	7	:	:	:Aff :	:	:	:	Unfriendly
Bad	1	:	:	: E :	:	:	:	Good
Active	7	:	:	: A :	:	:	:	Passive
Dishonest	1	:	:	: E :	:	:	:	Honest
Progressive	7	:	:	: A :	:	:	:	Regressive
Pleasant	7	:	:	:Aff :	:	:	:	Unpleasant
Stable	1	:	:	: A :	:	:	:	Changeable
Weak	1	:	:	: P :	:	:	:	Strong
Calm	1	:	:	: A :	:	:	:	Excitable
Harmful	1	:	:	: E :	:	:	:	Beneficial
Insincere	1	:	:	:Aff :	:	:	:	Sincere
Kind	7	:	:	: E :	:	:	:	Cruel
Competitive	1	:	:	: C :	:	:	:	Cooperative
Severe	7	:	:	: P :	:	:	:	Lenient
Exploitative	1	:	:	:Acc :	:	:	:	Accommodative
Trustworthy	7	:	:	:Aff :	:	:	:	Untrustworthy
Uninhibited	1	:	:	: I :	:	:	:	Inhibited
Nonaggressive	1	:	:	:Agg :	:	:	:	Aggressive

Predictive Actor Instructions

PLEASE rate YOUR Own behavior in the interaction you are about to undertake. For each set of descriptive words, place a check mark in one of the seven blanks nearest the word you believe is most descriptive of YOUR OWN behavior. Please mark each set of words whether or not they seem to apply to the situation.

Predictive Observer Instructions

PLEASE rate the behavior of the OTHER PERSON in the interaction you are about to undertake. For each set of two descriptive words, place a check mark in one of the seven blanks nearest the word you believe is most characteristic of HIS behavior. Please mark each set of words whether or not they seem to apply to the situation.

Postdictive Actor Instructions

PLEASE rate YOUR OWN behavior in the interaction you just completed. For each set of two descriptive words, place a check mark in one of the seven blanks nearest the word you believe is most descriptive of YOUR behavior. Please mark each set of words whether or not they seem to apply to the situation.

Postdictive Observer Instructions

PLEASE rate the behavior of the OTHER PERSON in the interaction you just completed. For each set of two descriptive words, place a check mark in one of the seven blanks nearest the word you believe is most characteristic of HIS behavior. Please mark each set of words whether or not they seem to apply to the situation.

APPENDIX B

LISTING OF VARIABLES

The following variables constituted the independent variables in the analysis of variance analysis, the marker variables in the factor analysis, and were coded as indicated.

Sex: Males = level 1, Females = level 2

Opponent's Sex: Same Sex = level 1, Opposite Sex = level 2

Outcome: Win = level 1, Lose = level 2

Viewpoint: Actor (self) = level 1, Observer (other) = level 2

The following variables constituted a portion of the dependent variables, and were scaled so that "1" indicated very little, and "9" indicated very much. These were presented in a Likert format.

Confidence in Prediction

Success Rating of Outcome

Personal Causality

Stability of Personal Causality

Situational Causality

Stability of Situational Causality

Likability

The remaining variables were also dependent variables, but were presented in a modified Semantic Differential form. They were scored so that a high number meant a high amount of the variable.

Affect (Aff)

Accommodative (Acc)

Activity (A)

Aggressive (Agg)

Cooperative (C)

Evaluation (E)

Inhibited (I)

Potency (P)

Motive (Motive = Affect + Evaluation)

Capability (Capability = Activity + Potency)

Frustration (Frustration = Motive - Capability)

VITA

Randie Lee Timpe

Candidate for the Degree of

Doctor of Philosophy

Thesis: AN OBSERVER MODEL OF PERSONALITY

Major Field: Psychology

Biographical:

Personal Data: Born in Fort Morgan, Colorado, October 4, 1948, the son of Mr. and Mrs. Richard C. Timpe

Education: Graduated from Fort Morgan High School, Fort Morgan, Colorado, in June, 1966; received Bachelor of Arts degree in Religion from Bethany Nazarene College, May, 1970; received Master of Arts degree in Experimental-clinical Psychology from Wichita State University in 1973; completed requirements for the Doctor of Philosophy degree at Oklahoma State University in December, 1975.

Professional Experience: Graduate teaching assistant, Department of Psychology, Wichita State University, 1972-1973; graduate teaching and research assistant, Department of Psychology, Oklahoma State University, 1973-1975.