

REINFORCEMENT AND COGNITIVE THEORETICAL
PREDICTIONS OF ATTRACTION TOWARD TWO
STRANGERS

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By: Robert P. Murray

A dissertation submitted to the Faculty of Graduate Studies of
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REINFORCEMENT AND COGNITIVE THEORETICAL PREDICTIONS
OF ATTRACTION TOWARD TWO STRANGERS (Abstract)

Robert P. Murray

A series of experiments was carried out, using a procedure which had experimental subjects tell stories in the presence of two peers, one who rated the stories for "creativity" and the other who was an observer. The dependent variable of interest was interpersonal attraction, and previous investigators using a similar procedure had interpreted their results as supporting a social learning theory explanation. This paper attempted to demonstrate whether cognitive balance theory could account for the experimental results typically found in such a situation, and further whether some facets of the behavior would be explicable only with balance theory.

The hypotheses were broken down into two sets: those demonstrating the dominance of balance vs. reinforcement - predicted influences in the experiment, and those which demonstrated the existence of balance influences. Several personality measures were also used which prior studies had associated with different styles of responding to cognitive balance type situations. Subjects were female undergraduates.

The first two experiments had the Rater physically separated from the Storyteller, and the second experiment had the Observer separated as well. They tested the hypothesis of the dominance of balance vs. reinforcement: basically, reinforcement predicted that if the Rater was positive toward the Storyteller, the latter would like both Rater and Observer. If the Rater was negative to the Storyteller, she would dislike both Rater and Observer. Balance theory predicted the same when Rater and Observer were perceived as similar, but when they were dissimilar then the Storyteller would dislike the Observer when liking the Rater, and like the Observer when disliking the Rater.

Both experiments found that the means conformed to sets of comparisons representing both balance and reinforcement hypotheses (they made a number of predictions in common). The critical means to indicate which theory was stronger, however, were not significantly different. This may have occurred because forces corresponding to the two hypotheses were active and cancelling each other. The third experiment added a test for the existence of balance, as well as the previous test of dominance.

In this experiment the Storyteller was confronted face-to-face with the Rater and Observer. There were two conditions where reinforcement influences only were hypothesized to operate

(the relation between Rater and Observer was unspecified to the subject). The results tended to suggest that balance influences do occur and can be dominant in specific situations, but this was found primarily among high self esteem subjects- a hypothesized optimum circumstance for balance. The weaker results in this experiment may have been largely due to the lack of control inherent in the face-to-face situation. A main effect on the evaluative ratings was found for Machiavillianism in the predicted direction, where high Machiavellian subjects gave lower evaluations. Neither Machiavellianism nor cognitive complexity related to the extent to which subjects conformed to reinforcement or balance predictions.

In general it was found that evidence for reinforcement predictions was persistent, and that there were some situations where balance added further predictive power.

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CHAPTER 1

THEORETICAL INTRODUCTION

Statements about whom we like date at least from Aristotle:

"They are friends, then, for whom the same things are good and evil, and who are friends and enemies of the same people..... Men like, too, those who have done good to themselves, or those for whom they care.....

"We like also those who, we think, wish to do us good. We like our friends' friends, and those who like the persons whom we like; and those that are liked by those that are liked by ourselves; and those who are the enemies of our enemies - who hate the persons whom we hate....." (Aristotle, Translated by Jebb, 1909, pp. 77-78.)

Experimental investigations of attraction (reviewed by Byrne, 1971) extend from Sir Francis Galton in the nineteenth century to the present. Social psychological research on this topic began in earnest during the 1930s when investigators tested the similarity of attitudes between husbands and wives to verify the hypothesis that like attracts like. Results were typically positive. Today interpersonal attraction is one of the major concerns of social psychology.

The purpose of the present dissertation was to investigate a laboratory analog of real life attraction. In doing so, this project compared two major theoretical orientations to interpersonal attraction - cognitive consistency theories versus classical conditioning learning theories.

Basically the laboratory situation used in the present research consisted of three people: a naive subject, plus two confederates of the experimenter. During the experimental session, the subject was shown several pictures and asked to create stories about them. One confederate, called the rater, provided feedback to the subject on how good or bad her stories were. The second confederate, called the observer, was present throughout this procedure as an onlooker. After the story-telling, the subject's primary task was to evaluate the rater and observer.

This chapter will introduce the two theoretical orientations for looking at this situation, critically review relevant research, and state the hypotheses that guided the present experiments.

Cognitive Consistency

Cognitive theories of attitude derive from Gestalt psychology, founded by Wertheimer as a protest against earlier German psychology which analyzed consciousness into elements. Gestaltists maintained that the whole was more than the sum of its parts, and that some of the properties of wholes "inhere in no single part but emerge when the parts constitute the whole" (Boring, 1950). Rather than seeing

behavior as a chain of nervous events, Gestalt theorists studied a dynamic system or "field". The events of the system, evidenced by conscious mental processes, followed unique internal laws not derivable from mere combinations of neural responses.

Cognitive Balance Theories

Modern day theories of cognitive balance postulate a basic "need" for consistency, which is based on an assumption of human rationality. Various contemporary theories of cognitive consistency have led to a considerable quantity of research (reviewed in Feldman, 1966; Insko, 1967; Zajonc, 1968; McGuire, 1968; Abelson et al., 1969; Kiesler, Collins and Miller, 1969), suggesting that although some of our behaviors stem from "irrational" causes, a wide range of cognitions and behaviors does stem from attempts to be consistent and rational.

For our present purposes, three theories will be summarized in an attempt to illustrate their similarities and differences with reinforcement principles which have been invoked to describe interpersonal attraction. For an appreciation of their entire intricacies, the reader

is referred to the above sources and to the original statements. We turn first to Heider's theory, it being a pioneering effort in this area. Next we refer to Newcomb, whose theory is a derivative of Heider's, and one that is addressed particularly to the topic of interpersonal attraction. Finally, Rosenberg and Abelson's theory, another descendent of Heider's, is of interest for its greater complexity and operational specificity. Other consistency theories are Festinger's (1957) theory of cognitive dissonance, not directly applicable to interpersonal attraction, and Cartwright and Harary's (1956) extension of Heider, a mathematical model which does not add directly to our present area of concern. Osgood and Tannenbaum's (1955) congruity model applies to the special case of acceptance of a communication. Two more recent and less well known theories are those of Feather (1964, 1966) and Wiest (1965). These latter two have not been widely verified and cited.

Heider's Theory of Cognitive Organization

Heider's (1946, 1958) theory is concerned with relationships between the perceiver (P), another person (O), and an object (X) in a person's phenomenological world. There are two types of relationships: attitudes and "unit" relations. Examples of attitudes are: to like, to love, to esteem, to value. Examples of unit relationships are: similarity,

proximity, causality, membership, possession, belonging, etc. Each relation can have either positive or negative value.

In a triad (P, O and X), a balanced state exists if all possible relations are positive, or if two of the relations are negative and one positive. The basic principle underlying the model is that man prefers balance; balanced states are stable states; unbalanced states are unstable and tension producing. Unresolved balance can lead also to cognitive reorganization, which in turn may lead to restoration of balance.

Although attitude (L) or unit (U) relations are defined as distinct from each other, they are "formally analogous" when balance is to be determined. That is, "p likes o", "o owns x", and "p likes x" is as much a balanced triad as "p likes o", "o likes x", and "p likes x". Heider does make passing mention, however, that "often the U relation is weaker than the L relation". This seems to have no firm consequences, nonetheless, for determining in which manner an unbalanced triad will be returned to balance. For example, the triad "p likes o" (pLo), "o owns x" (oUx), "o dislikes x" (o~Lx), could be resolved to balance by any of the following changes taken individually: "p dislikes o" (p~Lo), "o disowns x" (o~Ux); or "p likes x" (pLx).

Heider suggests that an incomplete triad will tend to be "filled in" to make a balanced structure, implying for example, that if "p likes o" (pLo) and "o likes x" (oLx), p will tend to acquire a positive attitude toward x. Another dynamic force in the model is the tendency toward "symmetry" in the liking relation. That is, if "p likes o" (pLo), then in the opposite direction there is a tendency for the occurrence of "o likes p" (oLp). This occurrence is seemingly what Heider also calls balance in the case of a dyad. However when discussing the triad, he does not emphasize criteria involving two-way relationships.

With reference to our experimental situation, it was expected from Heider's principles that if the Rater - (the confederate who rated the experimental subject's stories) told the Storyteller that the stories were good, then the Storyteller would tend to like the Rater. Then if the Storyteller perceives the Rater as having a positive relation to the Observer - (the confederate who was simply an onlooker), the Storyteller will tend to like the Observer as well to produce a balanced state. If, on the other hand, the Storyteller tends to like the Rater but the Storyteller perceives the Rater as having a negative relation to the Observer, then it should be expected that the Storyteller would dislike the Observer to produce balance and in turn reduce tension.

For another set of predictions, consider the situation where the Rater has a negative unit relation to the Storyteller, that is, where the Rater has judged the Storyteller's stories to be bad. Because of Heider's postulate of "symmetry", we expect the opposite relation to be similar - the Storyteller should dislike the Rater. Again if the Storyteller perceives the Rater to have a positive relation to the Observer, the Storyteller should this time dislike the Observer in order to produce a balanced triad. Finally, if circumstances (the ratings of stories) have induced the Storyteller to dislike the Rater but the Storyteller perceives that the Rater is negatively related to the Observer, then a balanced triad will occur if the Storyteller likes the Observer. These predictions are compared with those of other balance theories, and then serve as one set of hypotheses for the three experiments reported in this paper. The other set of main hypotheses will be derived from a social psychological interpretation of learning theory.

A further point Heider makes is that his discussions of balance in a triad presuppose that the perceiver has a positive liking relationship to p, himself in the structure. This is made more explicit by Rosenberg and Abelson whose theory is described below. For an experimental test of balance hypotheses, this implies that experimental subjects selected to be high in some measure of self esteem might perform more to confirm the hypotheses than subjects low in self esteem.

Newcomb's Theory of Interpersonal Balance

Newcomb (1953, 1956, 1958, 1959, 1961, 1971) is directly concerned with interpersonal attraction. The model depicts the nature of communicative acts from one person (A) to another person (B) about something (X). The components of Newcomb's A-B-X system are: A's orientation (attitude) toward X; A's orientation (attraction) toward B; B's orientation (attitude) toward X; and B's orientation (attraction) toward A.

Newcomb refers to similarities of A's and B's orientations to X as "symmetrical" relationships. He postulates that in the system there is a "strain toward symmetry" of A with B in respect to X. The greater the force inducing this strain toward symmetry, the greater the likelihood of increased symmetry due to one or more communicative acts. This force inducing the strain toward symmetry is aroused by the intensity of A's attitude toward X and his attraction to B.

The theory is primarily concerned with the relation of A and B, the "ego" and "alter" in the structure. The uniqueness of this relation is illustrated by its label of "attraction", while A's and B's orientations toward X are termed "attitudes". Newcomb is primarily interested in how differing attitudes and differing strengths of attitudes affect the attraction between A and B. The various components of the triad are then not interchangeable, as in Heider's model, but are uniquely defined.

An important difference between Newcomb and Heider is that for the latter, all positive relations or any two negative relations constitute balance. For Newcomb, when there are two negative relations in a triad, they must be the two attitudes, i.e., A's and B's orientations toward X. Otherwise AX and BX will not have the same sign and the basic requirement of symmetry will not be met.

In our experimental situation, where the Storyteller is being rated for telling stories by the Rater, and where the Observer is the additional object in Newcomb's system, predictions can be made for the specific instances where the Storyteller has been induced to be positively attracted to the Rater (by having been rated positively by the Rater). Where the Rater is perceived as having a positive attitude toward the Observer, then the Storyteller will tend to regard the Observer positively to produce symmetry and reduce strain. Where the Rater is perceived as having a negative attitude toward the Observer on the other hand, the Storyteller will tend to regard the Observer negatively. The Storyteller's responses in these cases where the Rater rates the Storyteller positively correspond to the hypotheses for the present experiments derived from Heider's theory. In the cases where the Storyteller is expected to react negatively to the Rater (negative attraction), Newcomb does not concur with Heider.

Newcomb (1971) addressed the question of negative attraction, tending to refer to any situation in which the AB attraction is negative as "nonbalanced", characterized by relative indifference. Based on his interpretation of the literature testing Heider's predictions, Newcomb considers all Heider-balanced triads with negative AB attraction to be intermediate in stability between balanced and unbalanced triads. To reiterate then Newcomb would not define as balanced two of the experimental cases here specified under Heider (those with a negative attraction of the Storyteller to the Rater).

In this paper, it will be argued that Newcomb's theory supports the predictions made where the attraction from the Storyteller to the Rater is to be positive, and makes no specific prediction where this is not the case.

In addition to balance, a variety of alternative "intrasystem" changes may occur to reduce strain:

"Hypothetically, strain may be reduced under any of the following conditions: (1) by reduction in the strength of attraction, (2) by reduction of object-relevance, (3) by reduction of perceived ("other's") object-relevance,

(4) by reduction of importance of the object of communication, (5) by reduction of perceived ("other's") importance of the object of communication, (6) by changes in cathexis or in cognitive structuring of own attitudes, such that there is increased similarity with the other's perceived attitudes, (7) by changes in perceived attitudes (cathectic or cognitive) of the other, such that there is increased similarity with own attitudes." (Newcomb, 1959)

Rosenberg and Abelson's Cognitive Balancing

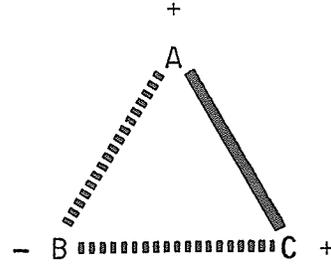
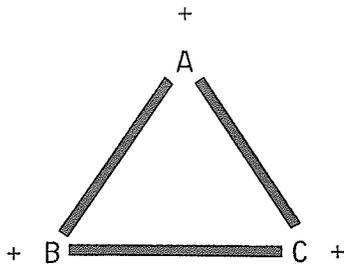
The model of Rosenberg and Abelson (1960) consists of the following components: "cognitive elements" are things or concepts which occur in human thought; "cognitive relations" (positive, negative, or null) are associations among the cognitive elements; "cognitive units" are defined as pairs of elements connected by a relation (i.e. "sentences of attitudinal cognition"); "cognitive balance and imbalance" are defined in terms of the positive and negative affect-arousing significance of the cognitive elements, and the value of the relation between them. A balanced unit is one in which two concepts of identical sign are believed to be positively related, or two concepts of opposite sign are believed to be negatively related. All units with other configurations are unbalanced. An unbalanced unit is hypothesized to be unstable and likely to undergo change in a balancing direction, if the person is attending to the imbalance. In more complex attitude structures, e.g. the triad, the requirement is the same - each unit in the structure must be balanced.

Rosenberg and Abelson's model has an advantage over the models of Heider and of Newcomb in that in complex structures if several changes are possible to produce balance, the authors are able to suggest that the route to balance which is most likely to occur is that involving the fewest changes. No distinction is made between the likelihood of changing a perceived relation or changing the affect associated with an element. Figure 1 gives examples of unbalanced and balanced structures consisting of three elements and the relations between them.

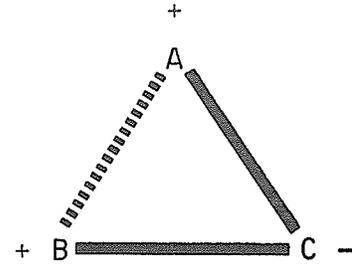
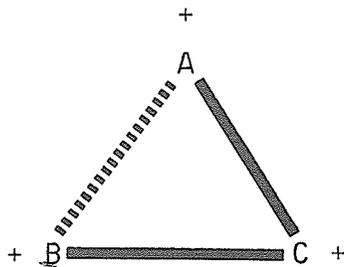
Quite aside from changing the signs of concepts and relations, other methods of redressing imbalance are (1) redefining concepts to reduce the association between them, or (2) to stop thinking. Experimentally these latter two methods do not concern us.

With regard to the Rosenberg and Abelson predictions in our specific experimental situations, it will be argued here that they are consistent with the Heider predictions. The comments make reference to Figure 2.

Balanced Structures



Unbalanced Structures



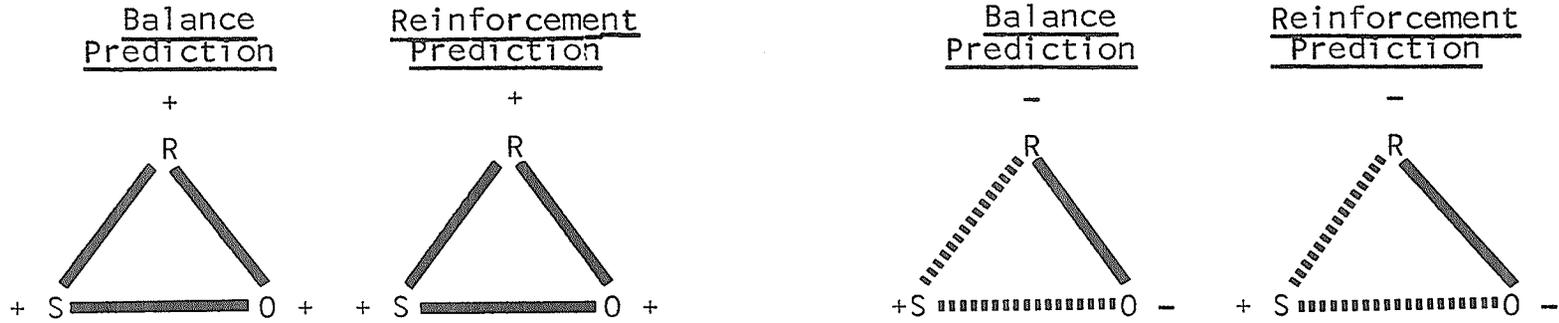
Symbols A, B, and C represent concepts, signs attached to the symbols indicate their valuations. A solid line denotes a positive relation; a broken line, a negative relation.

Figure 1. Examples of Balanced and Unbalanced Three-Element Structures in Rosenberg and Abelson's (1960) Cognitive Balancing Model.

Positive Rater-Observer Relation Condition

1). Positive Reinforcement Condition

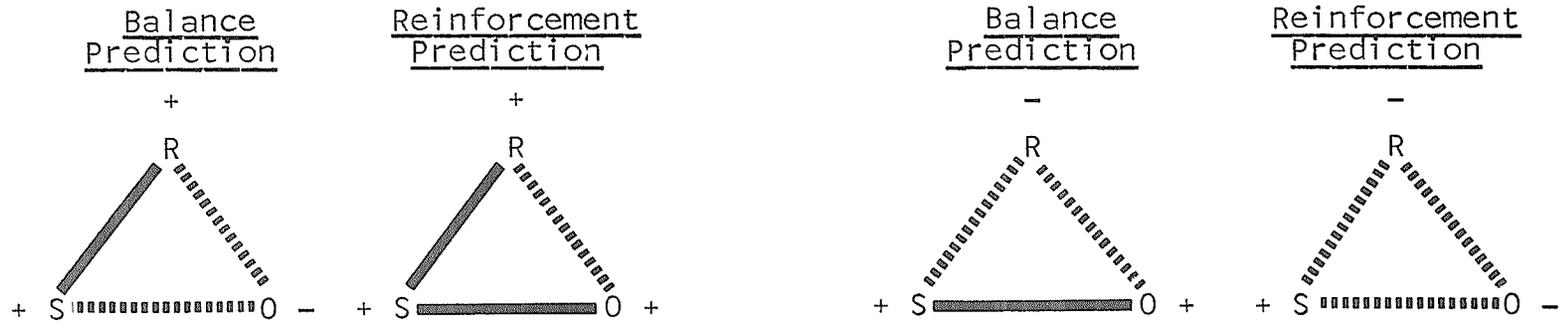
2). Negative Reinforcement Condition



Negative Rater-Observer Relation Condition

3). Positive Reinforcement Condition

4). Negative Reinforcement Condition



R denotes Rater; S - Storyteller; O - Observer

Figure 2. Experimental Conditions in Experiments I and II Represented in Cognitive Structural Terms.

In Cell 1, there is a strong cognitive relation between the Rater and the Storyteller. That it is associated by a positive evaluation of the Rater by the Storyteller is not surprising, and this too should be a relatively frequent occurrence. The relation between the Rater and the Observer is manipulated in the experiment, and is in this case positive. We might expect that in any change toward balance, the relation of the Storyteller to the Observer and the evaluation of the Observer might be the most weakly held, and so the most likely to give way and change to result in balance. In this case the most direct way to have balance is for them both to be positive. In Cell 2, if the Storyteller-Rater and the Rater-Observer relations are manipulated negative and positive, respectively, and if we strongly expect the evaluation of the Rater to be negative, then the easiest route to balance is for the Storyteller-Observer relation and the evaluation of the Observer to be both negative. In Cell 3, the Storyteller-Rater and the Rater-Observer relations are positive and negative respectively, and the evaluation of the Rater is positive, so the easiest way to balance the structure is to have the Storyteller-Observer relation and the evaluation of the Observer both negative. Finally, in Cell 4, both the Storyteller-Rater and the Storyteller-Observer relations and the evaluation of the Rater are all negative. Assuming again that our change will occur with the Storyteller-Observer relation and the attitude to the Observer, the easiest balance is to have them both positive.