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A CRITICAL ANALYSIS OF "BALANCE MODELS" IN COMMUNICATION RESEARCH

Yoshihiro Akutsu

The purpose of this paper is to describe and evaluate the models of dissonance, balance, and congruity. In the following sections will be discussed Festinger's theory of cognitive dissonance, Heider's theory of balance, Rosenberg and Abelson's analysis of cognitive balancing, and Osgood and Tannenbaum's principle of congruity. In discussing these notions, special attention will be paid to the adequacy of their empirical base. Finally, some major problems of the models will be discussed in terms of their similarities and differences.

Leon Festinger
A THEORY OF COGNITIVE DISSONANCE [1)]

Ⅰ. The Theory of Cognitive Dissonance

A. The basic background of the theory:

The human organism tries to establish internal harmony, consistency, or congruity among his opinions, attitudes, knowledge, and values −−− a drive toward consonance among cognitions.

B. The core of the theory:

1. There may exist dissonant or nonfitting relations among cognitive ele-

ments.

2. The existence of dissonance gives rise to pressures to reduce the dissonance and to avoid increases in dissonance.
3. Manifestations of the operation of these pressures include behavior changes, changes of cognition, and circumspect exposure to new information and new opinions.

C. Definitions of dissonance and consonance:

1. Cognition: any knowledge, opinion, or belief about the environment, about oneself, or about one's behavior; decomposable into elements or, at least, clusters of elements.
2. The terms of dissonance and consonance refer to relations which exist between pairs of cognitive elements.
   a. Two cognitive elements are in a dissonant relation if, considering these two alone, the obverse of one element follows from the other.
   b. Two cognitive elements are in a consonant relation if, considering these two alone, one element follows from the other.
   c. Two cognitive elements are in an irrelevant relation if they have nothing to do with one another.
   d. The relation between two cognitive elements is either dissonant or consonant if they are relevant.

D. The magnitude of dissonance:

1. The magnitude of the dissonance or consonance which exists between two cognitive elements is a direct function of the importance of these two elements.
2. The total magnitude of dissonance which exists between two clusters of cognitive elements is a function of the weighted proportion of all the rel-

evant relations between the two clusters which are dissonant, each dissonant or consonant relation being weighted according to the importance of the elements involved in that relation.

E. The reduction of dissonance:

1. The strength of the pressures to reduce the dissonance is a function of the magnitude of the dissonance.
2. There are three major ways in which dissonance may be reduced;
   a. By changing one or more of the elements involved in dissonant relations.
   b. By adding new cognitive elements that are consonant with already existing cognition.
   c. By decreasing the importance of the elements involved in the dissonant relations.
3. The effectiveness of efforts to reduce dissonance depends upon the resistance to change of the cognitive elements involved in the dissonance and on the availability of information which will provide, or of other persons who will supply, new cognitive elements consonant with existing cognition.

F. Resistance to dissonance reduction and the maximum dissonance:

1. The major sources of resistance to change for a cognitive element are the responsiveness of such cognitive elements to reality and the extent to which an element exists in consonant relations with many other elements.
2. The maximum dissonance which can possibly exist between two elements is equal to the resistance to change of the less resistant of the two elements. If the dissonance exceeds this magnitude, the less resistant cognitive element will be changed, thus reducing the dissonance.

G. Avoidance of dissonance:

1. Where, in the process of attempting to reduce dissonance, support is sougth for a new cognitive element to replace an existing one or where new cognitive elements are to be added, the avoidance of an increase in dissonance may lead to highly selective exposure to sources of support or sources of information.
2. Past experience may lead a person to fear. and hence to avoid, the initial occurrence of dissonance. A fear of dissonance may lead to circumspect behavior with regard to new information or a reluctance to commit oneself behaviorally.

Ⅱ. The Specific Implications of the Theory

A. The consequences of decisions:

1. Dissonance almost always exists after a decision has been made between two or more alternatives.
2. The magnitude of postdecision dissonance is a positive function of the general importance of the decision and of the relative attractiveness of the unchosen alternatives.
3. The magnitude of postdecision dissonance decreases as the number of cognitive elements corresponding identically to characteristics of chosen and unchosen alternatives increases.
4. Postdecision dissonance may be reduced;
   a. By increasing the attractiveness of the chosen alternative, decreasing the attractiveness of the unchosen alternatives, or both.
   b. By perceiving some characteristics of the chosen and unchosen alternatives as identical.
   c. By decreasing the importance of various aspects of the decision.

B. The effects of forced compliance:

1. Dissonance almost always exists after an attempt has been made, by offering rewards or threatening punishment, to elicit overt behavior that is at variance with private opinion.
2. The magnitude of the dissonance resulting from an attempt to elicit forced compliance is greatest if the promised reward or threatened punishment is either just sufficient to elicit the overt behavior or is just barely not sufficient to elicit it.
3. If forced compliance is elicited, the magnitude of the dissonance decreases as the magnitude of the reward or punishment increases.
4. If forced compliance fails to be elicited, the magnitude of the dissonance increases as the magnitude of the reward or punishment increases.
5. If forced compliance has been elicited, the dissonance may be reduced by changing private opinion to bring it into line with the overt behavior or by magnifying the amount of reward or punishment involved.
6. If forced compliance fails to be elicited, dissonance may be reduced by intensifying the original private opinion or by minimizing the reward or punishment involved.

C. Voluntary and involuntary exposure to information:

1. Forced or accidental exposure to new information may create cognitive elements that are dissonant with existing cognition.
2. The presence of dissonance leads to seeking new information which will provide cognition consonant with existing cognitive elements and to avoiding those sources of new information which would be likely to increase the existing dissonance.
3. Forced or accidental exposure to new information will frequently result in

misinterpretation and misperception of the new information by the person thus exposed in an effort to avoid a dissonance increase.

D. The role of social support:

1. The open expression of disagreement in a group leads to the existence of cognitive dissonance in the members.
2. Identical dissonance in a large number of people may be created when an event occurs which is so compelling as to produce a uniform reaction in everyone.
3. The magnitude of the dissonance introduced by the expression of disagreement by others decreases as the number of existing cognitive elements consonant with the opinion increases.
4. The magnitude of the dissonance introduced by disagreement from others increases with increase in the importance of the opinion to the person, in the relevance of the opinion to those voicing disagreement, and in the attractiveness of those voicing disagreement.
5. The greater the difference between the opinion of the person and the opinion of the one voicing disagreement, and, hence, the greater the number of elemetns which are dissonant between the cognitve clusters corresponding to the two opinions, the greater will be the magnitude of dissonance.
6. Dissonance introduced by disagreement expressed by others may be reduced by changing one's own opinion, by influencing the others to change their opinion, and by rejecting those who disagree.
7. The existence of dissonance will lead to seeking out others who already agree with a cognition that one wants to establish or maintain and will also lead to the initiation of communication and influence process in an effort to obtain more social support.

8. In situations where many persons who associate with one another all suffer from the identical dissonance, dissonance reduction by obtaining social support is very easy to accomplish.

Ⅲ. Further Suggestion

A. Personality differences:

1. Because of individual differences in tolerance for dissonance, it would be plausible to expect that persons with low tolerance would actually have considerably less existing dissonance at any time than comparable persons with high tolerance for dissonance.
2. Persons with extreme intolerance for dissonance would act so as to avoid the occurrence of dissonance. Furthermore, it would be expected that such a person tries to avoid making decisions or even becomes incapable of making decisions.
3. There are persons who, in avoiding postdecision dissonance, make decisions without making them. Thus avoiding postdecision dissonance can be accomplished to some extent by psychologically revoking the decision as soon as it is made. Such avoidance of dissonance should exist only for persons who have very low tolerance for dissonance coupled with relatively inefficient mechanisms for reducing dissonance.

B. Changes in status and role:

If a person is subjected to changes in role or in status, some cognitive dissonance will result. The phenomenon of acceptance of the values associated with a role by a person who moves into that position can be adequately understood in terms of dissonance reduction.

Ⅳ. Critique

For Festinger, the elements of study are cognitions without any clear specification. This unrestricted nature of elements may create problems on the experimental plane. The researcher, for example, can only select the elements of dissonance on an intuitive basis. Furthermore, Festinger does not indicate how to define dissonance empirically; that is, no indications concerning the empirical meaning of the "obverse." It should also be noted that there is nohting in the explication of cognitive elements, nor in the definitions of dissonance and consonance, which specifies when two cognitions are relevant or irrelevant. The experimental manipulation of dissonant cognitions is also left to intuition. Thus, the experiments can only be generated by intuition, lacking independent measures of the "obverse" and direct measures of the dissonant state.

The dissonant cognitions are said to be weighted by the importance of the cognitions involved. The method of weighting the cognitions and that of defining importance is again unspecified. Thus, estimates of the magnitude of dissonance remain conjectural or a posteriori.

In terms of the reduction of dissonance, the theory is not capable of predicting the specific manner in which consonance among cognitions will be achieved. Among the crucial defects of the theory are an inadequate specification of the conditions that will lead to a certain form of dissonance reduction as well as an unsatisfactory conceptualization of the type of motivation which is involved in the pressures to reduce the dissonance. Although dissonance is conceived to be a motivating state, there is nothing to characterize it as a motivation. Cognitive elements may be important to motivation, especially in the effects of motivation on various psychological processes. Since the existence of dissonance can stimulate interest and arouse

curiosity, the individual may seek out dissonance as well as avoid it.

V. General Assessment

The dissonance theory delineates and clarifies the nature of psychological changes because it focuses on the individual's own behavior as that behavior serves to create dissonance which gives rise to psychological changes. Especially, because of its emphasis on the individual's behavior in creating dissonace, the theory can be said to be uniquely equipped to explicate the effects of situations where the individual is forced to do or say something he does not want to do or say.

The dissonance theory has generated a number of experimental investigations and has been plausibly applied to the results of experiments relevant to the theory. Nevertheless, there are a number of questions concerning it and about the evidence taken to be supportive of it. Festinger has, however, made challenging predictions and also created striking experimental formats which suggest interesting experimental variations. It seems fair to say that Festinger's work stimulates the research which will constitute a systematic development of ideas that he first created.

VI. Overall Summary Evaluation

At the core of the theory is the postulate that individuals strive to reduce tension in their cognitive structure. This postulate is basically similar to an idea that has played a central role in the psychological field. There seem to be parallels in dissonance formulations to other theories which focus on discrepancy, self-consistency, and homeostasis. Moreover, ego-involvement, anxiety, achievement, level of aspiration, and the like, also seem to

involve operations similar in many respects to those used in dissonance experiments. Much more needs to be done, however, to determine whether or not the dissonance formulation can lead to deductions not possible on the basis of other traditions.

The definition of cognitive elements, their measurement, and the assessment of degrees of dissonance among them are critical to the further development of the dissonance theory. Lack of conceptual precision makes it difficult for experiments to specify operations and coordinating definitions and to interpret data obtained. This also may make intertheory translation extremely hazardous. The dissonance theory needs more anchoring in the concepts and methods of prior work than it has had.

Fritz Heider
THE PSYCHOLOGY OF INTERPERSONAL RELATIONS [2)]

I. The Approach of Heider's Work

1. Guided by the Gestalt approach to perception, Heider's theoretical work, expressed in this book, is concerned with understanding how the person perceives interpersonal events. His major thesis is that the person seeks to develop an orderly and coherent view of his environment and builds up a naive psychology that resembles a science in an important respect.
2. His work is an attempt to describe implicit theoretical models of the phenomena of perception, action, motivation,sentiments, and norms, using the psychological concepts and their interrelations that are embodied in naive psychology---to understand the person's social behavior one must understand the common-sense psychology that guides it, and scientific psychology has much to learn from the treasure of insight that is embodied in common sense. Thus, his work involves the investigation of

the naive psychology implicit in everyday language or expressed in common-sense propositions concerning interpersonal relations.

3. His method is to analyze the underlying concepts that are used in language and to study the interrelations of these concepts. Naive psychology includes the following basic concepts: "subjective environment" or "life space" ; "perceiving" ; "suffering" , "experiencing" , or "being affected by" ; "causing" ; "can" ; "trying" ; "wanting" ; "sentiments" ; "belonging"; and"ought"and"may". These underlying concepts are interrelated in a general way as follows: "··· people have an awareness of their surroundings and the events in it (the life space), they attain this awareness through perception and other processes, they are affected by their personal and impersonal environment, they cause changes in the environment, they are able to (can) and try to cause these changes, they have wishes (want) and sentiments, they stand in unit relations to other entities (belonging), and they are accountable according to certain standards (ought)". (p.17)

Ⅱ. The Major Themes in Heider's Analysis of Naive Psychology

In a detailed statement of his analysis, Heider placed the person in the complicated causal network of the environment. This network is composed of two parts: the mediation, the part that comprises the proximal stimuli which impinge on the person and the immediate influences of the person on the environment; and the distal environment, the part that is made up of the vitally relevant persons and things. By the mediation, the person is separated from the contents of the distal environment. The person's perceptions and actions are directed to the contents of the distal environment.

Heider's analysis presents two major, interrelated, dynamic themes:

"attribution" and "balance".

A. Attribution

1. The person tries to make sense out of the manifold of proximal stimuli by ordering and classifying them in terms of the distal invariants and their relevant dispositional properties. This ordering and classifying can be considered a process of attribution.
2. It is important in the interpretation of social events whether an event is attributed to causal factors located in the person or to causal factors in his environment. For example, a person's success or failure on a task may be attributed to the ease or difficulty of the task or to his ability. Attribution to the person or to the object depends on whether experiences of the self or those of another are being considered. Through attribution an experience leads to further beliefs important for prediction and control.
3. Heider suggested the common-sense model for such causal attribution: the effect is attributed to the condition which is present when the effect is present and which is absent when the effect is absent. Therefore, failure on a task is attributed to the difficulty of the task rather than to lack of the person's ability, if he can perform other tasks that require some ability and if other persons who are considered to be able also fail on it. Adequate attribution requires an adequate data pattern of condition-effect changes, in which the presence and absence of the effect is correlated with the presence and absense of the condition or conditions. However, attribution based on a minimum data pattern is more common than we might suppose.
4. The attribution process is often based on a series of observations which can lead to a veridical assessment of the important features of the envi-

ronment. However, in many cases the attribution is also based on personal preferences, habits of thought, or needs. This results in distorted views. For example, attribution of enjoyment to the object provides the basis for a kind of egocentric attribution. Enjoyment may also be egocentrically attributed in such a way that the enjoyment fits the picture the person has of himself and his wishes or the way he thinks things ought to be.

5. Thus, the person interprets the proximal event in terms of the relatively invariant contents of his world which must be consistent with each other. This implies that the person has definite ideas about fittingness, about consonance and dissonance.

B. Balance

1. Heider proposed the hypotheses concerning the relations between unit formation and sentiments. A sentiment refers to the way a person, p, feels about or evaluates another person, o, or an impersonal entity, x. Sentiments can be classified as positive in a relation of liking between p and another entity, and negative in a relation of disliking. The main concepts used to account for the events which are linked by naive psychology to positive and negative sentiments are unit formation and balanced state.
2. Separate entities comprise a unit when they are perceived as belonging together. Examples of unit-forming factors are similarity, proximity, interaction, familiarity, common fate, good continuation, causality, ownership, set, and past experience. The unit relation between two entities is positive if they make up a cognitive unit. The relation is negative if the two entities are segregated.
3. By a balanced state is meant a situation in which the perceived units and

the experienced sentiments co-exist without stress toward change. Relations between p, o and x are of two kinds: sentiment relations and unit relations, which are expressed as represented in p's life space. A basic assumption is that sentiment and unit relations tend toward a balanced state. If a balanced state does not exist, then forces will arise to produce a tendency toward locomotion so as to change p's sentiment or unit relations or to produce a tendency toward change in p's perception of a sentiment or unit relation in which p is not a party. If a change is not possible, the state of imbalance will produce tension.

4. With the following hypotheses, Heider developed an insight into some of the conditions that determine perceptions in interpersonal situations:
   a. In respect of sentiments toward the same entity, a balanced state exists if positive (or negative) sentiments go together; a tendency exists to see a person as being positive or negative in all respects.
   b. In respect of sentiments toward an entity combined with unit formation, a balanced state exists if a person is united with the entities he likes and if he likes the entities he is united with; and the converse is true for negative sentiments.
   c. If two entities are seen as parts of a unit, a balanced state will exist if they are seen to have the same sign character; but if the two entities have different sign characters, a balanced state will exist only if they are seen to be segregated.
5. There is also a tendency toward balance between personal likes and desires and suprapersonal likes (normative or objective values) and desires (ought prescriptions); since suprapersonal likes and desires are more invariant, balance tends to be achieved in terms of them. This explains how social norms are reflected in personal likes and desires.
6. There can be several reasons for the discrepancies between these hypoth-

eses and empirical resulte: for example, negative attitude toward the self, contrast formation instead of unit formation, and ambiguity in the determination of the unit-forming factor and the sign character of the unit relation. For another example, a unit relation prescribed by the conditions of balance for one person may be excluded by the existence of a unit relation on the part of another person.

Ⅲ. Critique

Heider's book is a presentation of the implicit, naive, common-sense psychology of the individual's system of schemata. Since this system is at the conscious level, his analysis is a verbalization of what we are aware of. However, he did not succeed in providing a clear statement ——— he is sometimes unclear, unsystematic, or contradictory in his terminology. His work has breadth but lacks depth. Thus, it may be said that many of his examples are only the descriptions of states in the process of moving toward balance.

A problem with the structural criterion of balance is that there is no rule for determining which particular unit formation of the multiple structural relations between p and other persons and objects is determinative, or how structural relations combine. Heider also did not note the role of time relationships between relations and entities.

Heider did not concern himself with the relative intensities of his dynamic characteristics, either. Although he mentioned the fact that the unit relation is often weaker than the sentiment relation, the degrees of relations could not be represented.

Furthermore, the occurrence and strength of imbalanced sentiment relations would seem to be affected by sentiment uncertainty. In his work, no

consideration is given to the degree of certainty that the person attaches to his sentiments toward persons and objects. If the person is uncertain of his sentimetns, he may have a large range of tolerance for perceived imbalances.

Ⅳ. General Assessment and Overall Evaluation

Heider's theoretical work constitutes a bold and original application to the Gestalt views in social psychology that there is a tendency for orderliness and simplicity in mental organization. His ideas have a wide sweep, with implications for many aspects of interpersonal and intrapersonal systems, but he does not formulate them in such a way as to make their implications for practice and research self-evident. The unit formations and the sentiment relations are specified, however, as examples of what conditions predict imbalance. Thus, one could classify the various unit formations and sentiment relations in such a way as to make Heider's work more of an empirical theory.

The impact of Heider's work is largely to be found in the work of others. Although the body of work stemming from his work could be described as observational data consistent with the main lines of his thought or as experimental data consistent with the broad principle of balance, however, no systematic research program has been generated. The main body of work is also concerned only with interpersonal perception, though Heider's work is not inherently limited to the special case of interpersonal perception.

Milton J. Rosenberg and Robert P. Abelson

AN ANALYSIS OF COGNITIVE BALANCING [3)]

I. A Model of Attitudinal Cognition

A. Cognitive elements: some cognitive representation of things, concrete and abstract, which human thought must involve and to which some sort of verbal labels can be attached.

B. Cognitive relations: relations between cognitive elements which may be positive (p), negative (n), or null (o). Positive relations include "likes," "supports,""uses,""possesses,""promotes,"etc.; negative relations include "dislikes,""fights,""opposes,""inhibits,""hinders,"etc,; and null relations include "is indifferent to," "is not responsible for," "does not affect," etc.

C. Cognitive units or bands: pairs of elements connected by a relation ––– the basic "sentences" of attitudinal cognition which are of the form, ArB, where A and B are cognitive elements and r is a relation.

D. Cognitive balance and imbalance: cognitive elements have signs, positive signs (+) for elements eliciting positive affect and negative signs (−) for elements eliciting negative affect. There is a balanced band if two cognitive elements have the same sign and are positively related (+p+ or −p−) or if they have different signs and are negatively related (+n−); an imbalanced band if two cognitive elements have the same sign and are negatively related (+n+ or −n−) or if they have different signs and are positively related (+p−). There is an absence of a cognitive band if two signed elements are connected by an null relation. It would be expected, however, that a person may feel a force toward finding a relation between the two elements which would establish a balanced rather than an imbalanced band ––– "induction of new relations."

E. Redressing imbalance: it is assumed that there is the general tendency to

reduce or redress cognitive imbalance. However, potential imbalance will remain undiscovered by a person unless he thinks about the elements and relations in question. The three general outcomes of thought about cognitive imbalance are:

a. Changing one or more of the signs ---- the signs of either of the two elements or the sign of the relation between them;
b. Redefining or differentiating one or more of the elements;
c. Stopping thinking.

Since a person seeks a relatively effortless means to achieve balance, the first two outcomes are likely to occur under strong pressure to continue thinking. With weak pressure, a person will most likely stop thinking if certain signs are resistant to change and certain elements are difficult to redefine.

Ⅱ. Research Evidence

The two experiments were conducted by the authors with an attempt to study ideational processes in terms of the balance-seeking force as it interacts with aspects of cognitive structures. By structure they meant any plural number of bands in which each band shares one element with at least one other band.

A. Experiment 1

1. Hypothesis: "The order of preference for paths toward restoring an unbalanced structure to balance will correspond to an ordering of the paths according to the number of sign changes required, from the least to the most." (p.128)
2. Method: 99 Yale undergraduates were used as subjects (no sampling pro-

cedures). Each subject was given a pamphlet which told him that he was to play a role defined in terms of certain feelings and beliefs which constituted a cognitive structure with some built-in dilemma. The assigned role was that of "the owner of a large department store in a middle-sized, Midwestern city." As part of the content of the role, each subject was told to adopt a specific feeling toward each of three concepts. In the first place he was to place a high positive value on "keeping sales at the highest possible volume in all departments of your store" (S). Feelings toward the other two concepts were varied among subjects so as to constitute three different cognitive structures. One group of 34 subjects was assigned to feel positively toward modern art (A) and toward Fenwick (F), the manager of the rug department. The 33 subjects in a second group were required to feel negatively toward A but positively toward F. In the third group the 32 subjects were required to feel negatively toward both A and F. The assigned role, moreover, involved the following beliefs about the relations between the three concepts: "Displays of modern art in department stores reduce sales volume" (AnS); "Fenwick plans to mount such a display in the rug department" (FpA); Fenwick in his tenure as rug department manager has increased the volume of sales" (FpS). These three beliefs were identical for all subjects. In order to see whether each subject had successfully internalized the assigned structure, he was required to rate the concepts and state the relations between them. As the result, 17 subjects (12 in the first group; 1 in the second; 4 in the third) failed to reproduce the structures accurately and were eliminated from the experiment. Those subjects who had correctly internalized their structures went on to read the following three communications: (1) "modern art displays actually increase sales volume" (AS communication); (2) "Fenwick really does not plan to display modern art

in the rug department" (FA communication); (3) "Fenwick really has failed to maintain sales volume in the rug department" (FS communication). Directly after reading each communication the subject was required to rate it on three separate five-point scales in terms of how much it pleased him, how much it persuaded him, and how accurate it appeared to him. The mean ratings by the three groups of each of the three communications on each of the three scales and on the composite index computed by summing the three ratings were obtained. And, to assess statistical significance, four analyses of variance were carried out.

3. Findings: The order of acceptability for the communications to subjects was as follows: in the first group, AS, FA, FS; in the second group, FA, AS, FS; in the third group, FS, FA, AS.
4. Conclusion: The hypothesis was strongly confirmed. If only a single sign change was required, the communication advocating that change was most acceptable to subjects --- that is, the simplest resolution was the preferred one. The less simple resolutions implying two or three sign changes were preferred in order of their simplicity. It was concluded, thus, that "imbalance reduction within a structure of attitudinal cognitions will tend to follow a least effortful path." (p.133)
5. Interpretation: It would be noted that the subjects might feel hesitant at the prospect of changing their evaluations of the concepts because the communications rated were concerned only with the relations between concepts. The approaches to balancing the structures seem to involve changing evaluations of concepts as well as of relations. The data obtained, furthermore, show little about what happens after the least effortful countercommunication is accepted.

B. Experiment 2

1. Hypothesis: "Initial differences in the structure of attitudinal cognitions would be related to differences in the extent and type of final formal balance achieved by the subjects." (p.134)
2. Method: The total number of undergraduate subjects was 119 (no sampling procedures). Group 1, 2, and 3 were assigned to role-play the same three cognitive structures used in the experiment 1. The actual structure-establishing communications were similar to those used in the experiment 1. As in the experiment 1, after reproducing the assigned structure, each subject received the three separate countercommunications, one of which presented the same relation between displaying modern art and sales volume as that in the AS communication used in the experiment 1. The other two countercommunications, which were similar to the FA and FS communications in the experiment 1, were: "Fenwick really will be prevented from displaying modern art" (FA); "Fenwick's sales record is really a very bad one" (FS). For observation of changes in cognitive structure, an instrument was administered at two points during the experimental sequence; immediately after the subject had read the structure-establishing communication and after he had completed his evaluations of the countercommunications. The instrument contained separate rating scales for evaluations of the three concepts, "high sales volume," "modern art," and "Fenwick," and of the three relations between these concepts. The subjects' evaluative responses to the three countercommunications were also examined by using the same scales as those used in the previous experiment. The additional three groups (1', 2', and 3') were exposed and tested on the same materials except that the single unbalanced relation in each of the three structures (AnS in the structure 1, FpA in the structure 2, and FpS in the structure 3) was more strongly established by supporting that relation with more extreme and

extensive evidence than in groups 1, 2, and 3. 72 subjects were retained in the final analysis since 47 failed to reproduce the assigned structures. The mean ratings by the six groups of each of the three countercommunications on each of the scales and on the composite index were obtained. For an assessment of statistical significance, two analyses of variance of the composite ratings were carried out. The before-after changes in group mean ratings of each of the three concepts and three relations were also examined.

3. Findings: Groups 1, 2, and 3 showed substantially the same pattern of response to the countercommunications as their counterparts in the experiment 1 except that in group 3 the FA communication was rated as high as the FS communication. Groups 1', 2', and 3' manifested less preferenc for the separate communications which would restore their respective structures to balance than did groups 1, 2, and 3. The high receptivity of group 3 to the FA communication was replicated in group 3'.

   Examining the signs of the subjects' ratings of the three concepts and their three relations, it was found that only among the subjects assigned to groups 1 and 1' was there an impressive number of subjects who achieved completely balanced final structures (16 of the 26 subjects in groups 1 and 1'; 6 of the 24 subjects in groups 2 and 2'; 4 of the 22 subjects in groups 3 and 3'. All of the relations changed in the directions advocated by the respective communications. However, the patterns of mean changes displayed considerable irregularity from making for attainment of structural balance.

4. Conclusions: The major findings obtained in the previous experiment were strongly confirmed. Moreover, subjects who needed a certain communication to balance their structures were in general more receptive to it than those for whom it did not offer a balanced resolution. In resolv-

ing cognitive discrepancies, however, subjects did not seek only the attainment of cognitive balance. From this fact, the assumption that persons holding unbalanced cognitive structures are motivated to return these to balance seems to be part of a more complex story.

5. Interpretation: The irregularities of relation changes from making for attainment of structural balance seem to suggest, in addition to a force propelling the person toward the redress of imbalance, another force which may drive him toward the maximization of potential gain of sales and the minimization of potential loss of sales, the dominant value for the store owner. When both forces converge so that they may be gratified through the same change or changes a balanced outcome might be achieved. When these forces diverge, however, the outcome might not meet the requirements of a formal definition of cognitive balance.

Ⅲ. Implications

A. The dual-force conception: the acceptability of an unbalanced structure may depend largely upon whether the single hedonic band to which it is reducible is balanced or unbalanced.

B. A microprocess analysis of cognitive balancing: a microprocess analysis will expose the complex interplay between the balance tendency and the forces preventing the attainment of balance. It is assumed that imbalance can be analyzed as one or more ambivalences. By ambivalence the authors mean the simultaneous presence of positive and negative affect in reaction to a cognized object. When concept A induces charge (affect with a sign and magnitude) onto concept B such as to create ambivalence on concept B, they refer to B as the "threatened concept," to A as the "intrusive concept," and to the relation between A and B as the "intrusive

relation." Then they suggest the following four microprocesses through which unbalanced bands are restored to balance.

1. Altering the intrusive relation: this process would require denial of the intrusive relation with some support which might be found in two ways; by disclaimers and/or by direct assertion of the opposite. What these two types of support have in common is an appeal to additional or alternative relations which make possible the denial of the unbalancing intrusive relation.
2. Altering the charge on the intrusive concept: This process has to do with the concept giving rise to the intrusion. Some cognitive materials make possible the assertion of a sign opposite to the original sign of the intrusive concept since a cognitive concept usually contains subparts by which it is denoted and frequently lies within a nexus of relations with other concepts. Through this process, the threatened concept may be insulated from the charge of the intrusive concept.
3. Isolating a subpart of the threatened concept: this process involves isolating the subpart of the concept receiving the intrusive charge from the remainder of the concept. If ambivalence is the heart of imbalance, then the existence of a subpart with the wrong sign implies further imbalance. To avoid this imbalance, it is necessary for a barrier to be imposed between the subpart and the remainder of the concept.
4. Bolstering the threatened concept with a reassuring charge: this process of counteracting the intrusive charge does not resolve the imbalance but protects against the running-down of a concept sign by restoring some of the affect that has been lost. This process may be used in conjunction with the other processes mentioned above.

Conditions under which the microprocesses are employed should be tak-

en into account; for all individuals in some cognitive areas there is not available a file of learned distinctions, categories, relations, etc. with which the microprocesses can be employed. For example, the resolution of imbalance by the imposing of a barrier between the subpart and its reference concept may be impossible by virtue of a lack of the necessary file material, a general characteristic of conceptual inflexibility, or the strong unity between concept and subpart. The general sequence of operations in all of the processes may be represented as: "search" for balance-appropriate material; "reality test" of such material; and "application" of the material if it satisfies the reality test.

C. Failure to redress imbalance: the impossibility of imbalance resolution may be due to the comparative emptiness of the appropriate "cognitive files." Such appropriate cognitive files may be unavailable because of the paucity of associated distinctions and differentiations, or because of the functional stupidity and cognitive rigidity. Thus, some kinds of emotional conflict may be understood as cognitive imbalances that can not be resolved. Two likely outcomes of failure to redress imbalance are suggested: delayed rejection of the communications on the basis of which the imbalance was aroused; if this is impossible, mechanisms of inattention and deverbalization may be employed.

D. Alternative research approaches: at least three research strategies are available by which a model of attitudinal cognition may be put to further test.

1. The use of subjects' real attitudinal-cognitions about real-world issues.
2. The role-playing operation to avoid the complications of idiosyncratic cognitive histories which cannot be completely compared.
3. Producing cognitive imbalances by situational manipulations instead of verbal materials.

Ⅳ. Critique

It is difficult for the experimental tests of a model to collect elaborate data without causing subjects to produce artificial reactions not representative of the life situation. For this, investigators are often committed to deception. However, not all subjects are deceived. It seems relatively easy for most people to do a satisfactory job of playing a role if that role is well described and draws on their past experiences. Thus, the role-playing design used in Rosenberg and Abelson's studies seems to permit the test of detailed implications without using deception techniques.

Rosenberg and Abelson showed the solution that maximizes gain and minimizes potential loss as well as the solution that requires the least effort in order to restore balance. However, the results of further experimentation seem necessary to determine the specific conditions under which the principle of least effort or hedonic gain will act.

Ⅴ. General Assessment and Overall Evaluation

The Rosenberg and Abelson's approach is closely related to the Heider model. However, the Rosenberg and Abelson model differs from the Heider model in that the objects themselves have positive or negative charges. It can be noted, for example, that the association in a unit relation between objects that elicit positive sentiments in the Heider model is equivalent to a positive relationship between two objects of the same sign in the Rosenberg and Abelson model.

The Rosenberg and Abelson model allows for such plausible outcomes as differentiation and stopping thinking. This is an advantage of the model. However, the model does not predict which of the three major out-

comes ― ― ― change of a sign or signs, differentiation of an element or elements, and stopping thinking ― ― ― will occur in a given case of cognitive imbalance. The model says that any one of rather general things can happen as an outcome of imbalance.

The gain in flexibility leads to a loss in precision. It would be the position of Rosenberg and Abelson, however, that it is better to lose precision than to gain it by a set of unjustifiable assumptions.

Charles E. Osgood, George J. Suci, and Percy H. Tannenbaum
THE PRINCIPLE OF CONGRUITY [4]

Ⅰ. Nature of the Congruity Principle

The general congruity principle is stated as follows: "Whenever two signs are related by an assertion, the mediating reaction characteristic of each shifts toward congruence with that characteristic of the other, the magnitude of the shift being inversely proportional to intensities of the interacting reactions." (p.200)

A. Assertion as a condition for cognitive interaction: each assertion is signed positively (associative assertion) or negatively (dissociative assertion), which corresponds to the basic distinction in all languages between affirmation and negation. The forms that assertions may take are simple linguistic qualification, simple perceptual contiguity, statements of classification, source-object assertions, and more complex statements which may include several overlapping assertions.

B. The direction and location of congruence: "Whenever two signs are related by an assertion, they are congruent to the extent that their mediating reactions are equally intense, either in the same direction of excitation in the case of associative assertions or in opposite directions in

the case of dissociative assertions." (p.203) "Intensity" is assumed to be coordinate with extremeness ("polarization") of judgment in the measurement space.

Ⅱ. Coordination with Measurement Operations

Each sign is given an evaluation of positive, negative, or neutral, and also, except for neutral cases, an intensity of evaluation, p, usually chosen from three scale values of increasing intensity. Thus, p has a range from −3 to +3. The location of congruence, pc, is defined as follows: for associative assertions, pc1=p2 and pc2=p1; for dissociative assertions, pc1=−p2 and pc2=−p1, where the subscripts refer to signs 1 and 2 respectively. Therefore, the position of congruity is always equal in degree of polarization to the other sign, in either the same or opposite directions.

The total amount of "pressure of incongruity," P, is always equal to the difference between the existing location of each sign and its location of maximal congruity. That is, for associative assertions, P1=p2−p1 and P2=p1−p2; for dissociative assertions, P1=−p2−p1 and P2=−p1−p2. However, this total "pressure" toward congruity is not distributed equally among the signs included in an assertion. The principle stated that the magnitude of shift toward congruity is inversely proportional to the original intensities of the two interacting evaluations. The following equations take into account this inverse proportionality and predict the amount and direction of the shift:

$$C1 = \frac{|p2|}{|p1| + |p2|} P1 \quad \text{and} \quad C2 = \frac{|p1|}{|p1| + |p2|} P2,$$

where C stands for "change."

Ⅲ. Congruity and Learning

It is not expected that one instance of interaction will produce a permanent change which will be evident when the two signs are later responded to in isolation. However, it may be expected that they will show a tendency to do so. In order to express this tendency, the authors present a "congruity-learning principle" which states that "Each time two signs are related in an assertion, the intensity of the mediating reaction characteristic of each in isolation is shifted toward that characteristic of each in interaction, by a constant fraction of the difference in intensity." (p.208)

Ⅳ. Some Limiting and Parametric Conditions of Congruity

A. Contiguity of signs in assertions: the degree of contiguity of signs in both time and space should affect the magnitude of congruity effect predicted.

B. Intensity of assertion: the intensity of either associative or dissociative assertions can be modified by operating on the kind of assertive action in perceptual situations.

C. Credulity of assertions: the congruity hypothesis assumes complete credulity of assertions on the part of subjects. But this is not the way human receivers handle grossly incongruous messages. The typical way may be to discredit the given or implied source of the assertion as a whole or, allowing the subject to retain his existing frame of reference, to rationalize the assertion. Another reaction to highly incongruent assertions may be blank bewilderment and failure to understand what was said. The authors assume on intuitive grounds that an extremely incongrous assertion is disproportionately much less credulous than a mildly incongruous assertion.

D. Relevance of the assertion: the relevance of the signs related to each other influences the magnitude of the congruity effect. It seems likely that the congruity effect will be greater in the relevant assertion than in the non-relevant assertion.

E. Meaning of the copula or action itself as a variable: the linguistic copula or the assertive action itself has meaning apart from its associative or dissociative function and thus participates in cognitive congruity interactions. In the case where a source makes an assertion about a concept, it seems likely that the concept would absorb more of the copula effect than the source.

V. Critique

The congruity principle makes quantitative predictions in terms of the location of attitudes on an intensity continuum. However, there is no provision for variation of intensity in a band. The amount of change resulting from a band may be responsive to the intensity of the band. Moreover, the importance of the attitudes to the individual is not formally taken into account, either.

The changes predicted by the principle are movements toward congruity. However, as Rosenberg and Abelson noted, differentiation is often a response to pressures of incongruity. The principle makes no provision for differentiation as a reaction to incongruity.

VI. General Assessment and Overall Evaluation

The congruity principle handles both associative and dissociative events with the same principles of congruity and relative polarization. The opera-

tions are not ambiguous. Thus, it can be said that the principle presents the clarity and economy of its formal properties.

The congruity principle is unique in that under incongruent circumstances both of the two signs will change ... each will change to a specified extent which is related to the extent of the other's change. Thus, one can be more specific about the direction of sign change and about which sign will change more.

Osgood et al. delimit themselves in permitting the extent of change of the two signs only in one specified way. A modification would fulfill the congruity prediction to a relatively high extent but not to the complete extent. Predictions would be often made to be fulfilled by a range of results rather than a point. Osgood et al. obtain greater precision, but limit the generality of their predictive device in so doing.

A Comparative Analysis of "DISSONANCE," "BALANCE," and "CONGRUITY"

A critical analysis of the models of dissonace, balance, and congruity has been ably done before: for example, Osgood,[5] Zajonc,[6] Brehm and Cohen,[7] Brown,[8] Pepitone,[9] or Aoi.[10] They have traced the theoretical development of the models and attempted the critical review of the experimental literature stimulated by them. In this section, therefore, only some major problems of the models will be discussed in terms of their similarities and differences.

At the core of dissonance, balance, and congruity models is the postulate that individuals strive toward attaining equilibrium among cognitions of themselves and of objects or persons in their environment. Disequilibrium results in discomfort and disturbance. Thus, these models can be said to be

cognitive in the sense that the pressures to reduce dissonance, to restore balance, or to achieve congruity originate and operate in the cognitive structure of the individual.

These models, however, differ in their specification of the elements which make up the disequilibrium. While the congruity or the balance model has potential generality across all attitudes, for example, disequilibrium attitudes do not exhaust the kinds of dissonances. The unrestricted generality of the dissonance model with respect to the elements of disequilibrium may create problems on the experimental plane. There is, however, a palpable advantage to generality concerning dissonance-forming cognitions... whatever cognitions are observed to have the effects can be accepted into the model. The relatively restricted domain of interest may exercise a selective bias in understanding what kind of cognitive elements can be consonant and dissonant.

A comparison of the paradigms of Heider and Osgood et al. shows that the two are largely equivalent, although Osgood et al. restrict the usage to a particular case, whereas Heider, with greater generality and less precision, spreads it over many possibilities. For example, the situation where p likes o, p disapproves a lie, and o tells a lie is an unbalanced triad for Heider because it contains two positive and one negative relations. Osgood et al. in this situation suggest three more sign characteristics, those of p, o, and x: p and o are positive elements, and x is a negative elements. Osgood et al. then say that the fact o tells a lie itself represents an incongruent situation because it contains only one negative sign, and that we can discard the rest of the triad. However, the rest of the triad is still necessary. The fact that o tells a lie provides us with one of the signs, the positive relation between o and x. Moreover, the positive relation attributed to o comes from the fact that p likes o, and the negative characteristic of x comes from the fact that p

disapproves a lie. Thus, it seems that the incongruity of the fact that o tells a lie depends on the signs established by all three statements together. Festinger would analze this situation by saying that p's cognitive element involving o and p's cognitive element invloving x is dissonant if they are relevantly related, and that such a relation is established by the third statement. Festinger applies no signs, saying that the obverse of one element follows from the other. He also says that the fact that o tells a lie does not link o and x but links the two cognitive elements, from p's point of view. Heider also looks at the situation from p's viewpoint. But Osgood et al. would like to develop a model in which the situation can be regarded from any point of view. For Osgood et al., the fact that p likes o may be analyzed as any of the following: +p+, +p−, −p+, or −p−. Thus, the sentiment relationship of Heider is only one of the three significant factors, the other two of which Heider does not incorporate into his model.

It is intruitively obvious that predictions as to whether or not the person will act and as to how he will act depend upon the degree of significance the disequilibrium has for him personally. The Heider model does not make any provision for the fact that imbalances vary in importance. For example, no account is taken of the intensity of the sentiment relations, reflecting their importance, in the definition of imbalance. Imbalance is defined qualitatively only. The congruity model makes quantitative predictions, but the importance of the attitudes to the individuals is not formally taken into account. In the dissonance model, the dissonant cognitions are said to be weighted by their importance. However, the method of weighting the cognitions and that of defining importance is unspecified. It should be noted, therefore, that the models either do not deal with the problem of importance or deal with it inadequately.

The question also arises as to whether equilibrium is a need in itself or

pressure toward equilibrium can be reduced to a more basic need or needs. Heider considers the strain toward balanced sentiments as a reflection of a basic tendency toward greater "perfection." The meaning of perfection comes closest to the idea of "self-actualization" as part of the nature of man. Such an organismic formulation tends to preclude a specification of the conditions under which balance pressures occur. Furthermore, the idea that balance-seeking is perfection-seeking may be tautological without detailed criteria as to the meaning and measurement of perfection. A basis of congruity-pressure is said to be a need to simplify the cognitive structure. The idea that equilibrium-seeking reflects a drive toward simplification is reminiscent of the law of"least action." The problem with cognitive simplification as a basis for congruity-pressure is that the attainment of congruity often entails considerable effort and complications. In the statement of the dissonance model, Festinger implies that there is no more basic motivation that underlies dissonance-reduction. In his statement, however, there is no attempt to characterize dissonance as an innate or an acquired motivation. Before concluding that there exists a motive force toward equilibrium, it seems necessary to determine whether or not such a motive can be reduced to some other basic motive and whether or not some other explanations can account for its effects.

In addition to the essential nature of the disturbance, the effects of the disturbance should be taken into account. It seems fair to say that the models of dissonance, balance, and congruity can not predict the apecific manner in which equilibrium among cognitions will be achieved. The problem of how disequilibrium is resolved has often been discussed abstractly in terms of"least effort." The congruity model suggests that it is the weakest sign that is changed to bring about congruity, but the problem is not simple. There exists the possibility of multiple sign changes. On this point, evidence is giv-

en by Rosenberg and Abelson to the effect that the balance-seeking response involving the least number of sign or sentiment changes is preferred. However, single and multiple sign changes do not exhaust the changes that can be made to achieve balance. Structural changes are also possible: for example, p could expel o from the unit formation in his cognitive structure. Whether the person will make structural changes or will change his sentiments may not involve a simple prediction. Furthermore, the prediction may be complicated by the possibility of the "stop thinking" mode of resolution. It would seem that this mode of resolution occurs when other modes are blocked or when imbalances are trivial. In this regard, a great deal of further specification is necessary.

It may be impossible to disprove any cognitive model discussed above at the level of a single dimension of equilibrium-disequilibrium. This would mean that the models could be regarded as useful if they were expanded from examinations of single dimensions to examination of the relationships among all relevant dimensions.

NOTES

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