

INTERPERSONAL ATTRACTION

203

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The expansion of interest in attraction research is best shown by the positively accelerating curve of references in psychological and sociological journals. From the widely scattered correlational studies in the first half of this century to the somewhat more numerous experimental investigations of the 1950s and early 1960s to the present deluge, attraction research shows no sign as yet of reaching asymptote. In preparing the first chapter on this topic for the *Annual Review of Psychology*, it became clear that a simple listing of only the directly relevant references would easily consume the total page allotment. In order to avoid that very tempting alternative, we have chosen as a primary focus the experimental work of the past 10 to 15 years which deals specifically with attraction. One unfortunate result of such selectivity is the total omission or barest mention of several closely related areas of research.

To obtain a more extensive view of the field, the reader is advised to examine recent reviews of areas such as impression formation (4), person perception (145), social perception (146), sociometric choice (105), ingratiation (84), marital success (73, 100), and social attraction in animals (96). More general reviews of attraction research have been provided by Aronson (6), Berscheid & Walster (13), Byrne (18, 19), and Taylor (147). In addition, two collections of original theoretical presentations edited by Huston (80) and by Murstein (118) constitute extremely useful and wide-ranging summaries of current work. A possible sign of the intensity of current interest is the proliferation of theoretical criticisms directed at one or more aspects of the work on attraction (8, 88, 101, 119, 158), often followed by a reply, rejoinder, or counterattack (20, 26, 31).

Attraction research may be conceptualized as an effort to establish and explain the relationship between certain classes of antecedent events and certain classes of consequent events. The present review will be organized around four topical areas: (a) the types of responses defined as indicators of attraction; (b) the stimulus variables identified as antecedents of attraction; (c) the consequences of attraction (i.e. behaviors mediated by attraction); and (d) theories which attempt to provide a general conceptual framework for the attraction process.

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MEASUREMENT OF ATTRACTION RESPONSES

Interpersonal attraction is a construct referring primarily to an individual's affective evaluation of another individual. At the operational level, attraction has been measured in many different ways by numerous investigators and sometimes in many ways even by the same investigator.

Verbal measures.—The most widely used measurement technique relies on a simple scaling of verbal responses expressed in terms of ratings or judgments of the target person on one or more dimensions. On social distance measures, respondents indicate their willingness to engage in activities of varying degrees of social intimacy with a target person. These instruments are described by their proponents (142, 151) as more personally involving than verbal rating scales which call for statements of evaluation and general liking.

With sociometric techniques, subjects are asked to indicate their choices of individuals as friends, leaders, group members, and work partners. The historically important role of this measurement technique, as well as an analysis of its advantages and disadvantages, has been provided by Lindzey & Byrne (105).

When target persons are rated on bipolar scales of positive and negative adjective trait combinations, interpersonal evaluations are indicated by summed ratings across many scales or a series of ratings on individual scales (62, 83, 97, 98, 122). Still other verbal indices utilized as measures of attraction include heterosexual dating preferences (12, 116, 153), roommate preferences (123, 139), the positiveness of adjectives generated to describe targets (3), affiliative choices (160), interview assessments of likability (7), as well as somewhat more elaborate measures of love (131) and friendship (157).

The single measure of attraction used most frequently and about which the most extensive empirical data are available is the Interpersonal Judgment Scale (19). This instrument is a six-item Likert-type rating scale on which subjects evaluate target persons on seven-point dimensions of intelligence, knowledge of current events, morality, adjustment, likability, and desirability as a work partner. Scores on the latter two sociometrically oriented items are summed to yield an index of attraction with a split-half reliability of .85. This attraction measure has been found to be related to a number of other measures designed to assess attraction such as: social distance scales; social choice; ratings of desirability as a date, sexual partner, and spouse; voluntary physical proximity; eye contact; the affective dimension of the semantic differential scale; voting choices; and a number of additional verbal and nonverbal behaviors (19).

Kiesler & Goldberg (90) factor analyzed a variety of response measures typically utilized as measures of attraction and extracted two factors. The first, characterized as primarily socioemotional, included such variables as liking, desirability of the target's inclusion in social clubs and parties, seating choices, and lunching together. The second factor included variables such as voting for, admiration and respect for, and seeking the opinion of the target. The latter factor

was conceptualized in terms of task orientation or respect for the target. In view of the variety of verbal measures of attraction which have been devised, such attempts to examine the generality of any given index or combination of indices constitutes a valuable contribution.

Some investigators (6, 85, 86, 136) have questioned the use of measures of attraction which rely upon verbal assessments. There is concern that verbal measures are highly susceptible to demand and bias effects due to the ease with which the response is recorded and the possibility that subjects attempt to hide their "true" feelings. Assuming that true feelings exist, that subjects are aware of them, and that subjects would rather reveal their feelings than be second-guessed by a machine, Jones & Sigall (86) propose the use of the bogus pipeline technique as a sensitive index of attraction. Briefly, the technique involves convincing subjects that the machine functions as a "pipeline to the soul" and then requiring them to estimate the meter readings which the machine is purportedly providing to the experimenter. Preliminary findings suggest that attraction as measured under bogus pipeline conditions differs from attraction as measured by the usual verbal response scales (85, 136). The suggestion that the bogus pipeline assesses "true" feelings is, however, questionable unless one views attraction as some real entity instead of simply as a useful construct.

Nonverbal measures.—Several nonverbal behaviors have also been utilized as measures of attraction. Among the proposed indicants of attraction are visual contact (49, 51, 53); physical proximity (21, 29); bodily postures such as forward and backward lean, relaxation, and arm position (112); placement of silhouette figures in hypothetical social situations (102, 103, 106); and physiological responses (44, 55).

Among the few attempts to study the interrelationships among these nonverbal indices are studies of bodily and posture variations (112) and of the relationship between visual contact and seating proximity (65). Because such measures are related to verbal attraction measures somewhat weakly and often in a rather complex fashion, these behavioral measures cannot be considered as interchangeable with verbal assessments. No one has maintained that attraction is a single-faceted construct or that any existing measure is inherently superior to all others. It does appear, however, that the unsystematic proliferation of attraction indices without consideration of their comparability has not facilitated the creation of a cumulative set of meaningfully interrelated empirical relationships.

STIMULI ELICITING ATTRACTION RESPONSES

Attraction has been found to be a function of the relationship between the target's characteristics and the respondent's own characteristics, specific characteristics or behaviors of the target individual, stimulus conditions not directly attributable to the target, and to personality characteristics of the respondent.

Relationship between characteristics of target and respondent.—The similarity or dissimilarity of the attitudes of the target and the respondent has received the

greatest amount of empirical attention in research to date. The reason for this interest seems to lie in the apparent ubiquity of the similarity-attraction relationship, the reliability with which the effect is obtained, and the ease with which such variables can be manipulated experimentally. Several decades of correlational research on this topic culminated in Newcomb's (120) partially controlled field study in which previously unacquainted students were given rent-free accommodations in a cooperative housing unit in return for their participation as research subjects. The attraction patterns which developed within the group were found to be positively related to preacquaintance similarity across a variety of attitudinal issues and, more strongly, to agreement in assessing other house members. These findings were later replicated (46).

Attraction, as assessed by the Interpersonal Judgment Scale, has repeatedly been found to vary as a positive linear function of the proportion of shared similar attitudes or opinions between subject and target (19). Typically, subject attitudes are assessed in a preliminary session and the simulated attitudes of an anonymous target are presented to the subject at a later time. The relationship between proportion of similar attitudes and attraction has been obtained when the attitudinal information concerning the target is transmitted via mimeographed attitude scales, tape recordings, movies (22), closed-circuit television (74), face-to-face interactions involving a confederate (8, 31) and when "real life" individuals express their own attitudes in face-to-face interactions (17).

Detailed analyses of the attitude-attraction relationship have demonstrated that the importance of specific attitudinal topics influences attraction responses only when agreement by a target is at an intermediate level between .00 and 1.00, the attitudinal items are heterogeneous in their importance, and when items of differential importance systematically are associated with similarity-dissimilarity. When these conditions prevail, agreement on important issues exerts a relative effect on attraction approximately three times that of unimportant issues (38). Other analytic research indicates that attraction is influenced by seemingly small discrepancies of attitude position in addition to general agreement or disagreement (25) and by structural similarity, the pattern of interrelationships of attitudes (148). Such analyses have made it possible to express the attitude-attraction function in relatively precise mathematical terms.

The basic similarity-attraction relationship is found to be quite general across a variety of subject populations. The linear function has been found to hold among children down through the fourth grade level (32); among low socioeconomic status individuals such as Job Corps Trainees and among alcoholic and schizophrenic hospital patients (35); among Japanese, Indian, and Mexican students (30); and among senior citizens (66).

Three basic research designs have been utilized to study the influence of personality similarity on attraction. In one approach, existing attraction pairs such as friends, fiancées, or spouses are selected and then assessed with respect to one or more personality variables; the scores of the series of pairs are correlated. In a second approach, the personality measure or measures are obtained, and then

previously unacquainted subjects are selected on the basis of their test scores and placed in an interactive situation, followed by an assessment of their attraction. Unlike analogous field studies and interactive studies with attitudes, inconsistency has characterized the findings obtained when either of these designs is used. For example, data have been reported supporting the notion that similarity of personality characteristics fosters attraction (9, 82, 113). Other studies have indicated that complementarity of personality is associated with attraction (156). Still other findings suggest that both similarity and complementarity of personality lead to attraction (89). Finally, no relationship between personality and attraction has been obtained in a number of studies (75, 76). There are two basic flaws in each of the two designs which make it impossible to answer the prototypic question concerning the effect of personality similarity on attraction (36). In neither design is there control of the additional stimulus determinants of attraction beyond the small array of personality characteristics under study, and the relationship between the personality-relevant behavior of the subject and that of the target is unknown or nonexistent. In research utilizing a third design, these two problems have been eliminated. Here the subject's personality-relevant behavior consists of his responses to the instrument used to assess personality characteristics, and he is subsequently exposed to the responses of the target on the same instrument with other stimulus elements controlled experimentally. With this design it has been shown that attraction is positively related to similarity along such dimensions as self-concept (57, 58), repression-sensitization (33, 36), Marlowe-Crowne need for approval (54, 123), self-esteem (72), ability (128), and dominance-submissiveness (126). It has also been possible with this design to isolate a few variables on which the effect of similarity varies in part as a function of the subject's standing on the personality dimension in question (71, 72, 127), specifically introversion-extraversion, self-esteem, and internal-external control.

In addition to studies of attitudes and personality characteristics, similarity along a number of other dimensions has been found to be positively related to attraction. Examples include economic status (27), relatively simple behavioral acts (79), task performance (134, 159), emotional states (160), and perceived social desirability of self and target (12, 116). It is clear that, with respect to many variables, similarity tends to be preferred to dissimilarity, at least in the kind of experimental situations normally employed.

Characteristics or behaviors of the target individual.—Attraction has been shown to be positively related to the physical attractiveness of targets in several investigations. In response to photographic stimuli, both male and female subjects indicated greater attraction toward physically attractive same and opposite-sex targets than toward unattractive ones (39). In later research, more extreme differences in physical attractiveness and only opposite-sex targets were used; it was reported that attractiveness effects on the work partner scale and measures of the target's desirability as a dating and marriage partner are stronger for males than female subjects (144). Physical attractiveness seems to play an especially

strong role in the dating situation. In studies of a prospective date whose photograph was available (116), actual partners in a computer dating experiment (29), and actual dates at a computer dance (155), physical attractiveness was found to be a strong and consistent determinant of interpersonal attraction.

Interest in the effects of racial characteristics on attraction has been intensified by the race-versus-belief controversy initiated by Milton Rokeach and Harry Triandis. The issue was whether racial membership (black versus white) or attitudinal similarity-dissimilarity constitutes the more powerful variable in the determination of interracial attraction. Rokeach, Smith, & Evans (130) reported that the effects of racial membership were largely outweighed by attitudinal similarity-dissimilarity in the determination of friendship choices. Triandis (150) utilized a social distance measure and concluded that race has a greater effect than beliefs; it was later suggested that the results obtained are largely dependent on the response variables in that different responses are influenced by different stimuli (151). The issue nevertheless remains alive and well in social psychology, and subsequent investigators have noted several reasons why the findings have differed from laboratory to laboratory (70, 81, 142), primarily revolving around differences in stimulus presentations and in the assessment of the dependent variable. Byrne & Ervin (28) pointed out that the effects of race and belief are relative and vary as a function of the views attributed to a black target person and to the prejudice level of the white subject. For example, there is no effect of Negro racial membership on the attraction responses of low prejudice subjects, while for high prejudice subjects such information exerts a negative influence on attraction approximately 11 times that of the positive effect of a single attitudinal agreement. With a sufficient number of attitudinal agreements, it is thus possible to mitigate or even nullify the prejudice-racial membership interaction; conversely, with a small amount of attitudinal agreement, the effect of race will be strongly evident for subjects high in prejudice.

In addition to physical attractiveness and racial membership, the influence of several other target characteristics on attraction has received some attention. For example, both males and females respond more positively to targets who maintain eye contact with them, and they prefer opposite-sex individuals with dilated pupils to those with nondilated pupils (141). In another study, a gazing interviewer was rated more positively than a nongazing interviewer when the interview content was favorable, while the reverse relationship was obtained when the interview content was unfavorable (50). Males were found to rate photographically depicted males more positively when the irises were light than when they were dark (87). Other nonverbal characteristics and behaviors of targets such as standing posture, arm position, bodily relaxation (112), smiling (77), and vocal attractiveness (97) also have been found to influence interpersonal responses. Presumably, such attraction influences are the result of the subject's past experiences with and expectancies concerning the consequents of these stimulus characteristics of the target.

While the target person's prestige has been found to have a positive effect on

attraction (15), prestige effects are negligible when the subject is also provided with information about the stranger's attitudes (34). In other studies, attraction has been found to be positively related to the scholastic and intellectual competence of the target (63, 125). Novak & Lerner (122) were able to demonstrate that the similarity-attraction relationship is less when the target is described as emotionally maladjusted, though this finding has been shown to be a function of the type and quantity of stimulus information available to the subject (37).

The target's evaluations of the subject's personal attributes are found to have a very strong effect on attraction. Positive evaluation elicits much more positive responses than negative evaluation when received by the subject in paper and pencil form (40, 61), in face-to-face situations (8, 31), and when they are overheard by the subject (7). Cognitive consistency theories predict that subjects will respond positively to the favorable evaluations of others only if the subjects positively evaluate themselves. This congruency hypothesis was tested by Deutsch & Solomon (48) in a situation in which the subjects were led to believe that their actual task performance was poor or good. Their performance was subsequently evaluated either positively or negatively by a confederate. When task performance was actually good, positive evaluators were liked more than negative evaluators, but no differences in liking for the two kinds of evaluators were found when task performance was poor. Support for the hypothesis was somewhat weak in that negative evaluators were not actually liked more than positive evaluators in the poor performance condition. In attempts to replicate these results, it has been found that positive evaluators are liked better than negative evaluators in both conditions (137). Some support for the hypothesis may be found, however, in studies involving role-playing strategies (14, 111).

Stimulus conditions not directly attributable to the target.—The influence of experimentally induced emotions and drives on attraction has been investigated primarily in research testing hypotheses derived from a reinforcement-affect model. Griffitt (60) manipulated feelings of comfort-discomfort through variations in ambient temperature and found attraction toward targets to be more negative under hot than under normal temperature conditions. In a second study (67) the temperature effect was replicated, and it was additionally found that attraction responses were more negative under extremely crowded than under less crowded conditions. The greater the reported degree of discomfort and feelings of unpleasantness, the more negative the response to the target, thus supporting the hypothesis that attraction is mediated by affect. Further support is provided by an experiment in which moods of elation or depression were induced by means of motion pictures, followed by an attitude-attraction task (56). Depressed subjects repounded more negatively to targets than did elated subjects.

The role of sexual arousal in the determination of attraction responses has been the subject of recent experiments (68). Sexual arousal was manipulated by exposing subjects to either a series of erotic literary passages or to a series of non-erotic control passages. Immediately afterward, attraction was assessed toward

same or opposite sex targets holding similar or dissimilar attitudes. For male subjects, attraction was not influenced by sexual arousal nor by the sex of the target. Females responded more positively to male than to female targets when sexually aroused, as well as more positively to male targets when aroused than when not aroused. In subsequent work (65), sexually aroused males and females were found to look more frequently at opposite sex targets than did control subjects. Sexual arousal has also been shown to influence male's perceptions of female targets (143).

Another manipulation of interest is that of temporarily induced changes in self-esteem and its effect on attraction (83, 152). Subjects whose self-esteem was lowered (by faked personality test feedback) responded more positively to an accepting target than did subjects whose self-esteem was raised. Also, subjects with raised self-esteem responded more positively to targets whose evaluations of them were ambiguous than did lowered self-esteem subjects.

It has been proposed by Byrne & Clore (23) that the attitude-attraction relationship is mediated by effectance motivation which refers to a learned drive to be logical, to make a correct report of one's environment, and to form and maintain valid attitudes and opinions concerning the relatively ambiguous social environment. Agreement elicits positive responses through consensual validation of opinions, while disagreement elicits negative responses through consensual invalidation of one's attitudes and opinions. Assuming that effectance motivation is aroused by exposure to unpredictable environmental conditions, the investigators presented subjects with either a specially prepared film composed of meaningless visual and auditory sequences or with a predictable film concerning life in Morocco. All subjects afterward responded to attitudinally similar or dissimilar targets. While it was expected that the similarity-attraction relationship would be stronger as effectance level increased, it was found that similarity and attraction were most strongly related for moderately aroused subjects. It was suggested that the high arousal subjects were so confused and disoriented that attention to target information was attenuated, thus leading to less polarized attraction responses. Later work has extended some of these findings (135).

Darley & Berscheid (47) investigated the effects of anticipation of future contact with targets on attraction. An ambiguously described target was rated more favorably when future contact was anticipated than when no contact was anticipated. Additional findings indicated that anticipated contact also leads to more positive evaluations of negatively described targets (11). Others (2, 99) have shown that the effects of anticipated contact with targets on attraction depend on the presumed positiveness or negativeness of the pending interaction.

Personality characteristics of the respondent.—The search for relatively stable personality variables which reliably influence attraction responses has occupied the efforts of a large number of investigators, most frequently in the context of attitude-attraction studies. The fruits born of these labors have more often been sour than sweet, however, for there seem to be a great many personality variables

which are simply unrelated to responses in the attraction situation. For example, individual differences in authoritarianism, dogmatism, repression-sensitization, self-ideal discrepancy, and cognitive complexity have been found to have no influence on the basic similarity-attraction relationship (19).

With respect to other personality variables, there is some inconsistency in the findings. For example, the reported effects of Marlowe-Crowne need for approval have included a positive relationship with attraction responses, a positive relationship only when there is expectation of meeting the target person, no relationship with attraction, and opposite effects for male and female subjects (19, 77). Additional personality variables which have produced a mixed bag of effects include stability of self-esteem (5, 72, 152), intolerance for ambiguity (45), and need for affiliation (19). Various anxiety measures have also been found to show no consistent relationships with attraction, though there is evidence that social-evaluative anxiety may prove to be a useful moderator variable (138).

CONSEQUENCES OF ATTRACTION

While the preceding discussion has focused on attraction as a dependent variable, the present section consists of a summary of findings concerning attraction as a mediator of other behaviors. In this context, attraction may be viewed as an independent variable associated with various consequent behaviors. Lott & Lott (110) have provided an excellent review of the consequences literature, and their outline will be followed here.

Approach and avoidance responses.—In general, individuals will move (physically, verbally, or symbolically) toward those they like and away from those they dislike. With visual behavior, for example, liked persons are looked at more, are seen as larger, are more easily recognized, and are dominant in a binocular rivalry task when compared with disliked persons. In addition, as noted earlier, subjects have been found to maintain closer seated and standing proximity to liked than disliked others in both symbolic and actual interaction situations. Verbal approach and avoidance tendencies have been studied with the majority of findings indicating that liked individuals are more often the targets of nonpersuasive communications than are disliked targets and that communication accuracy is positively related to interpersonal attraction (110).

Evaluative and descriptive responses.—Liked persons are generally evaluated more positively than disliked persons across a variety of dimensions including intelligence, knowledge of current events, morality, adjustment (19), affective dimensions of the semantic differential (62), and various adjective-trait characteristics scaled in terms of likability (110). Defendants in simulated jury studies are judged more harshly in terms of degree of guilt, length of prison sentence, and degree of punishment to be received when disliked than when liked (64, 95, 115). In one experiment (139), identical performances on a verbal learning task were evaluated more positively when the performer was liked than when disliked.

In addition, attraction is positively related to the degree of similarity attributed to the target, to the degree to which subjects feel that they are liked by the target, to the amount of detail with which targets are described (110), and to the anticipated positiveness of contact with the target (59).

Conformity, modeling, and acquiescence.—There is considerable empirical and popular support for the notion that influence over an individual varies positively with the degree to which the influence agent is liked. For example, conformity to group opinions and judgments is found to be positively related to liking for the group when compliance is not forced and when subjects are not committed to continue in the group (91). High attraction to models has been found to facilitate the imitation of preferences in buying paint, going deep-sea diving, choosing nonsense syllables, and selecting games (110). Imitation of betting strategy was facilitated by high attraction to a competent model but inhibited by high attraction to an incompetent model (10). In studies of imitation in children (e.g. 114), nurturant (liked) models are more frequently imitated than non-nurturant (disliked) models.

The influence of attraction on behavior in the prisoner's dilemma game has been the subject of a series of studies by Tedeschi and his associates. Subjects have been found to make more cooperative and accommodative choices when their partner is liked than when disliked (132, 133) and tend to comply more to the threats of a credible liked partner than to a credible disliked partner (16).

Still other research suggests that patient improvement in psychotherapy is facilitated by high attraction between patient and therapist (42) and that helping behavior is facilitated if the person in need of help is liked as opposed to disliked (92).

Learning.—Attraction has been shown to affect the learning and performance of several behaviors (110). Experimenters who are liked are generally more effective in producing high rates of conditioning, task performance, and persistence than are disliked experimenters. The mere presence of liked persons has been shown to facilitate the learning of relatively simple verbal material but to interfere with learning when the task is moderately difficult. It has also been found that photographs of liked and disliked peers can serve, respectively, as positive and negative reinforcers in a discrimination learning task, and that paired-associates learning is facilitated when the names of liked as opposed to disliked persons are paired with nonsense syllables (110).

On the basis of such investigations of the consequents of attraction, Lott & Lott suggest that the application of these findings is now feasible in areas such as communication, racial tolerance, and academic learning.

THEORIES OF INTERPERSONAL ATTRACTION

Psychological theories, insofar as they represent abstract constructions and conceptualizations of diverse behavioral phenomena, probably are best described

by the architects of the theories themselves. Second-hand descriptive accounts of theories often turn out to be primarily evaluative perorations and to involve the endless construction and destruction of straw men which often bear only passing resemblance to the positions of the original theorists. With such potential pitfalls well in mind, we will provide brief summary descriptions of the major theoretical conceptualizations of interpersonal attraction in conjunction with a few representative findings relevant to each position. The two primary conceptualizations of attraction phenomena may be roughly categorized as cognitive and reinforcement theories.

Cognitive theories.—Cognitive theorists (e.g. 69, 121) tend to emphasize the relational characteristics among elements of a closed triadic system comprised of at least two individuals and an object of communication (something or someone). The basic unit of such theories is the cognition which is "any knowledge, opinion, or belief about the environment, about oneself, or about one's behavior that a person might hold" (13, p. 14). Certain configurations among the cognitions within a triadic system are viewed as psychologically more pleasant than other types of cognitive relationships, and individuals are hypothesized to strive actively to maintain pleasant configurations and to avoid unpleasant ones. From the point of view of Newcomb's (121) modification of Heider's (69) balance theory, the most pleasant relationships consist of those which are positively balanced; imbalanced relationships are experienced as most negative, and nonbalanced configurations are evaluated relatively indifferently. Utilizing Newcomb's (121) symbols, positively balanced situations occur when a person (P) positively evaluates another person (O) and both P and O agree concerning their evaluation (positive or negative) of a third object (X). A state of psychological imbalance occurs when the P to O (P/O) relationship is positive but the P/X and O/X evaluations are in disagreement. Nonbalance is said to occur in any situation in which the P/O relationship is negative. Associated with the three states of balance, imbalance, and nonbalance are "experiences of preferring to accept a set of cognitive elements as they are, to modify it, or to be relatively indifferent as between its acceptance or its modification" (121, p. 32). Most relevant with respect to interpersonal attraction is the P/O relationship which is seen as primarily determined by P/X and O/X similarity and dissimilarity. P/O attraction will be most positive when P and O are in agreement concerning X and most negative when P perceives that he and O disagree concerning X. Since nonbalance is somewhat preferred over imbalance, a positive P/O relationship will tend to become negative as P perceives disagreement with O concerning X. It should be noted that the stress of imbalance may also be reduced by alterations of P/X, persuasive attempts to alter O/X, or misperceptions of O/X.

The attitudinal similarity studies reviewed previously are most relevant to cognitive balance interpretations of attraction. The obtained positive relationship between agreement and attraction is clearly consistent with balance predictions.

In addition, when *X* consists of *P*'s self-concept, positive *O/X* evaluations should lead to positive *P/O* response, assuming that *P* likes himself. As noted above, there are numerous findings which support this notion. Other data, in the form of ratings of the pleasantness of hypothetical relationships, generally support the balance theory predictions concerning the affective consequents of the three kinds of balance.

While the Heider-Newcomb formulation has received the greatest amount of attention in attraction research, other cognitive theories similarly propose that inconsistent cognitions produce unpleasant states of dissonance (52) or incongruity (124), the reduction of which may involve alterations in evaluations of a target person. A detailed account of such theories is provided in a recent volume (1).

Reinforcement theories.—In contrast to cognitive theorists, reinforcement theorists (e.g. 24, 43, 109, 140) tend to focus on stimuli and responses as the basic units comprising interpersonal interactions, on the positive and negative properties of the relevant stimuli, and on the utility of borrowing concepts from learning theory to apply to the attraction situation.

Hull-Spence associational learning theory concepts are utilized in the Lotts' formulation of attraction theory. The theory rests on four basic assumptions: (a) persons represent discriminable stimuli; (b) reinforcement results in an overt or covert goal response (R_g or r_g); (c) the goal response becomes conditioned to all discriminable stimuli present at the time of reinforcement; and (d) when such a goal response is conditioned to a person, that person in later situations will evoke R_g or r_g - s_g .

The Byrne & Clore (24, 43) model is similar to that of the Lotts but is less strongly committed to any specific theory of learning. From an associational standpoint, it is proposed that any stimulus with reinforcement properties functions as an unconditioned stimulus for an implicit affective response which is assumed to fall along a subjective continuum that is characterized as pleasant-unpleasant. The reinforcement properties of stimuli are defined independently of the attraction situation in terms of the empirical law of effect: the capacity to alter response probability. Any discriminable stimulus, including a person, which is temporally associated with the unconditioned stimulus can become a conditioned stimulus capable of evoking the implicit affective response. This implicit response is hypothesized to mediate evaluative responses to the conditioned stimulus. Evaluative responses include verbal assessments of the conditioned stimulus, various types of choice behavior, and approach and avoidance reactions. The attraction formulation of Lott & Lott (109) and of Byrne & Clore (24) have much in common with Staats' (140) theoretical system which was developed in the context of a quite different data base.

From studies of the precise manner in which stimuli combine to determine attraction, an empirically derived "law of attraction" has been presented (19) as

$$A_x = m \left[\frac{\Sigma(PR_x \times M)}{\Sigma(PR_x \times M) + \Sigma(NR_x \times M)} \right] + k$$

or attraction toward X is a positive linear function of the sum of the weighted positive reinforcements (number times magnitude) associated with X divided by the total number of weighted positive and negative reinforcements associated with X.

A great deal of research has been stimulated by the above reinforcement formulations; representative examples include Byrne, Young & Griffitt (41); Lamberth (94); Lott et al (108); Reitz, Douey & Mason (129); and Lombardo, Weiss & Stich (107). In general, data falling within the boundary conditions of the theories consist of any stimulus-response relationship in which stimulus conditions may be conceptualized in terms of affective meaning and in which response variables are primarily evaluative in nature. It should be noted that reinforcement and cognitive theories do not constitute incompatible and mutually exclusive explanatory systems concerning attraction. In fact, many of the empirical relationships previously considered are interpretable in either cognitive or reinforcement terms (37). In addition, cognitive theories have generated hypotheses (e.g. assumed similarity, misperception, and persuasion) which would most likely not have been suggested by a learning model. Similarly, hypotheses generated by reinforcement theory (e.g. attitudes as reinforcing stimuli, the role of affective states, the effect of delayed reward on attraction) do not appear to be the natural offspring of a balance theory. Equally utilitarian theoretical formulations need not be cast as embattled competitors.

Other theories.—Additional formulations have been proposed to deal with various aspects of attraction, usually focusing on dyadic interactions. Examples are exchange theory (78, 149), gain-loss theory (7), and theories of marital choice (104, 117), romantic love (131, 154), and friendship (157). In addition, Anderson's information integration theory, while not conceptualizing stimulus information in terms of rewards or reinforcements, shares much in common with the law of attraction in terms of its focus on the manner in which units of stimulus information combine to affect judgments of targets. The Anderson model is basically a weighted averaging model of target judgment and is viewed as encompassing a variety of judgment phenomena (4).

COMMENT

Cumulative scientific

Kuhn (93) describes as "normal science," which becomes possible following the acquisition of a paradigm. A scientific

body of research consisting of agreed-upon procedures, operations, measuring devices, empirical laws, and a common theoretical superstructure. Such agreement, at least among a small group of individuals interested in the same phe-

nomena, makes it possible to accumulate knowledge through attempts to increase the precision, reliability, and scope with which the facts are known and through continual formulation and modification of theoretical propositions put forward to account for the data. At the present time, research on interpersonal attraction may be seen as comprised of a small number of relatively independent mini-paradigms plus a number of nonparadigmatic approaches to data collection. If research in this area continues to proliferate at its present astonishing rate, it will be of interest to document the development of the study of attraction as it moves into the realm of a true paradigmatic science.

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