A MULTIVARIATE CONTRIBUTION TO THE MEASUREMENT AND CONSTRUCT VALIDITY OF GENERALIZED SOCIAL ATTRACTION

DAVID MIKLE LEUSER

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MEASUREMENT AND CONSTRUCT VALIDITY OF 
GENERALIZED SOCIAL ATTRACTION

BY
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B.A., Drew University, 1973
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A DISSERTATION

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Doctor of Philosophy
in
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September, 1979
This thesis has been examined and approved.

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For Maria and Dawn,

who have been through it all with me
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ABSTRACT

A MULTIVARIATE CONTRIBUTION TO THE
MEASUREMENT AND CONSTRUCT VALIDITY OF
GENERALIZED SOCIAL ATTRACTION

By
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University of New Hampshire, September, 1979

Social psychological research on interpersonal attraction seems to have peaked during the early 1970s, with interest and activity in the area steadily declining since that time. This decline seems to be the result of a series of unresolved measurement problems in the area. While attraction is conceptualized as a multidimensional construct, its presumed components are not systematically assessed at the operational level. The present research was designed to achieve three objectives: (a) to investigate the nature of the multidimensionality in "generalized social attraction," (b) to demonstrate that personal and situational factors may differentially influence the underlying components of social attraction, and (c) to compare the utility of the widely used procedures for measuring social attraction, and to develop a set of scales for the separate measurement of the components of the overall attraction response.

Based upon previous theory and factor analytic research, a three component multidimensionality in generalized social attraction was expected, consisting of liking, respect, and physical attractiveness.
components. Two studies were carried out employing a 2 X 2 X 2 factorial design. The independent variables were: (a) attitude similarity/dissimilarity (similar versus dissimilar attitudes about paranormal phenomena), (b) interaction orientation (task oriented versus socio-emotionally oriented interaction), and (c) dyad sex (same sex versus opposite sex dyadic interaction). In Study 1, a series of differential effects on liking, respect, and physical attractiveness components of attraction were found. These effects were partially replicated in Study 2. In addition to the widely reported attitude similarity-attraction effect, effects of interaction orientation were observed, along with sex differences in the relative importance of the components of attraction, and differential effects of same sex versus opposite sex interaction requirements between subjects.

A classical factor analysis with iterations was carried out on the within cells correlation matrix for (a) 40 widely used Likert type measures of attraction, and (b) 40 widely used semantic differential type measures of attraction. While there was some ambiguity in the results, as well as some variation in the nature of the factors obtained in the two different categories of items, the predicted three fold multidimensionality was generally supported. In addition to the multiple liking, respect, and physical attractiveness components, a series of social distance components was also identified.

A comparison of various methods of measuring attraction indicated that single scales and factor analytically derived scales were superior to logically defined composite scales in identifying between cells effects. A series of factor analytically derived scales, called the New Hampshire Social Attraction Scales, were presented to measure
liking, likability, easygoing sociability, respect, competence, physical attractiveness, grooming attractiveness, physical beauty, rejection, informal social acceptance, and intimacy dimensions of social attraction. Further research is required to develop and finalize measurement strategies in the attraction literature.
INTRODUCTION

The study of interpersonal attraction has been a very popular topic for research among social psychologists in recent years, and with good reason. Most human behavior occurs in a group setting, in the context of affective relationships between people. Common sense emphasizes the importance of attraction to almost all aspects of such interpersonal behavior. Personality and motivational theorists such as Maslow (1943, 1954) have long postulated basic human needs for affiliation and "belongingness" in social groups. The impact of attraction on social interaction has a long history of study by social scientists (e.g., Marlowe & Gergen, 1969; Newcomb, 1961; Schachter, 1959). Attraction appears involved with a wide variety of cognitive functions and interpersonal behaviors, including interpersonal perception (e.g., Brewer & Brewer, 1968), attribution (e.g., Regan, Straus, & Fazio, 1974), nonverbal behavior (e.g., Mehrabian, 1968a,b; Patterson, 1973; Speer, 1972), and amount of social interaction (e.g., Moran, 1966). In their reviews, Lott and Lott (1965, 1972) outlined three basic categories of behavioral correlates of attraction, including (a) approach and avoidance responses, (b) evaluative and descriptive responses, and (c) conformity, modeling, and acquiescent responses. In general, research has shown that people will move towards those they like and away from those they dislike, in physical verbal, and symbolic ways. Liked persons are typically evaluated more positively than disliked persons across a variety of dimensions. Respondents also tend to judge liked others as similar to themselves on positive or
neutrally evaluated traits. Liked persons tend to be described in more detail than disliked persons. And finally, the acceptance of interpersonal influence appears to be positively related to liking for the influencing agent. From the practical standpoint then, it is clear that attraction is an important area for social research, since it constantly impacts on such a wide variety of our everyday interpersonal and organizational behavior.

Attraction research expanded dramatically during the 1960s and early 1970s, leading some contemporary reviewers to comment that "attraction research shows no sign as yet of reaching asymptote" (Byrne & Griffitt, 1973, p. 317). Such an asymptote does seem to have been reached during the last six years, however. A recent review (Huston & Levinger, 1978) criticizes the laboratory study of attraction between strangers typically carried out by experimental social psychologists, and looks to other literatures (e.g., family sociology, cultural anthropology, and clinical psychology) to elucidate the nature of "attraction in relationships." The decreasing numbers of articles published on attraction in standard social psychological journals during the past few years seems to indicate that--like many other topics in social psychology--the study of interpersonal attraction has passed its period of peak interest among researchers.

Other areas, such as the study of group cohesiveness, have also come and gone in this literature. There seem to be a number of parallels in development in the rise and fall of both "group cohesiveness" and "interpersonal attraction" among experimental social psychologists. Most strikingly, both theoretical constructs represent the total and uncritical adoption of common sense notions for presumably
precise scientific theory and research. Both constructs are typically measured through idiosyncratic scales based on common sense notions of the phenomenon in question. Both areas appear very relevant and important to practical everyday concerns of social behavior, thus justifying a considerable research effort. Yet research in each area tends to be very limited in generalizability, where "general principles" are replete with exceptions, and the effort does not represent a truly cumulative scientific enterprise. Varied theoretical approaches and empirical contradictions abound, yet are casually accepted as a necessary by-product of the complexity of the phenomenon under study.

The above factors account for a brief flurry of research activity in the area of group cohesiveness during the 1950s and early 1960s, until a critical examination of the measurement question in the area ultimately led to its demise. Early research (e.g., Back, 1951; Festinger, Schachter, & Back, 1950; French 1941; Seashore, 1954) seemed to point to the promising potential of the area. Yet comments on the rift between the conceptual understanding of the phenomenon and its operational measurement soon began surfacing widely (e.g., Albert, 1953; Gross & Martin, 1952). Then a crucial study by Eisman (1959), which was replicated by Ramuz-Nienhuis and van Bergen (1960), indicated that the very basic, frequently employed measures of group cohesiveness did not correlate significantly with each other when measurements were taken of ongoing student groups. This led to a variety of proposed new measurement strategies (e.g., Gruen, 1965; Hoffman, 1962; van Bergen & Koekebakker, 1959), and to new conceptual analyses of the nature of the phenomenon (e.g., Feldman, 1968; Hagstrom & Selvin, 1965; Lott & Lott, 1965). These strategies and analyses essentially reduced the phenomenon
of cohesiveness from its initial very broad and abstract definition (as the "total field of forces which act on members to remain in the group," Festinger, Schachter, & Back, 1950, p. 164) to several component phenomena more explicitly defined in terms of measureable aspects of the empirical world. For example, van Bergen and Koekebakker (1959) identified cohesiveness in terms of attraction to group; Lott and Lott (1965) saw it merely as interpersonal attraction; Hagstrom and Selvin (1965) differentiated "social satisfaction," or the instrumental attractiveness of groups (in terms of a person's opportunity to meet people and make friends), from "sociometric cohesion," or the intrinsic attractiveness of groups (the degree to which members are attracted by values internal to the group). Finally, Feldman (1968) identified three potential components of group integration and group cohesiveness: (a) normative integration (acceptance of group norms); (b) functional integration (acceptance of specialized roles and intra/intergroup relations); and (c) interpersonal integration (reciprocal interpersonal attraction). Unfortunately, none of these new conceptualizations of cohesiveness spurred widespread interest, and the construct has for the most part disappeared from the pages of current social psychological journals.

The purpose of the foregoing comments on the rise and fall of the concept of group cohesiveness was to illustrate the manner in which a vague, common sense construct was taken over by social psychologists and used for scientific analysis, until the inherent measurement problems tied to such abstract, generalized terminology were realized and rectified by re-defining the construct in terms of more specific operational components. Ideally, such operational components should
be related to some of the basic parametric factors which reliably influence the phenomenon in the real world, so that the utility of one set of components over another could be demonstrated on empirical as well as logical grounds. Unfortunately, such a linking between environmental/personal parameters and consequent components of cohesiveness was never carried out in the cohesiveness literature. Thus, no single set of components was ever widely agreed upon, and researchers lost interest in the area.

The study of interpersonal attraction is characterized by a similar developmental history and set of operational/conceptual problems, as described by Leuser (1975, 1976). "Attraction" is a common sense construct that has typically been measured in common sense ways. Comparability of research results is seen as important, but is merely assumed rather than demonstrated. Cumulative scientific research requires reliable, valid measures of the phenomenon or construct of interest, and the identification of closely related variables that interact with the phenomenon so that they can be controlled during the process of scientific observation. Without both of these components, research results will be noncomparable. Even though large numbers of individual research studies may be done, a more refined understanding of the phenomenon of interest can not develop because of the fractionalization of effort in the area. It seems that interest is currently waning in attraction research because of such problems, and that cumulative research in the area cannot proceed until some very basic empirical and/or methodological agreements become an accepted part of this research literature.

This is not meant to imply that no general empirical or theoretical relationships have emerged from attraction research. It is well known,
for example, that attraction varies in lawful ways with both the proportion of attitude similarity and the amount of social interaction between actors (c.f., Byrne, 1971). On the other hand, the phenomenon is not yet well enough understood to allow accurate *predictive* application of theory in other than a very gross, probabilistic manner. Before more refined and accurate prediction can be achieved, the "common sense" phenomenon of attraction must be re-defined in more specific empirical and conceptual terms. Appropriate methodologies and empirical research results are now available to crystallize such a re-definition; that is the ultimate goal of this research endeavor.
THE NATURE AND CONCEPTUALIZATION OF ATTRACTION

Newcomb (1961) defined attraction as any direct orientation on the part of one person toward another that may be described in terms of a positive or negative sign and an intensity gradient. Most researchers studying attraction have employed this definition (at least implicitly). Yet, as numerous authors have pointed out (e.g., Huston, 1974; Marlowe & Gergen, 1969; Wright, 1971), such a generalized definition of attraction ignores numerous potentially important distinctions among sentiments that might contribute to attraction in different interpersonal and situational contexts.

A widely held conceptualization of attraction is that it is a construct referring primarily to one person's affective evaluation of another person (Byrne & Griffitt, 1973). From this perspective, attraction has been viewed both as a cognitive mediator, in information processing terms (e.g., Anderson, 1971; Kaplan & Anderson, 1973), and as a multifaceted attitude (e.g., Huston, 1974; Lott & Lott, 1968; Tedeschi, 1974). Attraction, as an attitude, is often further considered to be made up of cognitive, affective, and connative components. But clearer specification of the components is rarely attempted, in spite of the admitted complexity of the phenomenon. Newcomb (1961) himself pointed out that his conceptualization of attraction was broad, and was not meant to specify all of the fine-grained differentiations that could be made. As noted by Huston (1974), social psychologists have yet to specify these more fine-grained components of the global attraction response.
Some preliminary work has been done to differentiate various components of attraction. Several authors have attempted to differentiate liking from respect (Bales, 1958; Kiesler & Goldberg, 1968; Mettee, Hrelec, & Wilkins, 1971; Simons, Berkowitz, & Moyer, 1970), and liking from love (Berscheid & Walster, 1974a; Rubin, 1970, 1973, 1974). In this latter area of romantic attraction, physical attractiveness has proven to be an extremely important person variable which covaries with liking (e.g., Walster, Aronson, Abrahams, & Rottman, 1966). Research on physical attractiveness has increased abundantly during the past decade. Now it is not only clear that physical attractiveness is a major factor in date and mate selection, but it also appears that: (a) a "physical attractiveness stereotype" exists in our society, by which the physically attractive in general are assumed to possess ideal personalities, to be occupationally successful, and to lead happier lives than the unattractive; (b) association with physically attractive people may increase one's prestige, esteem, and favorableness of impression; (c) physically attractive people may be perceived as more similar to oneself than unattractive people; and (d) physical attractiveness is associated with popularity in childhood, with the perception of social behavior in either positive or negative terms, and with a variety of other attributional and socialization processes (see Berscheid & Walster, 1974b, for a review). Thus, the suggestion that physical attractiveness may be a fourth important component (at least under certain circumstances) in the multidimensional attraction response is a reasonable one.

In spite of the reasonableness of the supposition that the abstract quality of "interpersonal attraction" can be conceptualized
in a narrower, more clearly delimited fashion as some conglomeration of liking, respect, physical attractiveness, and occasionally love components, this possibility has received little attention in the literature. Social psychologists have, for the most part, been content to pay lip service to the assumption of multidimensionality in attraction, and then go ahead and design dependent measures as common sense and convenience dictate. Thus, three unresolved issues may be identified with regard to the conceptualization of interpersonal attraction: (a) the number and nature of components of the presumably multidimensional attraction response; (b) the problem of the measurement of these components for research purposes; and (c) the relationship of these components to each other and to personal, social, and situational factors.
THE MEASUREMENT OF INTERPERSONAL ATTRACTION

As just described, interpersonal attraction is routinely conceptualized as a multidimensional construct at the conceptual level, and it is generally agreed that there are varieties of interpersonal attraction that warrant more delimited analysis. Unfortunately, such conceptual components of attraction are neither deliberately nor systematically measured at the operational level. There are two major classes of operational measures of attraction: verbal and nonverbal. Nonverbal measures of attraction have gained popularity over the past decade, although their relationship to the verbal measures has not yet been systematically explored. Nonverbal measures include eye-contact (Ellsworth & Carlsmit, 1968; Goldberg, Kiesler, & Collins, 1969), physical proximity (Byrne, Baskett, & Hodges, 1971), bodily posture such as forward and backward lean, degree of relaxation, and arm position (Mehrabian, 1968a, 1968b), the placement of silhouette figures in hypothetical social situations (Livinger & Gunner, 1967), and physiological responses (Gormly, 1971).

The relationship between verbal and nonverbal measures of attraction is not clear cut. While some authors have reported a relationship between verbal measures and behavioral indices of attraction (Byrne, 1971; Byrne, Baskett, & Hodges, 1971; Lott & Lott, 1970), others have found no relationship (Latta, 1976; Nemeth, 1970; Tesch, Huston, & Indenbaum, 1973). Such results may be due to the vague and ambiguous definitions of attraction generally employed. Indeed, several authors have concluded that weak or complex relations between verbal and nonverbal measures of
attraction are to be expected, since attraction is a multifaceted construct (Byrne & Griffitt, 1973; Mettee & Aronson, 1974).

The present research is limited to the domain of paper-and-pencil type verbal self report measures of attraction. Experimental social psychologists employ such measures much more frequently than nonverbal measures, since the latter often require elaborate scoring instrumentation and procedures, as well as trained observers. Paper-and-pencil ratings, on the other hand, are easily collected in just about any research setting (including both the laboratory and the field), and they are also readily relateable to theoretical propositions regarding the multidimensionality in attraction, since they are couched in verbal conceptual terms.

A recent review (Leuser, 1975) documented both the tremendous variety of verbal self report attraction measures in use by social psychological researchers and the psychometrically naive manipulation of these measures through a variety of questionable arithmetic and statistical procedures. Fortunately, there have been some vain attempts at standardizing the social psychologist's measures of attraction. Ever since the publication of Osgood's seminal work on the measurement of meaning with the semantic differential (Osgood, Suci, & Tannenbaum, 1957), bipolar adjective scales have been used to assess interpersonal evaluative feelings. Leuser (1975) reviewed 130 studies on interpersonal attraction published between January 1970 and August 1975.1 Sixteen

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1Seven of the most important psychological journals publishing articles on the topic on interpersonal attraction were reviewed for the six year period running from January 1970 through August 1975. These journals were: (a) Journal of Personality and Social Psychology, (b) Journal of Experimental Social Psychology, (c) Journal of Social Psychology, (d) Journal of Applied Social Psychology (excluding the years 1970 and 1971, which were unavailable), (e) Representative Research in
percent (21) of these studies used some sort of semantic differential scale to measure attraction, including anywhere from five to nineteen different bipolar adjective subscales. This measurement process typically culminated in the arithmetic derivation of a composite score (usually either a mean or a simple summation), which combined the several component scales that comprise the measure into a single summary score. Little standardization of semantic differential scales was found, with the exception that individual researchers occasionally used the same scales and procedures in a program of research (for example, an eight item series of scales investigated by Lott, Lott, Reed, & Crow, 1970, was used in several of these studies), and seven point scales were often more popular than the other twelve types of scale ranges that were also encountered.

Byrne (1971) used his previous research experience and prestige in the area of attraction research to call for a standardization of the measurement of interpersonal attraction through the use of the seven item "Interpersonal Judgment Scale" (IJS) that he invented. This measure contains a series of six questions regarding one's impressions of another person in terms of intelligence, knowledge of current events, morality, adjustment, personal feelings (liking), and working together in an experiment. The last two items (ratings of liking for and desire to work with the target person) are presumed by many researchers to tap, respectively, feelings of liking for and respect towards the person being judged. Ratings on these last two questions are typically summed to yield a composite measure of attraction ranging between 2 and 14.

Social Psychology, (f) Journal of Personality, and (g) Journal of Experimental Research in Personality (now called the Journal of Research in Personality). A total of 130 studies were reviewed.
The justification for summing the scores lies in their .85 correlation (as reported by Byrne), and is based on the argument that the reliability and informational accuracy of the final composite score is increased by the summing procedure. This technique assumes that both sources of variance (i.e., both subscales) should receive equal weighting in the final composite score. Unfortunately, the validity of these arguments and assumptions has not been systematically investigated at the empirical level. Evidence offered in support of Byrne's IJS measure is limited to correlations with other measures logically presumed to assess attraction (Byrne, 1971). In spite of the lack of evidence supporting the utility of Byrne's IJS, it was the single most popular measure of attraction represented in the literature reviewed by Leuser (1975). Thirty-eight percent (50) of the studies reviewed used either the actual six item Interpersonal Judgment Scale or a variant of it. The typical variant was the use of only the last two items, which were then summed as usual, although researchers sometimes added a third attraction item regarding the desirability of the target person as a date or marriage partner—e.g., Palmer and Byrne (1970)—or as a roommate—e.g., Smith (1972)—and then summed their subscales. Such widespread use of similar dependent measures certainly increases the comparability of research findings and conclusions, and is a step in the direction of a truly cumulative research endeavor.

Unfortunately, Leuser (1975) discovered that the majority of attraction studies (52% or 68 studies) employed idiosyncratic rating scales with various levels and numbers of points, apparently based on the researcher's common sense notions about what sorts of questions ought to measure attraction. Surprisingly enough, in a number of studies,
the precise dependent measure was not even reported! In those cases where the nature of the idiosyncratic dependent measures was reported, it was found that such scales frequently encompassed liking and desire to work with the target in a variety of settings, and occasionally included statements regarding the desirability of the target as a friend, roommate, and/or social companion. There was little, if any, systematization to the type of measure employed.

Finally, 8% (or 11 studies) utilized "other measures" of attraction, such as sociometric choices, rank ordering of group members in terms of liking, and nonverbal measures such as gaze and interpersonal distance. Considerable variability in methods of measurement was again evidenced. As noted above, however, this class of attraction measures is not of primary interest in the present research.

It is apparent that many different types of scales of uncertain comparability are routinely employed as dependent measures of interpersonal attraction. Leuser's (1975) review indicated another major area of psychometric concern. Seventy-four out of the 130 studies reviewed (or 57%), employed some sort of composite score--combining a number of dependent measures, usually in a simple logical additive manner--for statistical hypothesis testing. Obviously, this raises the question of the relations existing between the various measures that are combined. That is, in statistical terminology, are the different measures that are being combined contributing orthogonal components of variation to the composite score? And if not, what are the implications of combining all subscales in an equally weighted manner, as is typically done? It should be clear from the foregoing discussion that the question of exactly what it is that any given composite attraction score measures is very much up in the air at this point.
THE OPERATIONAL-CONCEPTUAL RIFT

The preceding discussion illustrates that while attraction is assumed to be a multidimensional construct at the conceptual level, this multidimensionality is not systematically assessed at the operational level. I argue that this rift between operational procedures and theoretical conceptions is at the root of many of the problems in the attraction literature. This operational-conceptual rift seems to be the result of two unstated and largely untested assumptions in the attraction literature: (a) that the various operational measures of attraction are theoretically as well as empirically comparable, and (b) that greater precision in the measurement of attraction may be attained by combining scores from a variety of scales.

The existence of the first implicit assumption was recognized by Lindzey and Byrne (1969), who commented in their review: "It seems evident that there has been a progressive merging of the various methods of assessing social choice, with the end result that most investigators treat various types of rating scales and sociometric measures more or less interchangeably p. 5107." The validity of this assumption is, of course, called into serious doubt by the widespread acceptance of multidimensionality in attraction at the conceptual level. The end product of this operational-conceptual ambiguity is indeed a sorry state of affairs for attraction research. As Marlowe and Gergen (1969) put it:

> Like the terms "personality" and "conformity," social attraction seems to have been relegated to that felicitous state made up of "common
understanding" and generalized inexplicitness.....
It would seem, then, that social attraction, like the concept of personality, has theoretical merit only as a generic term. Greater specificity regarding the exact nature of social attraction being studied in each individual instance is much in need if understanding of the relevant processes is to be achieved /p. 627.

The second assumption cited above, that greater precision in the measurement of attraction may be attained by combining scores from a variety of scales, is also questionable. Again, there is a logical inconsistency in assuming conceptual multidimensionality and then collapsing separate subscales into a single composite score, thereby forfeiting any information available in the data regarding possible differential effects on the assumed multidimensional components.

The validity of neither of these implicit assumptions has been empirically established; it seems that they should be a major cause for concern in the attraction literature. There is some data available in the literature and in previous research done by the author indicating that such concern is justified. Occasionally, studies have provided data relevant to the assessment of the validity of these two implicit assumptions. One recent study (Kahn & McGaughey, 1977) found similar patterns of results using two different measures of attraction (i.e., the Interpersonal Judgment Scale and a semantic differential technique). Another study (Schiffenbauer & Schiavo, 1976) discovered similar patterns of effects whether their data was analyzed in terms of separate scale scores or in terms of summed composite scores. On the other hand, a number of authors have reported differential significance for effects, depending upon precisely which dependent measure of attraction was examined (e.g., Blake & Tessor, 1970; Gormly, Gormly, & Johnson, 1971;
Rivera & Tedeschi, 1976). Similarly, Stroebe, Insko, Thompson, and Layton (1971) discovered differential significance to scales evaluated individually as opposed to summed into a composite score. This data, along with the logical and theoretical problems already cited, provides justification for a more systematic evaluation of the validity of the implicit measurement assumptions in the attraction literature. A preliminary study by Leuser (1976) documented a variety of gross violations of these implicit assumptions, indicating serious noncomparability problems among the various widely used types of attraction measures. A discriminant function analysis derived from a multivariate analysis of variance indicated that the same variables (three 7-point semantic differential evaluative scales, and 11-point scale ratings of "liking" and "desire to work with") contributed in inconsistent ways to the discrimination of independent variable effects. These data also provided several different factor analytic solutions, depending upon the composition of the data subsample analyzed.2

Such validity questions are of particular concern in the light of the desired practical utility of attraction research. Social psychologists frequently conclude their articles reporting attraction research by citing broad implications of their findings for "attraction" outside

2This variety in solutions was thought to be due to the nature of the correlation matrix analyzed; the between groups correlation matrix, which includes variation due to independent variable effects, was subjected to an iterative factor analytic procedure with a VARIMAX rotation to simple structure. The resultant variety of solutions was thought to be an artifact of the nature and interaction of dependent measures employed, along with differential independent variable effects. Interestingly, however, when the within groups dependent variable correlation matrix was examined to check on the relationships between the six different measures of the attraction construct employed, only low to moderate correlations were found between measures (the 12 intercorrelations ranged from .055 to .633, with 9 of them falling between .335 and .529). If
of the laboratory setting. Indeed, reviewers (Byrne & Griffitt, 1973; Lott & Lott, 1965) have contended that attraction research represents an attempt to establish and explain the relationships between classes of antecedent and consequent events in interpersonal behavior. However, the cavalier attitude displayed towards the measurement problem in this literature undermines efforts at understanding the phenomena of attraction in any general sense. Byrne himself (1971, p. 230) states that the goal of his research program is merely to "explicate" variation in ratings on the Interpersonal Judgment Scale. As pointed out by Huston (1974), this view of measurement implies that the integration of attraction data gathered by different researchers depends on the comparability of measures. In this regard, Byrne and Griffitt (1973) observed 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." Thus it appears that the operational-conceptual rift in attraction research is antithetic to the goals of this research enterprise.

A systematic study of the presently assumed construct validity of the widely used attraction measures is called for. Such a study must examine not only the relationship between the various different measures of attraction currently in use, but also the relationships of these measures to other variables whose relation to attraction is

all measures of attraction were theoretically and empirically comparable, then high, significant intercorrelations (e.g., in the .80 to .90 or above range) would be expected. While the obtained correlations were statistically significant, they provide little support for the assumed comparability of measures. Rather, these lower intercorrelations seem to support the notion that different attraction measures are tapping into different components of the overall attraction response.
predicted on the basis of some theoretical proposition or set of propositions. That is, a **nomological validation** approach is in order (c.f., Selltiz, Wrightsman, & Cook, 1976). Such a study might well conclude that the concept of generalized social attraction still in widespread use is too broad to allow precise scientific analysis. As pointed out by Selltiz, Wrightsman, and Cook (1976), extremely complex, multifaceted constructs are frequently more usefully studied by treating the various sub-aspects of the phenomenon as separate concepts. In this regard, a parallel can be cited in the historical development of modern physics. Prior to the scientific revolution of the 16th and 17th centuries, researchers avidly investigated the behavior of "gases." More productive research only ensued when investigators began examining the behavior of the different elemental components (e.g., O₂, CO₂, NH₂, etc.) of those "gases." Thus it is apparent that, at times, common sense concepts are not empirically specific enough for use as theoretical constructs in scientific research. An excellent example of this problem in the social psychological literature comes from the work of Burwen and Campbell (1957). These authors could not demonstrate convergent validity for a generalized "attitude toward authority figures," and concluded that this common sense construct was not acceptable for scientific investigation. And, as discussed at the outset, "group cohesiveness" is yet another example of a common sense construct rising to the forefront of social psychological research, only to tumble back into the conceptual abyss and shatter into a variety of more meaningful sub-phenomena. "Interpersonal attraction" seems to be another construct in need of empirical refinement. It is time to investigate the utility of "interpersonal attraction" as a theoretical construct for scientific research in social psychology.
PRESENT RESEARCH

The present research was designed to address three basic issues that are fundamental to the operational-conceptual rift in the attraction literature. First, there was an attempt to delineate the precise nature of the underlying psychological components typically contributing to variation along the behavioral dimensions known as "interpersonal attraction" in the social psychological literature. Second, in order to facilitate the process of nomological validation by relating variation in these components to other variables of theoretical interest, several personal and situational variables which were expected to differentially effect these components were examined in a full factorial experimental design. The third and final step in this research endeavor was the preliminary development of a set of verbal self-report scales designed for the separate measurement of these components. These scales were based upon and derived from an empirical comparison of the major dependent measures of interpersonal attraction appearing in social psychological journals.

The present research was carried out in two phases. Study 1 was concerned with the initial theoretical breakdown of the multidimensionality in attraction, and with the theoretical relationship of this multidimensionality to certain personal and situational variables which might serve as parametric influences on variation in attraction. The results of Study 1 provided strong support for the merit of the proposed final research design.

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The second phase of this research, referred to as Study 2, verified and extended the theoretically posited multidimensionality in attraction through the use of factor analysis, and allowed a direct comparison of the sensitivity of various component and composite measures of attraction in identifying between cells effects in the factorial design employed in Study 1. The result of this work was the development of a preliminary set of scales designed to tap different components of the overall attraction response.

Study 1
Initial Theoretical Analysis and Relation to Parametric Variables

The initial step for the first investigation in this research was the delineation of the range of the empirical phenomena of interest. As noted previously, attraction has been conceptualized as the product of one or more of the following: liking, respect, physical attractiveness, and love. There are many indications in the research literature (e.g., Rubin, 1970, 1973, 1974) that "love" is different from the more widespread, commonly diffused type of "generalized social attraction" that seems to mediate much of our interpersonal behavior. Indeed, several theorists (e.g., Berscheid & Walster, 1974; Driscoll, Davis, & Lipetz, 1972) have distinguished several varieties of love (e.g., parental or filial love, romantic love, and conjugal love). For reasons of both pragmatism and the author's research interests, the current program of research is explicitly limited to the domain of "generalized social attraction" and does not include the investigation of "love." Such a delimitation still retains potentially great relevance for everyday social interaction, since, as discussed previously, such diffuse feelings of "attraction" are important in almost all types of social interaction.
Within the domain of "generalized social attraction," there are theoretical and empirical reasons for considering a three-fold multidimensionality of liking, respect, and physical attractiveness. As briefly mentioned above, a number of researchers have differentiated liking from respect. These two potential components of the more global attraction response have also shown up consistently in three factor analytic studies over the past several years. The earliest such study, an "exploratory" factor analysis of two sets of questionnaire items relating to various aspects of interpersonal attraction, was completed by Triandis (1961). This analysis yielded five independent factors. The first factor was labelled "formal social acceptance with subordination versus rejection with superordination," and has been viewed as a task category of interpersonal attraction by the later factor analytic researchers (Kiesler & Goldberg, 1968; McCroskey & McCain, 1974). Triandis' third factor, labelled "friendship acceptance versus rejection," has been recognized as a socio-emotional category of interpersonal attraction by these later researchers. Triandis' study supported the notion of attraction as a multidimensional construct, but it was the later researchers who began to refine and clarify the dimensions involved.

Kiesler and Goldberg (1968) followed up Triandis' work with a principal components factor analysis of items specifically designed to reflect socio-emotional or task-related aspects of interpersonal attraction. Their findings indicated that two independent orthogonal factors accounted for 41% of the total variation. The first factor appeared to represent the socio-emotional category of interpersonal attraction (i.e., simple "liking"), while the second more closely resembled the task category of attraction, labelled "respect" by the
authors. Kiesler and Goldberg pointed out that these two dimensions paralleled two of the five factors extracted by Triandis, and argued that they should be regarded as independent, empirical dimensions of interpersonal attraction.

McCroskey and McCain (1974) carried out the most recent factor analytic research in conjunction with their development of a series of scales designed to measure task, social, and physical attraction. These researchers built upon the previous factor analytic work which had differentiated task and social dimensions of attraction, but they also recognized the importance of an appearance dimension, or physical attractiveness, in the multidimensional attraction response. Physical attractiveness does seem to be related in important ways to interpersonal attraction (c.f., Walster, Aronson, Abrahams, & Rottman, 1966; Berscheid & Walster, 1974b). Also, there is evidence that the perception of physical attractiveness varies with both the nature of the personal relationship and various situational factors (Berscheid & Walster, 1974b). Thus, McCroskey and McCain's suggestion that ratings of physical attractiveness be considered as another dimension of interpersonal attraction is a reasonable one. These authors devised a 15 item attraction scale designed to measure liking, respect, and physical attractiveness. They collected a series of ratings on these scales and submitted the data to a principal components factor analysis with VARIMAX rotation. A three factor solution was obtained as expected. The same basic factor structure was obtained in four separate follow-up studies, leading McCroskey and McCain to conclude that they had developed a general measure of interpersonal attraction which is capable of reliably measuring social, task, and physical attraction.
Thus, there is suggestive factor analytic support for a three component conceptualization of the multidimensionality in attraction, in the form of liking, respect, and physical attractiveness components. Such a conceptual analysis of interpersonal attraction is congruent with social psychological theory. For many years Bales (1958) distinction between task and socio-emotional roles in groups has highlighted a basic influence of situational factors on interpersonal sentiments; that is, task leaders (emphasizing the "work" aspects of group interaction) are often better respected, while the socio-emotional leaders (emphasizing the promotion of harmony and of good feelings in the group) are often better liked. And the recent emergence of the study of physical attractiveness from its history of longstanding taboo has led to the discovery (discussed previously) that such appearance variables influence not only interpersonal attraction, but also a wide variety of other interpersonal perceptions as well (c.f., Berscheid & Walster, 1974b). Thus, such a factor structure makes sense in terms of accumulated scientific knowledge.

The next step for the initial phase of the current research was to examine the relationship of the proposed three component multidimensionality in attraction to other theoretically relevant personal and situational variables. Three salient personal and situational factors were chosen for investigation, based on logical, theoretical, and empirical considerations.

The first of the personal variables to be examined is attitude similarity-dissimilarity. Considerable research (reviewed by Byrne, 1969, 1971) has demonstrated the tremendous impact of this variable on attraction. The relationships are so strong that Byrne (1971) has postulated a law of attraction as a linear function of attitude similarity
(such that increases in attitude similarity are associated directly with increases in attraction).

The second person variable of interest in the present research is the sex of the interactants. In Leuser's (1975) review, it was found that most attraction researchers appear to implicitly assume that same sex and opposite sex ratings of attraction are equivalent (i.e., males rating males, or females rating females are assumed to be equivalent phenomena to males rating females or females rating males). Such assumed equivalence makes sense on neither logical nor theoretical grounds, since, in the case of opposite sex ratings, possibilities exist for sexual and/or romantic attraction which are presumably unimportant in the case of same sex ratings. In spite of the obvious reasons for differentiating same and opposite sex attraction, only a minority of the studies reviewed that investigated opposite sex ratings of attraction explicitly identified their subject matter as "heterosexual attraction." About half of the studies reviewed included opposite sex ratings of attraction in the same conceptual category as same sex ratings. Even more disconcerting was the discovery that 16% of the studies reviewed could not even be classified as to the sex of the raters and targets (it should be pointed out that 12 of the 21 studies employed Byrne's (1971) "imaginary stranger" technique, in which the sex of the subjects, but not of the imaginary target person, was specified). Thus, it is clear that attraction researchers do not systematically differentiate same sex and opposite sex attraction, in spite of the obvious logical and theoretical reasons for doing so. The importance of such a differentiation was empirically investigated in the current study by comparing ratings of attraction under conditions of same sex versus opposite sex dyadic interaction.
In addition to the person variables of attitude similarity-dissimilarity and same or opposite sex dyad interaction, a situational variable of pervasive influence on social interaction was also investigated. In recent years, research on small group interaction has increased profusely in quantity, though not in quality. In their recent review, Helmreich, Bakeman, and Scherwitz (1973) criticized the area of small group research for its lack of unifying theory and for its lack of concern for external validity or potential applications. In spite of such weaknesses, some variables of possible parametric importance for their impact on interpersonal attraction may be identified. Recent small group research has indicated that the type of task confronting a group has a very pronounced influence on the type of interpersonal behavior emerging in that group (e.g., Morris, 1966). Social science researchers have long differentiated task role behavior from socio-emotional role behavior in small groups (e.g., Bales, 1958; Parsons, 1951; Slater, 1955). More recent research has demonstrated that both group performance and interpersonal attraction vary under conditions of task oriented versus socio-emotionally oriented group interaction (e.g., Burke, 1967; Mann, 1961). Task versus socio-emotional interaction orientation is thus an important variable which has a strong demonstrated influence on social interaction. It is also a very pervasive variable in the practical sense, in that most social interaction could be classified as primarily task oriented (e.g., an industrial problem solving group) or socio-emotionally oriented (e.g., a cocktail party). A very widespread, frequently reported phenomenon in this regard is that task oriented behavior frequently leads to higher respect, whereas socio-emotionally oriented behavior frequently leads to higher liking in small group
interaction (e.g., Bales, 1956; Bales & Slater, 1955). Thus, it is reasonable to speculate that task versus socio-emotional interaction orientation may have a parametric influence on interpersonal attraction. Because of this potential importance, this variable was included in the design of the present study.

**Design.** The design of Study 1 was a 2 X 2 X 2 factorial (see Figure 1) with two levels of attitude similarity (similar/dissimilar), two levels of dyad sex (same sex/opposite sex), and two levels of interaction orientation (task/socio-emotional).

**Method.** One hundred fourteen male and female subjects were drawn from Introductory Psychology classes and participated in the study in partial fulfillment of a laboratory experience requirement. All subjects were strangers to each other. They reported to the laboratory in groups of 12, and there completed the Paranormal Belief Inventory (PBI), a measure of belief in paranormal phenomena (such as ESP, ghosts, UFOs, etc.; see Appendix C for a sample copy).³ The topic of paranormal phenomena was chosen as the subject for group discussion because of its low factual basis, wide individual differences in belief, and relevance to

³The Paranormal Belief Inventory was developed by the author for the present research. It is a 30 item forced choice instrument that yields a composite score ranging between 0-60. The 30 items employed were selected from a larger pool of 75 items, which were written to reflect Parapsychological, Religious, Superstitious, Supernatural, and Occult components of belief in paranormal phenomena. This 75 item inventory was pretested on two undergraduate psychology classes (Psyc 651: Psychology of Personality, and Psyc 401: Introductory Psychology) for a total sample size of 92 subjects. An item analysis was carried out, and items receiving an approximately equivalent number of endorsements by subjects across the three possible alternatives were chosen for inclusion in the final survey, unless subject's free response comments indicated that a particular item was ambiguous. Several items were reworded for inclusion in the final version of the scale. These items were all tested again on a previously tested undergraduate student population (the author's Psyc 651 class). An additional item analysis indicated that all items yielded a reasonably broad spectrum of responses, so all 30 items were retained in the final scale.
Figure 1

<table>
<thead>
<tr>
<th>Attitude Similarity</th>
<th>Similar</th>
<th>Dissimilar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interaction Orientation</td>
<td>Task</td>
<td>S-E</td>
</tr>
<tr>
<td>Dyad Sex</td>
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<td></td>
</tr>
<tr>
<td>Same</td>
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<td>15</td>
</tr>
<tr>
<td>Opposite</td>
<td>14</td>
<td>16</td>
</tr>
</tbody>
</table>

Factorial Design Employed in Study 1

Numbers in each cell indicate the number of subjects run in that condition. Dyad members scores were pooled in all analyses (i.e., both dyad members scores were analyzed).
the contemporary social scene. After completing the PBI, subjects scored their own inventories according to instructions provided by the experimenter. Then they were given a hypothetical case ("The Case of John and Mary"; see Appendix A for a sample copy) to read for later discussion purposes. While the subjects read this case, the experimenter assigned them to dyads using the following procedures: (a) attitude similarity-dissimilarity for a dyad was determined on the basis of PBI scores. Subjects in the similar attitude condition had PBI scores within 10 points of each other, whereas subjects in the dissimilar attitude condition had scores 20 or more points apart; (b) subjects were assigned to same or opposite sex dyad interaction on the basis of their sex; and (c) subjects were assigned to task versus socio-emotional interaction orientation conditions on an ad hoc basis, with a guiding consideration of maintaining approximately equal numbers of subjects in all cells of the design. Interaction orientation was manipulated through the use of written instructions which required the dyad to either analyze the case and explain the apparently paranormal phenomena in normal terms (task orientation), or to share their feelings about the case and about paranormal phenomena in general, disregarding questions of objective fact for the case at hand (see Appendix A for sample instructions). Subjects were given 20 minutes for interaction, then completed the dependent measures, were debriefed and dismissed.

Dependent measures. Four basic sets of dependent measures were used, all in the form of verbal self report rating scales. Two separate attraction measures were employed (both on seven point scales); Byrne's (1971) two item Interpersonal Judgment Scale (IJS), designed to measure liking and respect, and McCroskey and McCain's (1974) 15 item attraction
scale, in which the first five items tap liking, the next five, physical attractiveness, and the last five, respect. For the analysis of results, the two subscales of the IJS were summed (as is recommended by Byrne and traditionally done in the literature), and each of the five subscales of the McCroskey and McCain liking, respect, and physical attractiveness measures were summed to yield three composite scores. The third set of measures were concerned with perceived attitude similarity with the dyad partner, and took the form of two 7 point scales, one assessing attitude similarity-dissimilarity in the area of paranormal phenomena, and the other assessing attitude similarity-dissimilarity in general. The final measure asked for the subject's estimate of dyad talking time in the group, made on an 11 point scale (ranging from 0% - no talking at all, to 100% - constant talking in the dyad by either one or both of the subjects. A series of open-ended questions were also employed to gather further information regarding the strengths and weaknesses of the design (see Appendix A for a sample response booklet containing all of the dependent measures).

**Hypotheses.** A series of hypotheses was developed about the probable interactive effects of this combination of independent variables. First of all, in line with the voluminous previous research of Byrne (1971) and others, it was expected that there would be higher attraction in the similar attitude condition than in the dissimilar attitude condition. Next, in line with the hypothesized three component multidimensionality in attraction responses, it was expected that the independent variables would differentially affect the various subsets of attraction measures such that (a) liking would be higher in the socio-emotional condition than in the task condition; (b) respect would be higher in the task than
in the socio-emotional condition; and (c) perceived physical attractiveness would be higher in the opposite sex than in the same sex dyadic interaction condition.

Results. As expected, differential, interactive effects were found on the three components of attraction measured as a result of the particular personal and situational variables employed (see Tables 1 and 2 for summaries of the results, and Tables 3-11 for cell means for each dependent variable in the reported analyses). The pattern of effects supported the contention that these three variables may be of parametric importance in their impact on social attraction. The effects turned out to be somewhat more complicated than hypothesized, however, although they strongly supported the methodological revisions proposed in this research.

First of all, a manipulation check indicated that the attitude similarity-dissimilarity manipulation was successful; strong main effects for attitude similarity were found in unequal-n ANOVAs carried out on both the paranormal attitude similarity (F(1,106) = 24.71, p < .001; see Figure 2) and general attitude similarity (F(1,106) = 10.44, p < .002; see Figure 3) variables. That is, subjects in the similar condition

4 In the ensuing discussion, the term "liking variables" will refer to the sum of the five McCroskey and McCain liking subscales; the term "respect variables" will refer to the sum of the five McCroskey and McCain respect subscales; and the term "physical attractiveness variables" will refer to the corresponding sum of the physical attractiveness subscales. While the results of Study 1 are discussed in terms of effects on these composite variables, ANOVAs were also carried out on all component subscales. As expected, differential significance levels were obtained for different subscales. These results are summarized in Table 2.

5 Marginally significant attitude by interaction orientation statistical interactions were also obtained for both variables, as follows; paranormal attitude similarity, (F(1,106) = 2.36, p < .12, and general attitude similarity, (F(1,106) = 3.82, p < .051. Inspection of Figures 2 and 3 indicate that this is a result of more extreme ratings in the socio-emotional condition. That makes sense, in view of the greater amount of self disclosure occurring in this condition.
Table 1

Independent Variable Effects

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>ATTITUDE (similar/dissimilar)</th>
<th>DYADSEX (same/opposite)</th>
<th>INT. ORIENTATION (task/socio-emotional)</th>
<th>ATT/DYADSEX</th>
<th>ATT/INTOR</th>
<th>DYADSEX/INTOR</th>
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Summary of Reported Results of Analysis of Variance in Study 1

Decimals in each column indicate probability levels for effects; values considered significant are circled.
Table 2
Supplementary Summary of ANOVA Results in Study 1

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<th>A/I</th>
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<td>.19</td>
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</table>

Values considered significant are circled.
### Table 3

**Study 1: Mean IJS Ratings**

| Similar |  | Dissimilar |  |
|---------|  |        |  |
| Task    | S-E | Task   | S-E |
| Same    | 12.00 | 11.80   | 11.14 | 12.07 |
| Opposite| 10.86 | 12.06   | 10.29 | 11.29 |

### Table 4

**Study 1: Mean M&M Liking Ratings**

*(sum of M&M #1-#5)*

| Similar |  | Dissimilar |  |
|---------|  |        |  |
| Task    | S-E | Task   | S-E |
| Same    | 26.77 | 29.33   | 26.14 | 28.79 |
| Opposite| 25.00 | 27.31   | 25.36 | 25.36 |

### Table 5

**Study 1: Mean M&M Physical Attractiveness Ratings**

*(sum of M&M #6-#10)*

| Similar |  | Dissimilar |  |
|---------|  |        |  |
| Task    | S-E | Task   | S-E |
| Same    | 22.54 | 23.80   | 22.57 | 21.07 |
| Opposite| 22.29 | 26.75   | 22.79 | 25.64 |
### Table 6

**Study 1: Mean M&M Respect Ratings**  
*(sum of M&M #11-#15)*

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<thead>
<tr>
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</thead>
<tbody>
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### Table 7

**Study 1: Mean Paranormal Attitude Similarity Ratings**

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### Table 8

**Study 1: Mean General Attitude Similarity Ratings**

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**Study 1: Mean Percent Talking Time Estimate Ratings**

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### Table 10

**Study 1: Mean Paranormal Belief Inventory Scores**

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</table>

### Table 11

**Study 1: Mean PBI Difference Scores**  
*(measure of dyadic attitude similarity)*

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<tr>
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<td>5.88</td>
<td>26.14</td>
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</table>
rated each other as similar, while subjects in the dissimilar condition rated each other as dissimilar.

As a check on the comparability of the amount of social interaction in all conditions, an unequal-n ANOVA was carried out on all subject's ratings of perceived talking time (of either or both subjects) during the 20 minute interaction period. Several significant effects were found, indicating variation along this dimension. These effects included a main effect for dyad sex ($F(1,106) = 2.98, p < .08$), a main effect for interaction orientation ($F(1,106) = 8.50, p < .004$), and a dyad sex by interaction orientation statistical interaction ($F(1,106) = 4.40, p < .04$). The main effects appear to indicate that there was more perceived talking in the same sex than opposite sex conditions, and also more in the socio-emotional than task condition. However, the significant interaction effect clarifies these relationships by indicating that there was actually more perceived talking in opposite sex dyads in the socio-emotional condition only (see Figure 4).

The attitude similarity-attraction relationship did not emerge in its classic form as a strong main effect. Rather, a marginally significant ($F(1,106) = 2.72, p < .10$) main effect on the respect subscales was found, suggesting that similar partners were more highly respected (see Figure 5). This interpretation is not a valid generalization, however, because of the significant attitude similarity by interaction orientation statistical interaction ($F(1,106) = 6.11, p < .02$), which indicates that dissimilar partners were respected less in the task condition only. Thus, in the present case, attitude similarity did not affect liking, but did influence respect. This supports the contention of the present research that such different components of attraction should be evaluated independently.
Figure 2

Paranormal Attitude Similarity (Study 1)

- Similar, Opposite
- Similar, Same
- Dissimilar, Same
- Dissimilar, Opposite
Figure 3

Similar, Opposite
Similar, Same
Dissimilar, Same
Dissimilar, Opposite

General Attitude Similarity
(Study 1)
Figure 4

Estimated Percent Time Talking
(Study 1)
A procedure of summing across liking and respect scales loses this differential information, as is apparent from the differential significance of independent variable effects on Byrne's IJS and the three McCroskey and McCain components of liking, respect, and physical attractiveness (see Table 1 for a summary of these effects).

A series of other differential effects on the three components of attraction was also discovered. On the liking variables (see Figure 6), a main effect for dyad sex ($F(1,106) = 4.53, p < .04$) indicated higher liking in the same sex than cross sex dyads, and, as predicted, a main effect for interaction orientation ($F(1,106) = 3.99, p < .05$) indicated higher liking in the socio-emotional than the task condition.

Effects on the respect variables were more complicated, as indicated above. Main effects for attitude similarity and interaction orientation ($F(1,106) = 10.24, p < .002$) suggested that respect was higher for similar than dissimilar partners, and that respect was higher in socio-emotional than task conditions. Significant two-way interactions make these interpretations unjustified, however. As mentioned above, the .02 level attitude by interaction orientation statistical interaction indicates that dissimilar partners were respected less in the task condition. Similarly, the significant dyad sex by interaction orientation statistical interaction ($F(1,106) = 4.79, p < .03$) indicates that opposite sex partners were respected more than same sex partners in the socio-emotional condition. Thus, the initial hypotheses regarding effects on this variable were not confirmed, although the obtained effects do make sense in terms of the present multidimensional conception of attraction.

Finally, the expected effect on perceived physical attractiveness was found, but it held only in the socio-emotional condition, and not in
Figure 6

Summed M&M Liking Scales
(Study 1)
the task condition (see Figure 7). That is, a marginally significant
\((F(1,106) = 3.29, p < .07)\) dyad sex by interaction orientation statistical
interaction indicated that the opposite sex partners were rated more
physically attractive than the same sex partners, but only in the socio-
emotional condition. Physical attractiveness thus may be an important
variable only in the context of dating-type relationships.

The purpose of this initial study was not systematically to investi-
gate the parametric effects of attitude similarity, sex of interactants,
or task versus socio-emotional interaction orientation. Rather, Study
1 was designed to look for possible differential effects of important
everyday variables on the three hypothesized components of generalized
social attraction. The results strongly confirmed the existence of
such differential effects. Thus, as contended at the outset, the opera-
tional breakdown of attraction measures in line with the conceptual
multidimensionality of the overall phenomenon is required. It is clear
that the simple summation of scales designed to tap different components
of attraction is a counterproductive research procedure, since independent
variable effects may be obscured in this process. A comparison of
Figure 8 (mean effects on the summed Interpersonal Judgment Scale) with
Figures 5 and 6 (mean effects on the summed McCroskey and McCain respect
and liking scales), illustrates the utility of measuring the components
of social attraction separately rather than as a generalized score.

The results of Study 1 supported the feasibility of the proposed
final research design. A three component conceptualization of the
multidimensionality in social attraction (as liking, respect, and phy-
sical attractiveness) was justified in terms of social psychological
theory, previous factor analytic research, and the present empirical
Figure 7

Summed M&M Physical Attractiveness Scales
(Study 1)
Figure 8

Summed Interpersonal Judgment Scale (Study 1)
results. Further, it appeared that the three independent variables employed in this research did have important differential effects on these components of the overall attraction response. Thus, it seemed appropriate to proceed with the second phase of this research, Study 2.

Study 2

Confirmation of Theoretical Analysis and Scale Development

Study 2 employed the successful 2 X 2 X 2 factorial design of Study 1 (with 14 Ss per cell), with a few procedural variations expected to increase the magnitude of independent variable effects. In Study 2, subject's Dyad Discussion Instructions contained the names and PBI scores of both subjects in order to strengthen the perception of attitude similarity-dissimilarity. It was hoped that this manipulation would result in the traditionally observed attitude similarity/attraction main effect. An additional change designed to increase the magnitude of the attitude main effect was the employment of a more realistic case. A new case, called "The Case of Jill and Henry" (see Appendix B for a sample copy), was written maintaining the paranormal theme. However, the events were described in such a way that either a paranormal (e.g., ESP, spirits, etc.) or a normal, rational, scientific explanation (e.g., trickery, expectations, delusions, etc.) could be defended, depending upon the reader's beliefs and biases. Several subjects in Study 1 had commented that "The Case of John and Mary" was so unbelievable that they could find common grounds with their partner regardless of the difference in PBI scores. The new case was expected to heighten both the perception of and effects of attitude similarity/dissimilarity.
The instructions constituting the interaction orientation variable were also revised slightly, in an attempt to strengthen their impact. Both sets of instructions were expanded and clarified, and subjects in the socio-emotional condition were further instructed to explore each others beliefs and experiences in addition to their reactions to the case (see Appendix B for sample copy).

Method. Two hundred and eighty-four male and female subjects were drawn from Introductory Psychology classes and participated in the study in partial fulfillment of a laboratory experience requirement. The procedures for assigning subjects to the independent variable conditions and running the experiment were identical to those of Study 1 except for the changes described above and the use of a 5 and 17 point maximum PBI difference between dyad members for assignment to the similar and dissimilar attitude conditions, respectively. After all of the data were collected, seven dyads (14 subjects) were deleted because of errors in their response booklets. An additional 23 dyads (46 subjects) were randomly deleted to yield an equal-n factorial design of 28 Ss per cell. In order to meet statistical assumptions of independence of observations, dyads were split on an ad hoc basis into two samples of 112 Ss each (14 Ss per cell). In assigning dyad members to either Sample 1 or Sample 2, care was taken to equate the numbers of males and females in each cell, and attempts were make to approximately equalize the distribution of PBI scores in all cells.

Dependent measures. A large series of dependent measures were employed, all in the form of verbal self-report rating scales. The last two items of Byrne's (1971) Interpersonal Judgment Scale and the fifteen items of McCroskey and McCain's attraction scales were included
along with a series of other attraction items selected from the recent attraction literature. In addition to those just mentioned, the following sources were drawn from heavily in the construction of the present attraction scales: Kiesler & Goldberg (1968), Triandis (1961), and Rubin (1970). Items were selected on the basis of both frequency of occurrence in the literature and their logical relatability to the hypothesized dimensions of liking, respect and physical attractiveness. All ratings were made on seven point scales.

Forty Likert-type scale items were employed. Thirty-six of these utilized the "strongly agree" -- "strongly disagree" endpoint labels as in the McCroskey and McCain scales. A number of items were re-worded slightly in order to meet these and other criteria for scale construction. Other criteria include reverse wording of the sentiment for a number of the items included in the final scale (e.g., "He (She) would be a poor problem solver," was a negatively worded item). Also, all items were re-worded to a "he (she)" gender format as necessary.

Fifteen of the most frequently occurring items from the attraction literature which were expected to tap a "liking" dimension were employed. As they appeared in the literature, these items seemed to fall into two distinct categories: attributional items (e.g., "I think that he (she) could be a friend of mine") and behavioral items (e.g., "I would like to have a friendly chat with him (her)"). Eight attributional and seven behavioral items were included. Similarly, seven attributional and eight behavioral "respect" items were selected. All of these items were presented with the "strongly agree - strongly disagree" response format, except for the Interpersonal Judgment Scale items and two direct liking and respect items written by the author: "Overall, I feel that I like
my partner; very much/not at all" and "Overall, I feel that I respect
my partner; very much/not at all."

On the physical attractiveness dimension, eight of McCroskey and
McCain's (1974) previous scales were employed, along with two new scales
written by the author ("In general, his (her) physical appearance is
very unattractive," and "a member of the opposite sex would probably
regard him (her) as extremely attractive physically." These items were
all attributional in nature.

Forty bipolar semantic differential type attraction scales were
also employed. Items were again selected on the basis of both frequency
of occurrence in the literature, and relatability to liking, respect,
and physical attractiveness dimensions. It is important to note, how­
ever, that the classification of items into one or the other of these
categories was often difficult; considerable ambiguity existed in the
identification of the 15 liking, 14 respect, and 11 physical attractiv­
ness items (more so than was the case for the Likert items). Major
sources of items included Lott, Lott, Reed, and Crow (1970), Jacobs,
Berscheid, and Walster (1971), and Gormly, Gormly, and Johnson (1971).
All items were presented in bipolar seven-point scale format (e.g.,
"Good X-X-X-X-X-X-X Bad"). The order of the positive and negative poles
was alternated across all items.

These eighty attraction items were presented to the subjects in
the form of a sixteen page response booklet (see Appendix B for a sample
copy). The order of items was partially counterbalanced, as follows:
Half of the subjects received the Likert items first, the other half
received the semantic differential items first. Within the group of
Likert items, the IJS scales were always presented first, followed by a
ten item page of presumably sensitive (i.e., very frequently used) scales. Three additional pages of Likert scales were presented in counterbalanced order across subjects. The final Likert page always contained the two direct liking and respect items. This ordering arrangement was employed so that responses on the presumably sensitive scales would always be given first, without possible contaminating or interactive effects from the other Likert or semantic differential measures. Liking, respect, and physical attractiveness items were intermingled across all 80 attraction items. While the wording of items was varied in positive or negative terms, all items were scored such that a score of 7 indicated high attraction (i.e., negatively worded items were scored in reverse).

The response booklet also included other Likert type and free response scales. Three separate scales asked for subjects ratings of the degree of change from their first impressions of liking, respect, and physical attractiveness for their partner. As in Study 1, two separate scales measured paranormal attitude similarity and general attitude similarity, and one ten point scale measured estimated percentage of talking time. With the exception of the last scale, all of these other scales were seven point scales. Finally, two free response questions asked subjects to explain why they felt the way they did about their partner, and whether they had ever had any psychic experiences.

Several composite scores were constructed from the 80 attraction items employed. The traditional sum of the two IJS items was calculated along with sums for each of the five item McCroskey and McCain liking, respect, and physical attractiveness scales. A sum of all 15 McCroskey and McCain items was also calculated. As reported below, factor analyses were carried out on the 40 Likert and 40 semantic differential items separately. On the basis of these analyses, factor scores based upon
subsets of the variables employed were calculated. For each factor score employed, the corresponding unweighted sum of the component scale scores was also calculated.

Results

Manipulation Checks. The use of unacquainted dyad interactants in Study 2 provided two separate data samples for analysis, called Sample 1 and Sample 2, each an equal-n complete factorial design (with 14 Ss per cell). Unfortunately, the attempts to equate the two samples in terms of the differences between the dyad interactant's PBI scores were not completely successful. ANOVAs were carried out in both samples on Subject's PBI scores, PBI difference scores (i.e., the difference between the PBI scores of dyad member 1 and dyad member 2), ratings of paranormal attitude similarity and general attitude similarity, and estimates of dyad talking time. As summarized in Table 12, several unexpected effects emerged indicating variations both within and between the samples (see Tables 13 and 14 for cell means for each variable in Samples 1 and 2, respectively). In general, Sample 2 displayed more unanticipated effects than Sample 1, although both do present results that make interpretation of the independent variable effects difficult and ambiguous.

ANOVAs on PBI scores showed no difference across all independent variables in Sample 1, as expected. However, in Sample 2 a marginally significant attitude main effect emerged \(F(1,104) = 3.306, p < .072,\)

\[6\] Actually, the data from Study 1 also provided two subsamples (i.e., two strangers interacted with each other). However, data from both subsamples were combined for the analysis of results for Study 1. Since it could be argued (Winer, 1971) that such a combination of data would violate statistical assumptions of independence of scores, data from Study 2 were evaluated separately for the two subsamples.
Table 12

Descriptive Dependent Variable Effects: Samples 1 and 2

Independent Variable Effects

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For each dependent variable, Sample 1 effects are summarized in the upper row, Sample 2 effects in the lower row.
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Cell Means for Sample 2 Descriptive Dependent Variables

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indicating that subjects in the dissimilar attitude condition had higher average PBI scores than subjects in the similar attitude condition.

With regard to PBI difference scores, complications emerged in both samples. While, as expected, both samples demonstrated significant attitude main effects on this variable (Sample 1, \( F(1,104) = 923.23, p < .001 \); and Sample 2, \( F(1,104) = 923.23, p < .001 \)), both samples also included marginally significant attitude by dyad sex interactions (Sample 1, \( F(1,104) = 3.520, p < .063 \); Sample 2, \( F(1,104) = 3.520, p < .063 \)). These results appear to indicate that in both samples, there were larger differences between same sex subject's PBI difference scores than between those of the opposite sex subjects.

A slightly different complication arose with the paranormal attitude similarity rating variable. Here, as expected, significant main effects of attitude emerged in both samples (Sample 1, \( F(1,104) = 39.26, p < .001 \); Sample 2, \( F(1,104) = 75.50, p < .001 \)), indicating that subjects in the similar condition rated themselves as similar, while subjects in the dissimilar condition rated themselves as dissimilar. However, a significant dyad sex main effect was obtained on this variable in Sample 2 only (\( F(1,104) = 7.923, p < .006 \)), indicating that opposite sex subjects rated each other as more similar than same sex subjects.

Similar but somewhat more extensive complications arose in the case of the general attitude similarity ratings. As expected, both samples presented significant attitude main effects (Sample 1, \( F(1,104) = 15.549, p < .001 \); Sample 2, \( F(1,104) = 27.154, p < .001 \)). However, Sample 2 also demonstrated a significant dyad sex main effect (\( F(1,104) = 6.789, p < .011 \)), and a marginally significant interaction orientation main effect (\( F(1,104) = 2.868, p < .093 \)). These effects indicate that
subjects in the opposite sex condition rated themselves as more similar than those in the same sex condition, and that subjects in the socio-emotional condition rated each other as more similar than subjects in the task oriented condition.

Finally, unexpected differences also emerged on the subject's rated estimates of the percentage of time that one or both of the dyad members were talking. The ANOVA in Sample 1 indicated a significant interaction orientation main effect ($F(1,104) = 22.503, p < .001$) and a significant attitude by dyad sex two way interaction ($F(1,104) = 11.291, p < .001$). In Sample 2, only the interaction orientation main effect was significant ($F(1,104) = 17.216, p < .001$). These results indicate that in both samples, subjects in the socio-emotional condition rated their dyad as significantly more talkative than those in the task condition. However, in Sample 1 only, same sex subjects rated themselves as significantly less talkative in the similar condition, but more talkative in the dissimilar condition.

A variety of differences between the two data samples of interest here have been discussed. It seems clear that the two samples cannot be considered "comparable," although they are clearly empirically informative. Interpersonal attraction, as measured on verbal self report scales, is an exceedingly complex phenomenon. These sample discrepancies indicate that an extended analysis of independent variable effects may not be as productive for the current research endeavor as a more detailed analysis of the apparent components of the overall attraction response. Thus, the remaining presentation of the research results will discuss the ambiguous effects of the independent variables only insofar as they are relevant to the interpretation of the theoretical components of the overall attraction response, which are the primary concern of this
research. Further, the diversity of the PBI effects between the two samples, with its consequent implications for differences in factor score coefficient weightings, appear to require a more tentative approach to the construction of an overall attraction scale. In particular, the rather gross differences between the results in the two samples may indicate that any attempt at development of a weighted scale must include a situational factor in its research design. With regard to the present research, it seems that the presentation of a weighted scale based upon such ambiguous sample results would be premature. Thus, the remainder of this research report will simply delineate probable components of the overall attraction response, and suggest combinations of scales for the measurement of these components in future research. That is to say, a finalized, weighted scale for the measurement of components of "generalized social attraction" no longer seems a viable goal for the present research. Rather, the groundwork for such an endeavor will be laid, leaving the scale construction to future cross-validational efforts.

Factor analyses. The nature of the multidimensionality in generalized social attraction was assessed by submitting the 80 attraction measures employed in this study to a factor analytic procedure. Specifically, two factor analyses with iterations (Comrey, 1973) were carried out on the within cells correlation matrices; one was done on the forty Likert items, and one was done on the forty semantic differential items. There are several reasons for the selection of the within cells correlation matrix for factoring. Previous work has almost uniformly employed the between cells correlation matrix. However, this results in severe interpretational problems for the factor structure obtained, since variation due to differential independent variable effects is included
in the analysis (Caldwell, 1974; Harris, 1975). The use of the within cell rather than between cell matrix is justified in this case because the primary goal of the present analysis is to identify the underlying psychological components of the presumably multidimensional attraction response. Thus, variance due to independent variable effects should be partialled out.

For similar reasons the correlation matrix was chosen for factoring, rather than the variance - covariance matrix. The variance - covariance matrix may be employed when the scaling factor of the original measures is crucial (Morrison, 1967), as for example, when the precise nature of between cells effects is the area of primary concern. In the present analysis, however, primary concern lies not with between cells effects, but rather with the underlying theoretical components of variation in the dependent measures. That is to say, the present research is seeking factors which more truly reflect the underlying psychological variation than the dependent variables employed. The latter are seen merely as estimates of the underlying, unobservable psychological processes that make up the phenomenon. Thus, the scaling factor of the original scores is not important here; in fact, the opposite is the case. A factor structure is desired that will hold for any metric (e.g., 5, 7, 9, 11, 15, etc., point scales), since researchers in this area use an abundant variety of numerical scale ranges (cf, Leuser, 1975). On this basis, use of the correlation matrix rather than the variance - covariance matrix is justified. The form of the obtained factor structure will be invariant under changes in the scales of the responses (Morrison, 1967).

The present analysis differs from previous factor analytic attraction research in one additional significant way. Here, a factor analysis
with iterations was carried out rather than a principle components factor analysis. This procedure has the important advantage of differentiating common variance -- that shared by all data variables in the analysis -- from error variance, which is variance specific to particular variables (Comrey, 1973, Harman, 1976). Since the goal of the present analysis is to identify the underlying psychological dimensions of attraction, it should deal only with variance common to recognized operational measures of attraction. The procedure of factor analysis with iterations statistically estimated the common variance shared by the dependent measures, rather than arbitrarily assuming that all variance was common, as the principle components method would have done.

After factoring as just described, all resulting factors with eigenvalues greater than 1.0 were retained and rotated to simple structure using the VARIMAX method (Kaiser, 1958). The resulting factor structures were not as simple and direct as hypothesized. In the analysis of Sample 1 Likert items, seven factors emerged with eigenvalues greater than 1.0, accounting for 69.2% of the standardized variance. For the Sample 2 Likert items, however, eight factors emerged with eigenvalues greater than 1.0, accounting for 70.6% of the standardized variance. Since the ordering of the factors was not necessarily the same in both samples after rotation, attempts were made to identify comparable factors existing in both samples. This was done by comparing every possible pair of rotated factor loadings between the two samples, and selecting the best match (i.e., Sample 1 factor 1 was systematically compared with Sample 2 factors 1 through 8, with the best match between variable loadings selected as a commonly defined factor for the two samples). The criterion for the selection of a match was the optimization of the numbers of variables loading at .40 or above in both samples.
In this way, new, composite factors were defined in terms of the limited number of variables which loaded highly on the same factor in both samples (See Table 15 for listing of factor pair loadings by dependent variable). The emerging factors were then labelled in an intuitive manner based upon the nature of the included variables.

As a consequence of this factor generating procedure six factors were defined, each by varying numbers of items. The first Likert factor (referred to as factor LA) was clearly a physical attractiveness factor. It emerged as the first factor in Sample 1, accounting for 60.9% of the rotated variance. In Sample 2, the corresponding factor emerged third, loaded on fewer variables overall, and accounted for only 6.4% of the rotated variance.7 The variables retained in the composite factor provided for ratings on the following dimensions; handsome (pretty), well groomed, sexy looking, attractive physically, good looking, and physically attractive to the opposite sex (see Appendix D for the actual items).

The second factor in Sample 1 accounted for 16.4% of the rotated variance. Its best match in Sample 2 was factor 1, which accounted for

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7The varying nature of the emerging factors (as indicated by the differential variable loadings) and the differences in percentages of variance accounted for in each sample call into question the initial goal of the present research; i.e., the development of a weighted scale to measure the components of attraction. These results may indicate that the "components" of attraction exist and interact in varying, idiosyncratic ways among different persons, and that no nomothetic statement is possible without qualification in terms of still to be defined subject and situational variables. It should be noted here that Triandis (1961) found similar variability in factor structures across different samples, thus lending support to such a conclusion. However, a characteristic of both Triandis work and the present study is the factoring of a large number of variables. Since the numbers and complexity of emerging factors is dependent upon the number and nature of variables included (Comrey, 1973; Harman, 1976), more clearcut results might emerge if the analysis were repeated on a smaller subset of the variables.
Table 15

Significant Factor Pair Loadings for Each Likert Variable

Numbers in each column indicate item loadings above .30 on each obtained VARIMAX rotated factor. Numbers are paired in each subcolumn, with the left subcolumn containing the higher loadings for Sample 1, and the right subcolumn containing the higher loadings for Sample 2. The numbers at the top of each subcolumn indicate the emergent factor number in its respective sample. The factor identification letters used in the text are indicated above these numbers for the retained factor pairs. Matched item loadings above .40 in both samples are boxed to facilitate the identification of items employed in the scales defined in Appendix D. The letters presented before each item indicate the predicted nature of that item, as follows: L = liking, R = respect, P = physical attractiveness, and A = attributional, B = behavioral. The letters presented after selected items indicate the source of those items, as follows: (a) IJS item, (b) Author's item, (c) McCroskey & McCain Liking item, (d) McCroskey & McCain Respect item, and (e) McCroskey & McCain Physical Attractiveness item.

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<tr>
<td>/79-47/</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>L,A</td>
<td>I feel that I would probably like/dislike this person very much/to a slight degree. (a)</td>
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<tr>
<td>49-39</td>
<td>/56-52/</td>
<td>52</td>
<td>52</td>
<td>52</td>
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</tr>
<tr>
<td>/73-48/</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>L,A</td>
<td>Overall, I feel that I like my partner very much/not at all. (b)</td>
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<td>59-35</td>
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Table 15 continued

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<td>/62-61/</td>
<td>61</td>
<td>61</td>
<td>61</td>
<td>L,B</td>
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</table>

I think that he(she) is one of those people who quickly wins respect.

It would be difficult to meet and talk with him(her).

He(She) is very well groomed.

I would enjoy working with him(her) at the same job.

He(She) is very sexy looking.

He(She) seems to be a very admirable person.

I would not be interested in meeting with him(her) socially.

In general, his(her) physical appearance is very unattractive.

I couldn't get anything accomplished with him(her).

I would invite him(her) to join my club or other social group.

I don't like the way he(she) looks.

I feel that I know him(her) personally.

I would enjoy having lunch with him(her).
The clothes he(she) wears are not becoming. (c)
I would ask his(her) opinion before making an important decision. (d)
I have confidence in his(her) ability to get the job done. (d)
I would praise his(her) suggestions. (c)
He(She) just wouldn't fit into my circle of friends. (c)
Most people would react very favorably to him(her) after a brief acquaintance. (c)
He(She) is somewhat ugly. (e)
He(She) is a typical goof-off when assigned a job to do. (d)
I have great confidence in his(her) good judgment. (c)
I think that he(she) and I are quite similar to each other. (c)
I would never want to study with him(her). (c)
He(She) is not attractive physically. (e)
We could never establish a personal friendship with each other. (c)
Table 15 continued

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- **I would vote for him(her) in a class or group election.**
  - R,B
  - 41
- **I definitely would not enjoy his(her) company.**
  - L,A
  - 40
- **He(She) is not very good looking.**
  - P,A
  - 40
- **I would never invite him(her) to accompany me to a party.**
  - L,B
  - 58
- **If I wanted to get things done, I could probably depend on him(her).**
  - R,A
  - 42
- **A member of the opposite sex would probably regard him (her) as extremely attractive physically.**
  - P,A
  - 42
- **He(She) would be a poor problem solver.**
  - R,A
  - 42
- **I would like to have a friendly chat with him(her).**
  - L,B
  - 63
64.3% of the rotated variance. This was a task-oriented respect factor, labelled factor LB. Variables loading above .40 on this factor included: respect for, quickly wins respect (of others), asks opinion of before an important decision, praise the suggestions of, confidence in ability to get the job done, goofs off on a job, confidence in the good judgment of, vote for, depend on to get things done, and be a poor problem solver.

The third factor in Sample 1, accounting for 7.4% of the rotated variance, best matched the second factor for Sample 2, which accounted for 10.8% of that samples rotated variance. This was a liking factor (factor LC). It included the following variables: like/dislike this person, like/dislike working in an experiment with this person, overall liking, could be a friend of mine, difficult to meet and talk with, invite to join my club/social group, enjoy having lunch with, people would react favorably to, could never establish a personal friendship with, not enjoy company of, and like to have a friendly chat with.

Factor four of Sample 1 accounted for 5.3% of the rotated variance. In the case of Sample 1 factors four, five (which accounted for 3.7% of the rotated variance), and six (which accounted for 3.6% of the rotated variance), all appeared to be best matched by the second factor of Sample 2. While the matching involved here was the best possible utilizing the criteria outlined above, as can be seen in Table 15, the majority of high loadings on factor 2 of Sample 2 were not paired with similar loadings among factors 4, 5, and 6 of Sample 1. In any event, some interesting composite factors did emerge. The fourth composite factor (factor LD)

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8 Note that the loadings in Table 15 are positive even for negatively worded items because the scoring was reversed for these items; i.e., a high score on any item indicates a positive evaluation.
appeared as a rejection factor: couldn't get anything accomplished with, would never want to study with, and could never establish a friendship with. The fifth composite factor (factor LE) was an informal social acceptance factor defined in terms of a single variable: not enjoy the company of. The sixth composite factor (factor LF) an intimacy factor, was also defined by a single scale: feel that I know him/her personally.

Similar complexities emerged from the factor analysis of the semantic differential items. In Sample 1, eight factors emerged with eigenvalues greater than 1.0, accounting for 72.7% of the standardized variance. On the other hand, in Sample 2 only seven factors emerged with the eigenvalues greater than 1.0, accounting for 70.9% of the standardized variance. Similar matching procedures were used to indentify composite factors loading highly on similar patterns of variables in both samples (see Table 16).

The first composite factor (factor SA) resulted from the matching of Sample 1 factor 1 (accounting for 62.9% of the rotated variance) with Sample 2 factor 4 (which accounted for 5.4% of the rotated variance). This factor, labelled "easy going sociability" loaded highly on the following variables: good-natured, tolerant, cooperative, pleasant, attentive, polite, and open-minded.

The second composite factor (factor SB) was labelled "likability." It resulted from the matching of Sample 1 factor 2 (accounting for 14.2% of the rotated variance) with Sample 2 factor 3 (accounting for 5.9% of the rotated variance). Variables loading highly on this dimension were: likable, thoughtful, friendly, sincere, pleasant, and sociable.

The third composite factor (factor SC), "grooming attractiveness," was the result of matching Sample 1 factor 3 (accounting for 5.0% of the
Table 16

Significant Factor Pair Loadings for Each Semantic Differential Variable

Numbers in each column indicate item loadings above .30 on each obtained VARIMAX rotated factor. Numbers are paired in each subcolumn, with the left subcolumn containing the higher loadings for Sample 1, and the right subcolumn containing the higher loadings for Sample 2. The numbers at the top of each subcolumn indicate the emergent factor number in its respective sample. The factor identification letters used in the text are indicated above these numbers for the retained factor pairs. Matched item loadings above .40 in both samples are boxed to facilitate the identification of items employed in the scales defined in Appendix D. The letters presented before each item indicate the predicted nature of that item, as follows: L = liking, R = respect, P = physical attractiveness.

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L likable-unlikable
R kind-cruel
P beautiful-ugly
L thoughtful-thoughtless
R intelligent-unintelligent
P attractive-unattractive
L friendly-unfriendly
R competent-incompetent
P good looking-plain
L warm-cold
R sincere-insincere
P well groomed-sloppy
P neat-unkempt
L good natured-quarrelsome
R tolerant-intolerant
Table 16 continued

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<td>42-31</td>
<td>60</td>
<td>31</td>
<td>P strong-weak</td>
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<tr>
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<td>37-37</td>
<td>L considerate-inconsiderate</td>
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<td>84</td>
<td>R responsible-irresponsible</td>
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<td>P robust-frail</td>
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<td>41</td>
<td>L polite-impolite</td>
<td></td>
</tr>
<tr>
<td>/59-48/</td>
<td>34</td>
<td>R open minded-narrow minded</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
rotated variance) with Sample 2 factor 1 (accounting for 70.5% of the rotated variance). This factor demonstrated high loadings on three appearance variables: attractive, good-looking, and well groomed.

Composite factor four (factor SD), a "competence" factor, emerged when Sample 1 factor 4 (accounting for 4.6% of the rotated variance) was matched with Sample 2 factor 2 (which accounted for 9.0% of the rotated variance). This factor included the variables intelligent, competent, and wise.

The final composite factor (factor SE) also emphasized an appearance dimension, although it seemed more associated with inborn physical characteristics than apparent grooming patterns. Consequently, this was labelled a "physical beauty" factor. Variables loading highly on this composite factor in both samples included: beautiful, attractive, good-looking, and appealing. It was derived from the combination of Sample 1, factor 5 (accounting for 4.2% of the rotated variance) and Sample 2, factor 1 (accounting for 70.5% of the rotated variance).\(^9\)

Independent Variable Effects. The observed between cells effects were complex and varied both across and within the two samples. Complicated and inconsistent independent variable effects emerged across the two samples. In the light of the fact that approximately 120 analyses of variance were performed on various combinations of the scales under study, problems of probability pyramiding became paramount. Adding this difficulty to that of the apparent differences in characteristics between

\(^9\)For both the Likert and Semantic Differential items, there are fewer composite factors than possible pairs of original factors. This is because factors which could not satisfactorily be matched between the two samples were deemed too idiosyncratic for inclusion, and were thus omitted from the analysis.
the two samples, it seems ill-advised and perhaps presumptuous to engage in a detailed analysis of the between cells effects. On the other hand, some explanation of these effects in line with the construct validation goals of the present research does seem in order.

For purposes of comparison with Study 1 (see Table 1), Table 17 lists the probability levels of independent variable effects on the IJS and the summed (5 item) McCroskey and McCain liking, respect, and physical attractiveness scales. As is apparent from a comparison of the two tables, independent variable effects were drastically attenuated in Study 2. Further, there was little consistency in the effects across Sample 1 and Sample 2. Many effects which were significant in one sample were either nonsignificant or only marginally significant in the other. In fact, the only partially consistent effect between the two studies was the dyad sex main effect on the summed McCroskey and McCain Liking scales, significant in Study 1 at the .04 level and in Sample 1 of Study 2 at the .007 level (but not significant in Sample 2). Unfortunately, the interesting series of effects of the interaction orientation manipulation observed in Study 1 disappeared completely in Study 2. A more positive trend, however, is observed in the marginally significant attitude main effect on the McCroskey and McCain Liking scale in Study 2 (Sample 1, F(1,104) = 3.092, p < .082; Sample 2, F(1,104) = 4.015, p < .048). This effect replicates the frequently demonstrated attitude similarity-attraction main effect reported by Byrne (1971) and others.

Component vs. Composite Scale Sensitivity. The general nature of independent variable effects is of lesser interest in the present research than the question of the sensitivity of the various dependent measures and their combinations that have been employed. Differences in sensitivity were examined between composite and component scores for the
Table 17

Summary of Selected ANOVA Results in Study 2

Independent Variable Effects

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>D</th>
<th>I</th>
<th>AD</th>
<th>AI</th>
<th>DI</th>
<th>ADI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal Judgment Scale</td>
<td>.083</td>
<td>.045</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.039</td>
</tr>
<tr>
<td>M&amp;M Liking</td>
<td>.082</td>
<td>.007</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.011</td>
</tr>
<tr>
<td>M&amp;M Physical Attractiveness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Decimals indicate significance levels of effects; top row = Sample 1, lower row = Sample 2. Effects with probability levels below .10 are listed.
Interpersonal Judgment Scale, the 15 item McCroskey and McCain attraction scales, and the newly created liking and respect scales developed for the present study. Each of these comparisons will be discussed in turn.

Two rudimentary statistical techniques were employed for these comparisons of dependent variable sensitivity to between cells effects. First, the significance level of the effects was examined. Since the significance level provides a probabilistic estimate regarding the "validity" of a between cells effect as opposed to a simple chance effect, it was used to select effects for further examination on the dependent variables of interest (such comparisons were deemed useful here in either or both of Samples 1 and 2). After appropriate effects for examination had been selected, a specialized statistic, $\omega^2$ (small omega squared) was used to compare the proportion of variance in each dependent measure accounted for by the between cells effect of interest (cf, Hays, 1973). While a significant F value guarantees that some association exists between the independent and dependent variables, it provides no information regarding the degree of association between the two. This latter information is estimated by $\omega^2$.

Through this dual use of information regarding significance levels and values of $\omega^2$, the strengths of detected effects were compared across

---

10 According to Hays (1973), $\omega^2$ and related statistics can be estimated by a variety of procedures, although no generally agreed upon estimating technique exists at the present time. The technique employed in the present research was an extrapolation of the formula presented by Hays for the analysis of the $2 \times 2$ factorial ANOVA. The statistic, which can take on continuous values between zero and 1.0, estimates the degree to which the knowledge of between cells manipulations allows more precise prediction of the dependent variable score; i.e., the degree of association between specific between cells effects and scores on a specific dependent variable. Thus, each value of $\omega^2$ cited estimates the degree of relationship between one between cells effect (e.g., the attitude main effect) and one dependent variable (e.g., the liking item of the Interpersonal Judgment Scale).
two standard attraction measures (the IJS and the McCroskey and McCain scales) and the newly created liking/respect scale combination introduced in the present study. To facilitate comparison among the dependent measures, the two strongest (i.e., most frequently significant) between cells effects were used for comparison purposes. These were the attitude and dyad sex main effects. Each of the dependent measures of interest will be discussed in turn, in terms of their component and composite scores.

The Interpersonal Judgment Scale will be considered first. Tables 18 and 19 present the data on significance levels and $\omega^2$ values for the attitude and dyad sex main effects, respectively. Since significant and/or marginally significant F values were obtained only in Sample 1, $\omega^2$ was examined only for Sample 1 data. The results indicate that for both the A and D main effects, information is lost by combining the component scales into a composite score in a simple additive fashion (i.e., $\omega^2$ values for composite scores are lower than those for one of the component scores). That is, the attitude main effect is better explained by an analysis of the IJS respect item than by the summed composite IJS score, while the dyad sex main effect is better explained by the IJS liking item than the composite score.

The newly created liking and respect scales were examined next. As indicated in Table 18, only one out of six possible F values approached significance on the attitude main effect, so this effect is not considered for this set of dependent measures. As seen in Table 19, however, five out of six ANOVA's yielded significant or marginally significant dyadsex effects on these variables, so $\omega^2$ was examined for the liking, respect, and summed liking/respect variables in both Sample 1 and Sample 2. Again,
Table 18

Attitude Main Effect: Comparison of p-value and $\omega^2$

<table>
<thead>
<tr>
<th>Component</th>
<th>p</th>
<th>$\omega^2$</th>
<th>Composite</th>
<th>p</th>
<th>$\omega^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>IJSLIK</td>
<td>.244</td>
<td>.003</td>
<td>.541</td>
<td>0.0</td>
<td>*</td>
</tr>
<tr>
<td>IJSRSP</td>
<td>.059&lt;sup&gt;M&lt;/sup&gt;</td>
<td>.022</td>
<td>.162</td>
<td>.009</td>
<td>*</td>
</tr>
<tr>
<td>LIK</td>
<td>.361</td>
<td>0.0</td>
<td>.263</td>
<td>.002</td>
<td>*</td>
</tr>
<tr>
<td>RSP</td>
<td>.061&lt;sup&gt;M&lt;/sup&gt;</td>
<td>.022</td>
<td>.186</td>
<td>.007</td>
<td>*</td>
</tr>
<tr>
<td>M&amp;M LIKING</td>
<td>.082&lt;sup&gt;S&lt;/sup&gt;</td>
<td>.016</td>
<td>.048&lt;sup&gt;S&lt;/sup&gt;</td>
<td>.027</td>
<td>*</td>
</tr>
<tr>
<td>M&amp;M PHYSICAL</td>
<td>.421</td>
<td>0.0</td>
<td>*</td>
<td>*</td>
<td>.004</td>
</tr>
<tr>
<td>ATTRACTIONNESS</td>
<td>.230</td>
<td>.004</td>
<td>*</td>
<td>*</td>
<td>.004</td>
</tr>
</tbody>
</table>

Sample 1 = upper row; Sample 2 = lower row

superscript $^M$ = marginally significant (.05 < $p$ < .10)
superscript $^S$ = significant ($p$ < .05)
Table 19

Dyadsex Main Effect: Comparison of p-value and $\omega^2$

<table>
<thead>
<tr>
<th>Component</th>
<th>p</th>
<th>$\omega^2$</th>
<th>Composite</th>
<th>p</th>
<th>$\omega^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>IJSLIK</td>
<td>.002$^S$</td>
<td>.073</td>
<td></td>
<td>.415</td>
<td>0.0</td>
</tr>
<tr>
<td>IJSRSP</td>
<td>.381</td>
<td>0.0</td>
<td></td>
<td>.337</td>
<td>0.0</td>
</tr>
<tr>
<td>LIK</td>
<td>.083$^M$</td>
<td>.018</td>
<td>SUMMED IJS</td>
<td>.045$^S$</td>
<td>.026</td>
</tr>
<tr>
<td></td>
<td>.010</td>
<td>.051</td>
<td></td>
<td>.321</td>
<td>0.0</td>
</tr>
<tr>
<td>RSP</td>
<td>.158$^M$</td>
<td>.009</td>
<td>SUMMED L+R</td>
<td>.093$^M$</td>
<td>.016</td>
</tr>
<tr>
<td></td>
<td>.070</td>
<td>.020</td>
<td></td>
<td>.017$^S$</td>
<td>.042</td>
</tr>
<tr>
<td>M&amp;M LIKING</td>
<td>.007$^S$</td>
<td>.051</td>
<td>SUMMED M&amp;M</td>
<td>.076$^M$</td>
<td>.019</td>
</tr>
<tr>
<td></td>
<td>.609</td>
<td>0.0</td>
<td>TOTAL</td>
<td>.362</td>
<td>0.0</td>
</tr>
<tr>
<td>M&amp;M RESPECT</td>
<td>.342</td>
<td>0.0</td>
<td></td>
<td>.303</td>
<td>.001</td>
</tr>
<tr>
<td>M&amp;M PHYSICAL</td>
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<td></td>
<td>.445</td>
<td>0.0</td>
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<tr>
<td>ATTRACTIVENESS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sample 1 = upper row; Sample 2 = lower row

superscript $^M$ = marginally significant (.05 < p < .10)

superscript $^S$ = significant (p < .05)
the results presented in Table 19 indicate that information is lost by summing the component scales to form a composite score (e.g., in Sample 2, 5.1% of the variance in the liking variable is attributable to the D main effect, while 2.0% of the variance in the respect variable is attributable to this effect. A summing of these scales, however, yields only 4.2% of the variance in the composite dependent variable attributable to that main effect—representing a loss of information regarding that between cells effect).

The next set of variables to be discussed are the McCroskey and McCain attraction items. For purposes of the present analysis, a summed composite score was created for each of the five actual component liking, respect, and physical attractiveness items, respectively. These were then treated as "component" scores and compared to a composite score constructed by summing these three "components." Since four out of eight possible ANOVA's yielded either significant or marginally significant F's on the attitude main effect, this effect was used for comparison purposes for these variables (see Table 18). While in Sample 1, the largest $\omega^2$ among components is equal to that of the composite variable, the composite $\omega^2$ in Sample 2 is less than the $\omega^2$ for the liking component. Again, the results seem to indicate that simple summing of component scores is inadvisable.

Factor Analytically Derived Scales. In addition to these single scale component and arithmetically derived "component" and composite scores, two additional sets of composite scores were calculated. Factor scores (referred to in the Tables as "Facscores") were estimated from the reduced set of variables identifying the factors as discussed in the previous section. Estimates were calculated in standardized format by
subtracting the grand mean from the raw score, dividing by the within
cells standard deviation, and multiplying by the appropriate factor
score coefficient, summing across all variables loading above .40 in
both samples on the given factor. This technique is similar to several
discussed by Comrey (1973). It should be noted that the exclusion of
some variables in the factor estimating procedure had the effect of
destroying the orthogonality built into the original single sample 40
item factor analyses. Factor scores were estimated in the same manner
from the data of both Sample 1 and Sample 2 for both the Likert and
semantic differential items.

The second additional set of composite scores calculated was a
simple arithmetic sum of the scale scores of all variables loading above
.40 on the same factor in both samples. These scores (referred to as
"Facsums" in the tables) differ from the factor scores in two ways.
First, they are not standardized. Second, all variables receive equal
weightings in the determination of the final score, rather than differ­
tential weightings as produced by the use of the appropriate factor
score coefficient as a multiplier. Again, these scores were calculated
in both Sample 1 and Sample 2, for both the Likert and semantic differ­
tential factors.

Similarly to the previously discussed ANOVA's, results on both the
factor scores and factor scale sums are inconsistent between samples.
Few meaningful or reliable effects emerged for the factor analytically
derived composite scores based on the Likert items (see Table 20). In
three cases, significant or marginally significant F values were obtained
in both samples. In the case of all three variables, the effect con­
cerned was the attitude main effect. The ANOVA's on factor scores for
Table 20

Significance Levels for Factor Scores and Factor Scale Sums:

Likert Items

<table>
<thead>
<tr>
<th>Variable</th>
<th>Effect</th>
<th>A</th>
<th>D</th>
<th>I</th>
<th>AD</th>
<th>AI</th>
<th>DI</th>
<th>ADI</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACSCORE LA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACSUM LA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACSCORE LB</td>
<td>.018</td>
<td>.064</td>
<td>.051</td>
<td>.078</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACSUM LB</td>
<td>.029</td>
<td>.045</td>
<td>.056</td>
<td>.098</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACSCORE LC</td>
<td></td>
<td>.006</td>
<td>.076</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACSUM LC</td>
<td>.050</td>
<td>.066</td>
<td>.013</td>
<td>.037</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACSCORE LD</td>
<td></td>
<td>.044</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACSUM LD</td>
<td></td>
<td>.033</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>FACSCORE LE</td>
<td>.060</td>
<td></td>
<td></td>
<td>.081</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACSUM LE</td>
<td>.060</td>
<td></td>
<td></td>
<td>.081</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 20 continued

<table>
<thead>
<tr>
<th>Variable</th>
<th>A</th>
<th>D</th>
<th>I</th>
<th>AD</th>
<th>AI</th>
<th>DI</th>
<th>ADI</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACSCORE LF</td>
<td>.089</td>
<td></td>
<td></td>
<td></td>
<td>.025</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACSUM LF</td>
<td>.089</td>
<td></td>
<td></td>
<td></td>
<td>.025</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sample 1 = upper row; Sample 2 = lower row
Factor LB (the task oriented respect factor) indicated a significant attitude main effect in Sample 1 \( (F(1,104) = 5.753, p < .018) \) and a marginally significant A main effect in Sample 2 \( (F(1,104) = 3.494, p < .064) \), indicating that subjects in the similar attitude condition respected their partners more than did subjects in the dissimilar attitude condition. Similar effects emerged on the corresponding Factor LB scale sum variable, with significant A main effects in both Sample 1 \( (F(1,104) = 4.888, p < .029) \) and Sample 2 \( (F(1,104) = 4.126, p < .045) \).

Composite Factor LC, the liking factor, yielded effects in the scale sum version but not in the factor score version. For this factor scale sum variable, the A main effect was significant in Sample 1 \( (F(1,104) = 3.930, p < .05) \), and marginally significant in Sample 2 \( (F(1,104) = 3.455, p < .066) \), indicating that subjects in the similar attitude condition liked each other better than subjects in the dissimilar attitude condition.

Similar inconsistent patterns of effects were found for the factor analytically derived composite scores based on the semantic differential items (see Table 21). Here, three sets of composite scores were significant or marginally significant in both Samples 1 and 2 on the dyadsex main effect. A significant D main effect was obtained on factor scores for Factor SA in Sample 1 \( (F(1,104) = 8.749, p < .004) \), while the same effect in Sample 2 was marginally significant \( (F(1,104) = 2.969, p < .088) \). These differences on the "easygoing sociability" factor indicate that subjects in the opposite sex condition rated their partners higher along this dimension than subjects in the same sex condition.

The other two sets of significant effects on these semantic differential composite scores were found on the factor scores and scale sum
Table 21  
Significance Levels for Factor Scores and Factor Scale Sums:  
Semantic Differential Items

<table>
<thead>
<tr>
<th>Variable</th>
<th>A</th>
<th>D</th>
<th>I</th>
<th>AD</th>
<th>AI</th>
<th>DI</th>
<th>ADI</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACSCORE SA</td>
<td>.004</td>
<td>.088</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACSUM SA</td>
<td>.003</td>
<td>.046</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACSCORE SB</td>
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<td>.031</td>
<td>.091</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACSUM SB</td>
<td>.072</td>
<td>.018</td>
<td>.068</td>
<td>.053</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>FACSCORE SC</td>
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<tr>
<td>FACSUM SC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACSCORE SD</td>
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</tr>
<tr>
<td>FACSUM SD</td>
<td>.081</td>
<td>.038</td>
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<td></td>
</tr>
<tr>
<td>FACSCORE SE</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>FACSUM SE</td>
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<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Sample 1 = upper row; Sample 2 = lower row
scores for Factor SB, the so-called "likability" factor. The dyadsex main effect was significant for the factor scores in both Sample 1 (F(1,104) = 9.650, p < .002), and Sample 2 (F(1,104) = 5.759, p < .018). The dyadsex main effect was also significant for the corresponding scale sum scores for Factor SB; Sample 1, F(1,104) = 9.853, p < .002, and Sample 2, F(1,104) = 5.035, p < .027. These results indicate that subjects in the opposite sex condition rated their partners higher on the likability dimension than the subjects in the same sex condition.

Overall Dependent Variable Sensitivity. The final set of analyses compared the overall strength of association between dependent variables and the recurrent attitude and dyadsex main effects, through the use of $\omega^2$ (see Table 22). Differences in strengths of effects across dependent variables is perhaps best discussed in terms of groups of related variables. Such a discussion must be guided by the significance levels of the effects concerned.

In the case of the variables measuring the "liking" dimension, (the IJS liking item, newly created "like" scale, McCroskey and McCain liking items, and factor scores and scale sums for Factor LC--Likert "liking", and Factor SB--semantic differential "likability"), differential sensitivity to effects is noted. The strongest association for a single scale exists for the IJS liking item on the dyadsex main effect in Sample 1 ($\omega^2 = .073$), although the "like" scale ($\omega^2 = .018$) and the McCroskey and McCain liking scales ($\omega^2 = .051$) also picked up this effect. The factor analytically derived scores also identified this effect, although not quite as strongly as the IJS item (Facscores LC and SB, $\omega^2 = .057$ and .069, respectively, and Facsums LC and SB, $\omega^2 = .042$ and .071, respectively). Since the obtained values of $\omega^2$ indicate the strongest association between independent and dependent variables entails only
### Table 22

**Levels of Significance and $\omega^2$ Values for Selected Factor Analytically Derived Dependent Measures**

<table>
<thead>
<tr>
<th>Variable</th>
<th>A Main Effect</th>
<th></th>
<th></th>
<th>D Main Effect</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$p$</td>
<td>$\omega^2$</td>
<td></td>
<td>$p$</td>
<td>$\omega^2$</td>
<td></td>
</tr>
<tr>
<td>FACSCORE LB (Respect)</td>
<td>.018$^S$</td>
<td>.041</td>
<td></td>
<td>.346$^M$</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.064</td>
<td>.022</td>
<td></td>
<td>.051</td>
<td>.025</td>
<td></td>
</tr>
<tr>
<td>FACSCORE LC (Liking)</td>
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<td>.008</td>
<td></td>
<td>.006$^S$</td>
<td>.057</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.142</td>
<td>.011</td>
<td></td>
<td>.431</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>FACSCORE SA (Easygoing Sociability)</td>
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<td>.004$^S$</td>
<td>.066</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.151</td>
<td>.010</td>
<td></td>
<td>.088$^M$</td>
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</tbody>
</table>

Sample 1 = upper row; Sample 2 = lower row

superscript $^M$ = marginally significant (.05 < $p$ < .10)

superscript $^S$ = significant ($p < .05$)
7.3% of the between cells variance accountable on the dyadsex main effect for that dependent measure, it is clear that very small amounts of accountable variation are being dealt with here. Thus, it may be inappropri­
ate to select one measure over another as "better" or "more sensitive."

The next effect of interest is the attitude main effect on the "res­
pect" items. Here, the factor analytically derived measures appear supe­
rior, in that they identify the effect in both samples, (Facscore LB, \( \omega^2 = .041 \) and .022 for Samples 1 and 2, respectively; Facsum LB, \( \omega^2 = .034 \) and .027 for Samples 1 and 2, respectively), whereas the other scales do not (IJS Respect, Samples 1 and 2, \( \omega^2 = .022 \) and .009, respectively; Respect, Samples 1 and 2, \( \omega^2 = .022 \) and .007, respectively; and McCroskey and McCain Respect, \( \omega^2 = .006 \) and 0.0 in Samples 1 and 2, respectively).

The remaining dyadsex main effects on "easygoing sociability" (Fac­
tor SA) illustrate some of the complexity in the relationships between the factor scores and factor scale sums. In Sample 2, the factor scores (\( \omega^2 = .017 \)) account for more between cells variance than the factor sums (\( \omega^2 = .012 \)), whereas in Sample 1, the factor sums (\( \omega^2 = .070 \)) account for more variance than the factor scores (\( \omega^2 = .066 \)). An inspection of Table 22 indicates that this sort of reversal occurred on numerous occasions, precluding any statement about whether the factor scores or factor scale sums are a "better" dependent measure.\(^{11}\)

\(^{11}\)These reversals may be the result of the differential nature of the variance analyzed between the present factor scores and factor scale sums. The former are based upon standardized variance, whereas the latter are cast in the variance of raw scores. Further, the weightings for each individual item differ between the two techniques of score derivation. These complications can be avoided in future studies (designed to assess experimental effects rather than to uncover the underlying dimensions of attraction) through the derivation of factor scores by a principle components procedure applied to the scale data. This technique is described in more detail shortly.
DISCUSSION

The ambiguity and complexity of the results obtained across the various measures of attraction employed in the present research demonstrate the magnitude of the problems facing the researcher in this area. The lack of knowledge of relevant parameters to be controlled for can cause experimental effects to appear and disappear capriciously, as was observed with the interaction orientation main effects of Study 1, which disappeared in Study 2. To make matters worse, the present results indicated that the implicit, untested psychometric assumptions of the attraction literature were not supported upon careful examination. The outcome of such problems is a large number of studies like those reported here, identifying isolated instances of statistically significant effects of a rather trivial nature. The highest value of $\omega^2$ obtained in the present research indicated that less than 8% of the variance in the dependent variable was accountable in terms of the independent variable, in spite of the "highly significant" F value (.002).

Several important conceptual and procedural refinements are called for in the area of attraction research. The present factor analytic assessment of the widely used attraction scales provides further evidence for complex multidimensionality in the psychological underpinnings of the phenomenon. The comparison of between cells effects among component scores, simple arithmetically and logically derived composite scores, and factor analytically derived composite scores, indicates that this multidimensionality must be specifically assessed at the operational level if a maximization of understanding of the phenomenon is desired. The remaining portions of this dissertation will be devoted to all of
these issues. First, the nature of the multidimensionality in "generalized social attraction" will be discussed. Next, the question of how to reliably measure this multidimensionality at the operational level will be explored. Following this, a very tentative discussion of the independent variable effects obtained in the present research will be used to outline possible directions for future parametric research in the area of attraction. And finally, suggestions for further research will be outlined, designed to clarify and cross validate the results of the present research.

Conceptual Multidimensionality in Attraction

The factor analyses reported here are important for two reasons. First, the procedure employed, which subjected the within cells correlation matrix to an iterative, classical factor analysis (cf., Harman, 1976), differs from all previous factor analytic studies of attraction in that it is a procedure explicitly designed to identify any underlying psychological cores of variation which are tapped in some common way by the group of related dependent measures of attraction drawn from the literature as a whole. Previous studies all employed principle components factor analyses, which are perhaps better suited to the simple reduction of a given body of variables to a smaller number of variables through a statistical transformation utilizing information about the intercorrelations among all of the original variables. This is essentially a data reduction strategy. The present approach used factor analysis in an inferential manner, and is thus more appropriately suited for use in theorizing regarding the nature of the underlying psychological dynamics of interpersonal attraction.
The second reason that the present factor analyses are important is that they indicate a considerable amount of variation in the nature of the inferred components depending upon the data sample examined. Since these results replicate the original findings of Triandis (1961), the case for their validity is strengthened. This may indicate that attraction is in actuality not a reliable, unitary phenomenon (as an "attitude" or other cognitive mediator) functioning in a similar manner in all individuals. Rather, it seems a more productive theoretical approach at this time to assume that what we mean by "attraction" may vary in significant ways, both nomothetically and idiosyncratically, depending upon a variety of dynamic personal, interpersonal, and situational influences.

This is not to say that meaningful components of the attraction response cannot be isolated. It is rather meant to contend that the specific relevant dimensions of attraction which come into play in any given encounter may vary depending upon personal, interpersonal, and situational factors. In fact, the current results strengthen the argument for a verifiable multidimensionality in attraction, because they in effect replicate the results of all three previous factor analytic studies which dealt with Likert type items. The "liking" and "respect" dimensions identified by Kiesler and Goldberg (1968) and McCroskey and McCain (1974) were identified in the present more refined analyses, along with the "physical attractiveness" dimension posited by McCroskey and McCain. The former pair of factors match Triandis' "Friendship Acceptance" and "Formal Social Acceptance with Subordination" factors (Triandis' items were all behavioral in nature, and thus precluded the identification of an attributional "physical attractiveness" dimension). Finally, a dimension of "Social Distance" also identified by Triandis was essentially
confirmed in the final three factors identified by the present analyses: the "rejection" factor, the "informal social acceptance" factor, and the "intimacy" factor. The fact that eighteen years of accelerating social change have intervened between these studies, which all produced related results, is an argument supporting the generalized validity of the posited dimensions, at least in contemporary American culture. In addition to these dimensions of generalized social attraction, it should be pointed out that the "love" component of attraction explicitly excluded from analysis in the present study has been verified in a factor analytic manner by both Triandis (1961) and Rubin (1973), and thus should be considered as another potentially important dimension in addition to those identified by the present research. Thus, it appears that "inter-personal attraction," as typically assessed by social psychologists using Likert type rating scales, can be said to consist of liking, respect, physical attractiveness, love, and social distance components, the latter possibly being reducible to rejection, social acceptance, and intimacy dimensions.

The present study was the first to undertake a large scale factor analysis of the widely employed semantic differential procedure for the assessment of attraction. The results indicate a reasonable theoretical correspondence with the factor structure of the Likert items, supporting the contention that an underlying psychological "core" of variation in attraction responses is indeed being assessed. The precise nature of the obtained factor structure differs in certain minor ways from that of the Likert items, probably due to the purely attributional nature of the

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12 It should be noted, however, that Triandis' results also included several other factors which did not emerge in the present research. Thus, his findings were not directly replicated.
semantic differential items. In fact, these differences serve to further illuminate the complexity of the underlying psychological dimensions. The Likert "liking" factor is paralleled by two semantic differential factors: "easygoing sociability" and "likability." Similarly, the Likert physical attractiveness factor appears to become two dimensions on the semantic differential scales, inborn "physical beauty" and learned "grooming attractiveness." Finally, the Likert "respect" factor is paralleled by the semantic differential "competence" factor. The absence of a clear "social distance" factor among the semantic differential items may be accounted for in terms of their attributional nature; social rejection is a behavioral phenomenon not easily translated into the attributional adjectives that comprise the semantic differential scales. On the other hand, there was a sixth semantic differential composite factor which emerged from the factor matching procedures discussed above, but was rejected from further analysis because it contained no paired loadings above .40. This factor, loading on the adjective pairs considerate/inconsiderate, trustworthy/untrustworthy, unselfish/selfish, and reliable/unreliable, might be considered a potential attributional match to the Likert social distance factors.

Measurement of the Multidimensionality in Attraction

One of the most important conclusions of the present research is that the simple-minded use of "common sense" dependent measures, frequently summed into an arbitrary arithmetic composite score, loses potentially large amounts of valuable information which could be better recovered using a wider array of dependent measures grouped into particular factor scales. The precise procedures utilized in the generation of
factor analytically derived scores for research purposes would undoubtedly vary with the statistical expertise and computer resources of the individual researcher.

The comparison of relative sensitivity of component and logically derived simple arithmetic sums as composite scores indicated that in no cases were the composite scores superior to each of the single components, in terms of the values of $\omega^2$. That is to say, a clearer understanding of the nature of independent variable effects would emerge (i.e., greater proportions of variance would be accounted for), if appropriate component scores were examined individually rather than after an arbitrary summing into some logically defined common sense composite score.

The selection and examination of component scores can become quite cumbersome, considering the large number of attraction-oriented scale items that have been and could be generated. The current research demonstrated that theoretically meaningful components of attraction can be operationally assessed in a productive manner through the use of a variety of factor analytically derived scales. Both the McCroskey and McCain (1974) scales and the presently defined factor scales should be useful in the assessment of physical attractiveness, liking, and respect. The presently defined scales offer a further attributional breakdown of the above three generalized dimensions into physical beauty and grooming attractiveness, easygoing sociability and likability, and finally competence. The presently defined Likert factors further define rejection, social acceptance, and intimacy dimensions (see Appendix D for a summary of the presently defined factor scales). Rubin (1970) has elsewhere defined a love dimension. These latter four dimensions may be more or less important depending upon the circumstances of the rating situation.
The above factor analytically derived scales may be used experimentally in either of two ways. Ideally, the statistically experienced researcher will select those subsets of scales theoretically relevant to his/her research problem, administer them under controlled conditions, and then carry out a principle components factor analysis on the within cells variance-covariance matrix, generating factor scores based upon this analysis for use in the examination of between cells effects. This is similar to the techniques successfully employed by Kiesler and Goldberg (1968), to assess the effect of a blunder on the attractiveness of a "competent" same sex male other person. It requires access to and ability to utilize relatively complicated statistical computer programs.

On the other hand, the statistical novice or the researcher with limited computer capabilities may use the appropriate factor analytically defined scales in the more traditional manner of composite generating component scores. That is to say, a simple arithmetic sum of ratings on all given items on a scale (e.g., liking) may be calculated and used as a dependent variable in further analyses. While this is a simple arithmetic sum, the selection of items for inclusion in the scale is based upon widely used psychometric principles rather than mere common sense or tradition (i.e., the scale sum is factor analytically rather than logically defined). Such a composite score does not include a weighting factor for the individual items. However, the present results parallel Triandis' (1961) results in indicating that such weightings may best be determined for homogenous sub-groupings of individuals. Thus, next to

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13 This potential sample to sample variation in the dimensions of attraction is the reason for the suggestion of a principle components factor analysis on the variance-covariance matrix. This procedure should maximize the identification of dimensions accounting for independent variable effects, and will provide weightings for items based upon the
an actual factor analysis (which sometimes might not be feasible prac-
tically), the use of summed factor scale items, like the "Facsums" in
the present research, seems appropriate for the measurement of multi-
dimensionality in attraction. For the researcher intent on simplicity,
it seems that several empirically selected single scale items, analyzed
individually, would provide the most informative assessment of exper-
imental effects. Through the use of any of the methods of measuring at-
traction just outlined, the future researcher will contribute to the
healing of the operational-conceptual rift in the attraction literature.

Independent Variable Effects

The major purpose of the present research was not to assess the
nature of between cells effects for the attitude similarity, dyad sex,
and interaction orientation variables. Rather, the examination of in-
dependent variable effects was seen as a way of validating the utility
of a multidimensional measurement strategy in the study of attraction,
and as an exploratory probe into the possible parametric influences on
variation in attraction.

Interpretation of independent variable effects was complicated by
several factors. In Study 1, the merging of the dyad members data into
a single sample for analytic purposes violates statistical assumptions

variance-covariance characteristics of the given sample. This procedure
avoids the standardized weighting of items that was proposed at the out-
set of the current research endeavor. As discussed above, the volatile
nature of the factors which emerge from current non-parametric research
does not support the use of standardized weightings. Such refinements
of measurement procedure may become possible once a better understanding
of the multiple dynamic relationships among the largely unexplored
realm of personal, interpersonal, and situational parameters determining
attraction is achieved.
of independence of data points, since the possible dependency in scores between dyad members was not taken into account. In Study 2, the data were divided into two separate samples in an attempt to overcome this problem. However, the procedures used to assign subjects to samples inadvertently resulted in a series of important differences in the attitudinal composition of the samples, thereby weakening their comparability. Because of these difficulties, all comments presented here regarding independent variable effects should be viewed in a very tentative manner, certainly requiring substantiation through further research.

In spite of the problems just outlined, the present results cohere with previous work by such researchers as Triandis (1961), Kiesler and Goldberg (1968), Rubin (1970), and McCroskey and McCain (1974), indicating that attraction is more profitably studied by breaking down the generalized, common sense construct into more specifically defined theoretical components.

The two basic dimensions of "generalized social attraction" most crucial for study appear to be liking and respect dimensions. Previous researchers have suggested this, and the present results also support that proposition. The widely established parametric dimension of attitude similarity/dissimilarity impacted on respect only in Study 1, whereas in Study 2 effects appeared on both the respect and liking dimensions. This latter effect replicated the traditional attitude similarity-attraction main effect widely reported by Byrne (1971) and others. Taken together, these results re-emphasize the importance of not blindly combining component scores designed to tap different dimensions of attraction.
The physical attractiveness dimension of attraction emerged as a separate component in the factor analyses employed here, but exhibited only marginally significant differences in Study 1, while the 2 X 2 X 2 ANOVA's of Study 2 showed no effects on this dimension. On a hunch, the data were reanalyzed in a post-hoc manner as a 2 X 2 X 2 X 2 factorial, including subject sex (male or female) as a variable. The results of this analysis demonstrated effects on the physical attractiveness dimension. The summed McCroskey and McCain physical attractiveness scales exhibited a marginally significant dyadsex by subject sex statistical interaction (F(1,96) = 3.328, p < .071) in Sample 1, and a highly significant D x S interaction in Sample 2 (F(1,96) = 7.062, p < .009). These results indicate that in the same sex condition, female subjects rated their female partners as more attractive physically than the male subjects rated their male partners, whereas in the opposite sex condition, male subjects rated their female partners as more attractive physically than female subjects rated their male partners. While the post-hoc nature of these tests combined with the other problems cited above severely limits generalization of these results, they do suggest important sex differences in the perception of physical attractiveness, and they provide tentative support for the utility of assessing the physical attractiveness dimension of interpersonal attraction, at least in opposite sex interaction situations. It seems plausible that this dimension may be related more to sexual attraction in males, but more to friendship attraction in females.

The present results thus provide support for the assessment of liking, respect, and physical attractiveness dimensions of attraction in social psychological research. The utility of the remaining factor analytically identified dimensions of rejection, social acceptance, and
intimacy can only be assessed through future research, since no significant between cells effects emerged on these dimensions in the present study.

The present between cells effects, albeit complicated and inconsistent, do provide some insights into possible parametric influences on interpersonal attraction. As described above, attitude similarity/dissimilarity emerged as an important variable controlling variation in attraction. While the replication of this widely described effect is not of paramount importance, it does demonstrate the comparability of the present research results to those traditionally appearing in the literature.

Of greater theoretical and methodological interest are the sex related effects that emerged in both Study 1 and Study 2. The presence of both main effects and statistical interactions on the dyadsex factor in both Study 1 and Study 2 indicate that the largely ignored dimension of same or opposite sex social interaction is important to a complete understanding of the phenomena of attraction. In addition, the possibility of sex differences in the area of attraction seems to warrant closer examination. The changing roles of women in contemporary American society underscore the importance of an understanding of these sex related influences on attraction. In addition to liking and respect, physical attractiveness may be an important dimension for further study in this regard. Such research could conceivably have implications for the productive management of interpersonal relations in a variety of social contexts, including the educational, industrial, helping professional, and governmental realms.

Personal factors such as attitude similarity/dissimilarity, gender, and physical attractiveness should thus be further examined as potentially
important parametric influences on variation in attraction. It is likely that a variety of situational factors are also important in this regard. Social requirements for same or opposite sex interaction might also be considered in this area. Regarding the other situational variable in the present research, ambiguous outcomes were obtained as a result of the interaction orientation manipulation. The interesting differential effects of this manipulation on the multidimensional components of attraction observed in Study 1 disappeared after a series of seemingly minor procedural changes were instituted in Study 2. Because of the multiple changes in procedure between the two studies, exact cause and effect relationships between the variables involved cannot be specified.

One possible speculative explanation for the observed differences will be offered, based upon the change in nature of the cases used as the basis for dyad interaction. The basic difference between The Case of John and Mary (used in Study 1) and The Case of Jill and Henry (used in Study 2) was one of "plausibility," from the standpoint of generally accepted belief systems regarding the nature of reality. Several subject's free response reactions to the experimental procedures employed in Study 1 indicated that the case was so "far out" that common ground could be found between subjects regardless of large differences in their PBI scores (e.g., both "believers" and "disbelievers" could agree that the events described were "impossible"). Post experimental analysis of videotape recordings of several of the subject dyad's interaction indicated that a number of apparently "believer" subjects in the dissimilar attitude condition asked their "disbeliever" partner a question such as: "This story sure is a crock, but don't you think that some wierd things can happen sometimes?" It seems that such a comment could lead a "disbeliever" to doubt the traditionalness of the "believer's" reality system,
and result in a lowering of respect for that individual. Similarly, a negative reaction by the "disbeliever" could cue the "believer" to some very basic differences in personal outlook and value systems (perhaps with religious connotations for some subjects), which, in line with the widely identified attitude similarity-attraction effect, could also result in a lowering of respect. These explanations could account for the significant two-way attitude by interaction orientation statistical interaction observed in Study 1, in which dissimilar partners were respected less in the Task condition.

In another vein, the obvious scientific impossibility of the events described in The Case of John and Mary could have frustrated subjects in the Task condition, because they were provided with a seemingly impossible explanatory task, and through mediation of some sort of situational "negative halo effect," lead to a lowering of respect (perhaps due to weakness of the suggestions presented by their partners). This would help to explain the power of the interaction orientation manipulation in Study 1, and could account for the fact that subjects in the Socio-emotional condition were generally both liked and respected more by their partners than subjects in the Task condition.

The Case of Jill and Henry was cleverly constructed to allow either a paranormal or a rational, scientific explanation. Because of this, it was possible for all subjects to agree that the events described in the case could have apparently happened in the manner indicated, although they might differ in the details of their explanation for individual events. Thus, for example, a subject could have accepted the existence of ESP, but rejected as impossible the "materialization" of spirits described in the case. In such a manner, variations in belief systems
touched upon during the interaction may have been viewed more as minor differences of opinion than indications of "kookiness" or scientific materialism. The challenge of discussing the new case may have thus inadvertently had the effect of nullifying the differential behavioral outcomes associated with the interaction orientation manipulation in Study 1.

The foregoing possibility is clearly only one of several potential ways of explaining the inconsistency of the interaction orientation main effect across the two studies under consideration in this dissertation. The effects observed in Study 1 do however seem to support the value of further research with this manipulation, since it can be used to clarify variations in the multidimensionality of attraction in a laboratory setting, and it appears related to a widespread situational parameter influencing social interaction in a variety of contexts. It is possible that the phenomenon of self disclosure may provide a mediational explanation for some of the effects in this area.

Suggestions for Future Research

The present methodological study is seen as one step in a group effort of paradigm building. It seems that the fractionated efforts of researchers in the area of interpersonal attraction can be drawn together with two kinds of research results. First, there must be some standardization of the dependent measures employed in studies on attraction. Unilateral attempts in this direction of the type made by Byrne (1969, 1971a, b) and Griffitt and Byrne (1970) run counter to traditional avenues of scientific collaboration because of an authoritarian one-sidedness in approach. Byrne's Interpersonal Judgment Scale provides a
quick, convenient measure of something, which carries with it the academic respect of being presented in the professional literature by one of social psychology's well known and prolific researchers. As described at the outset, this measure has received widespread use by social psychological researchers. Unfortunately, the arbitrary summing of these apparently potentially independent scales can lead to a loss of important research information (e.g., differential results were obtained in the current research when effects were analyzed in the traditional "summed IJS" format as opposed to the separate consideration of the component scales or the analysis of various factor analytically defined scales). In line with the traditional development of paradigmatic procedures in science (Kuhn, 1970), it seems that the standardization of attraction measures would be more profitably achieved through a group effort based upon the experimental analysis of the utility of the various scales of measurement offered for use in the literature. Thus, it is not claimed that the presently defined scales provide the final answer to the measurement problems in the attraction literature. Rather, the present scales are offered for further experimental analysis and comparison to the other widely used measures of attraction. Only further research on a variety of situations and subject populations can verify the utility of any set of potential psychometric instruments.

The continuation of research aimed at the development of standardized attraction scales seems called for. In addition to this, there is a tremendous need for research designed to outline the parametric personal, social, and situational influences on variation in attraction that are commonly encountered (at least in contemporary American culture). It seems that several basic issues are in need of explanation; those identified in the present research shall be briefly described.
First of all, attitude similarity/dissimilarity is clearly an important parameter controlling variation in attraction. However, its influences may not always be of the "main effect" type. Thus, further research should emphasize the identification of significant interaction effects between attitude similarity/dissimilarity and other parametric influences on attraction.

This latter issue, the identification of "other parametric influences on attraction," appears to lie at the root of the problems in the attraction literature. There are, unfortunately, few such parameters sufficiently defined or understood in the current literature. Several contenders include time, self disclosure, propinquity, physical attractiveness, similarity and complimentarity in attitudes, beliefs, and values, and reinforcement relationships among actors. The present research points to the importance of defining the conditions under which physical attractiveness is a meaningful dimension affecting variation in attraction. Similarly, sex related issues have here been shown to be of potentially significant importance to an understanding of attraction; either in terms of sex differences in the nature and function of components of attraction, or in situational effects regarding requirements for interaction between members of the same or opposite sexes. Other potentially important parametric influences include the task/socio-emotional interaction orientation dimension utilized in the present research.

Finally, as indicated in the recent review by Huston and Levinger (1978), it seems that a more systematic analysis of the nature, antecedents, and consequences of attraction in relationships among individuals other than college sophomores is in order. While such research may be less convenient to conduct, its potential scientific contribution is
much greater than the proliferation of study after study conducted on college students in ways designed to achieve "significant" differences. As demonstrated in the present research, such significant differences may account for only trivial proportions of the variance involved in any given study.

The study of interpersonal attraction has a long way to go before it can even begin to compare to the paradigmatic "normal science" (Kuhn, 1970) pursuits of the contemporary "hard" sciences. But it seems that if attention were turned towards issues of reliability and validity in measurement, along with the identification of parametric influences on variation in attraction, such "normal" scientific research might be sooner in coming.
SUMMARY

Interpersonal attraction has been a popular topic for social psychological research in recent years, although interest in the area currently seems to be waning. Research on attraction tends to reflect fractionated efforts which do not cohere into a cumulative scientific research enterprise. A series of untested, implicit psychometric assumptions seem responsible for these difficulties. While attraction is assumed to be a multidimensional construct at the conceptual level, its operational measurement does not reflect such qualities (a problem labelled the "operational-conceptual rift" by the author).

The present research addressed a series of interrelated, unresolved issues in the attraction literature, including: (a) the number and nature of components of the presumably multidimensional attraction response; (b) the development of verbal self report scales—derived from widely employed attraction measures—to assess these components; and (c) the relationship of these components to selected personal and situational parameters. Based upon previous research, a threefold multidimensionality in "generalized social attraction" was expected, consisting of liking, respect, and physical attractiveness components. "Love" was differentiated as a related but significantly different class of phenomena, beyond the range of the present research. Assumptions of comparability among verbal self report measures of social attraction were investigated, along with psychometric issues regarding the combination of subscale scores into composite indices of attraction. The construct validity of the widely used attraction measures was thus under scrutiny.
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here. Both statistical and nomological validation procedures were em-
ployed.

From the nomological perspective, three personal and situational
variables—expected on logical, theoretical, and empirical grounds to
have differential effects on the three proposed components of social
attraction—were investigated. In Study 1, a series of significant
effects was found in this regard. Attitude similarity/dissimilarity
appeared to differentially affect respect, but not liking, in the at-
titude domain of belief in paranormal phenomena. Task versus socio-
emotional interaction orientation also led to differential attraction
responses, strongly affecting both liking and respect, as well as the
amount of perceived interaction between subjects. Finally, the sex of
the subjects (same or opposite sex dyad) influenced liking, and inter-
acted statistically with the task/socio-emotional interaction orientation
variable in the case of the physical attractiveness component of social
attraction (such that opposite sex partners were seen as more physically
attractive in the socio-emotional condition only). This pattern of
results supported the multidimensional conceptualization of social
attraction proposed, and laid the groundwork for further research.

For statistical reasons, the dyad data of Study 2 were analyzed as
two separate samples. Problems in the derivation of these samples com-
plicated the interpretation of the observed personal and situational
influences on attraction. However, potentially important parametric
influences on attraction were suggested from these results. Sex differ-
ences in the relative importance of the components of attraction were
observed, as were situational influences of same or opposite sex inter-
action requirements between subjects.
A more appropriate and refined factor analytic procedure was employed to assess the underlying psychological components of "generalized social attraction," as measured by the popularly employed dependent variable scales found in the social psychological research literature. In line with three previous studies, this methodology identified liking, respect, and physical attractiveness components among the widely used Likert type measures of attraction. A series of social distance components was also tentatively identified, including rejection, social acceptance, and intimacy factors. Slightly different results were obtained from the factor analysis of the most popular semantic differential measures of attraction. Those results suggested the subdivision of the Likert liking and physical attractiveness dimensions into paired categories of likability and easygoing sociability, and inborn physical beauty as well as learned grooming attractiveness, respectively. The Likert respect dimension was paralleled by a competence dimension among the semantic differential items. Thus, conceptual and empirical multidimensionality in generalized social attraction was substantiated. A preliminary set of scales were offered for the measurement of four general components of social attraction: liking, respect, physical attractiveness, and social distance. Further cumulative research in a variety of personal and situational contexts is necessary to verify the appropriateness of this conceptual structure.

Comparison of various methods of attraction score derivation indicated the superiority of simple single scale analyses over the widely used logically defined arithmetic summation procedures (which characterize, for example, the extremely popular "Interpersonal Judgment Scale"). Differences in obtained factor weightings for identical dependent measures
collected from separate data samples appeared to indicate that such an arithmetic summatory procedure could be fruitful in the case of factor analytically derived scales. Because of this large sample variation in factor weightings, an original goal of the present research--to develop a weighted scale for the measurement of selected components of generalized social attraction--was abandoned. It now seems that the development of weighted attraction scales will depend upon the clarification of parametric personal, social, and situational influences on the phenomenon, so that they can be controlled during the measurement process. Further research is required to develop and finalize measurement strategies in the attraction literature.
APPENDIX A

Research Materials from Study 1

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GENERAL INSTRUCTIONS TO ALL PARTICIPANTS

Paranormal phenomena are events or occurrences that appear to be beyond the bounds of our current capabilities for scientific explanation. Different people believe in such phenomena to different degrees. There is no general agreement among everyone in our society regarding the truth or falsity of reported paranormal events; some people believe in them while others do not.

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One final comment. You have undoubtedly read about "experimental control" in your textbook. This is a very important part of a psychological experiment. It is the component of the scientific method in psychology that ensures the comparability and repeatability of research results. Since this experiment deals with human social interaction (i.e., the discussion between you and your partner), it is important that "other variables" which might influence your responses be held constant. Thus, it is very important that you do not talk during this experiment, except with your partner during the group interaction period. You may, of course, ask me questions at any time. But please remember that, for the sake of experimental control, it is important that your questions or comments not influence how other participants in the experiment respond. Therefore, I will answer your questions individually.

Thanks for your help through your careful participation in this study.
THE CASE OF JOHN AND MARY

John Cavendish and Mary Higgins were both seniors at the University of Colorado at the time of these events, in March of 1975. They had been going together for a year and a half, and had recently decided to get married. John had been accepted into the Dartmouth Medical School, and was eager to pursue his professional training towards his career goal of becoming a psychiatrist. Mary looked forward to the prospect of moving back to New England, since her family lived in Massachusetts.

During spring break John and Mary returned to New England to surprise their families and share the good news about their engagement. They spent a delightful weekend with Mary's parents in Cambridge, and were eager to continue their festive activities with a visit to John's family up in Northwick, Vermont.

Mary was a vivacious, happy energetic person who bubbled out good feelings to everyone around her. Her exhuberant personality was in stark contrast to John's shy, almost withdrawn introversion. In spite of his shyness, John was an intellectual wizard. He could read and comprehend a whole book in one night, and his academic credentials were so good (starting with a 4.0 cum) that he was able to make his own selection from among the four medical schools that he had applied to--all of which accepted him.

John had chosen Dartmouth since it was closer to "home." As he drove up the interstate in Vermont, he daydreamed about Mary's family.... they were all so open, friendly, and loving.....what a supportive atmosphere that must have been to grow up in! When he thought about his own childhood, he just bit his lip and sort of floated off into a trance.....

"You're doing it again, Johnny!" quipped Mary as she tickled him in the ribs. "How can you be so sullen when we're having such a great time?"

"I'm sorry, Mar" mumbled John. "It has been fantastic. Your parents are really nice, and I like your brother and sister, too. And gosh, all your relatives--they treat me like they've known me for years. It really is nice....."

"So what's been bothering you this morning, Scoots, or are you just 'THINKING' (Mary playfully lowers her voice) again?"

"No. It's nothing like that. I guess I just envy you, having such a great family like that. And I guess I hope my Aunt and Uncle will be as happy about our engagement as your parents were...."

"Oh sure they will, Johnny. They can't be all that weird as you make them out to be" said Mary.

"Well now, they're not really weird, mind you!" snapped John. "I mean, after all, we all have our own little idiosyncrasies. Hell--your parents must have some skeletons hidden away in their closets somewhere, too. I'll betcha!"
"Now simmer down, John. Don't get all worked up again--or you'll be back on Valium. I didn't mean that your folks were wierd. It's just that--"

"And they're not my 'folks'!" John interrupts. "They're my legal guardians. You know that my parents died in an accident when I was four years old."

"OK John, OK. I'm sorry. Now lets just try to take it easy and enjoy ourselves. This is our holiday--you and me--we're getting married in June--remember?"

"I'm sorry, Mar." (John pauses and takes a slow, deep breath). "Its just that sometimes I don't understand all these things....."

"Oh Johnny, I love you" Marry snuggles up close and they drive on in a pleasantly shared silence.

They arrived at the magnificent old Victorian house at around 1:30. John was surprised to see lots of bright red "day glow" signs tacked to the trees proclaiming "Tresspassers will be shot!".

"Must be the snowmobilers" John muttered as he pulled up in front of the stately mansion.

"Sounds like your uncle has a real sense of humor" quipped Mary.

"Yeah.....sort of" replied John. "Let's see if Aunt Mineara is home. Uncle Tom is probably still over at the school."

Their repeated knocks at the old wooden door brought no reply.

"That's funny" said John. "Didn't you smell smoke from the fireplace when we got out of the car? I know I saw smoke coming out of the east chimney! Aunt Mineara always does keep a fire...so she must be home. But why doesn't she come to the door?"

Suddenly an icy chill ran up Mary's spine. Someone was standing right behind her--she could hear his heavy, labored breathing--and she knew that he was going to hurt her. "Oh no!" she thought. Cold perspiration was heavy on her forehead and palms--and tears were running down her cheeks.

"Momma!" cried Mary as she broke down sobbing.

"Mary! What's wrong? What's the matter? Mary......Mary!!"

Mary had fainted. John took her to the car and laid her down on the back seat. She soon came to, but seemed almost delerious.....

"Oh John, oh my God, it was horrible! (sobbing) Oh John, hold me..."

"Mary--what's the matter? Are you sick?"
"Didn't you hear him?" she exclaimed.

"Hear who?"

"Him! That's who--my God--it was horrible! You mean to tell me you didn't hear him? You didn't smell him? My God, John--what's the matter with you?"

John cradled Mary's head to his chest.

"Take it easy, Mary. That was a long drive. I'm sorry for carrying on that way about my Aunt and Uncle. It's just that I haven't been home since my freshman year, and I guess I didn't know what to expect. You know--what with my Uncle getting into that crazy research and my Aunt having a nervous breakdown....

"Just a second now.....Can you just wait here for a minute? I'll go try my key."

A few minutes later John returned. "That's funny," he puzzled, "my key doesn't work. Maybe they changed the locks. And you know, there isn't any smoke coming out of these chimneys. All the doors are locked--and so are the windows. I tried to look in but they've got some kind of drapes all over the windows. I guess we'll just have to wait until later when my Uncle gets back from the school."

John and Mary settled down to wait. As they sat together in silence, John mused over the strange old house. How many times had he--as a child--heard strange noises or perceived strange events in that house. Like the time that his Aunt's favorite vase just shattered while sitting up on the mantle. No one was in the room at the time, but of course he was blamed for it. And then there was the time that he was in bed, very late at night, and he heard footsteps in the hallway. They seemed to walk up the hall and stop right in front of his door, but when he opened the door, there was no one there. John always figured that it was his Uncle playing jokes on him. After all, that Satanism stuff that Uncle Tom was into--that stuff isn't really true. It's all in the mind. The mind can play tricks on you, you know. Hell, Thomas Cavendish is a tenured Professor of Classics at William Elliot College! He's a serious scholar. He's just into that stuff from the historical standpoint.

But John felt uneasy. Mary had fallen asleep, and the old house looked strangely foreboding as the sun set behind them.

"Mar--" John shook Mary's shoulder gently. "You think maybe we ought to go back to town and stay over at the Inn? Maybe they're not coming home tonight. I knew I should've written first."

"Well, if your family had a phone like normal people do..." snapped Mary as she rubbed her eyes.

"I'm sorry, Mary. It's just that I wanted everything to be just so..."

John stopped in mid-sentence. What was that sound he heard?
"The door?" he thought. And sure enough, the front door was standing open, beckoning them with its darkness.

"C'mon, Mar" said John. "Let's get in out of the cold."

"John, I'm scared" said Mary.

"Oh for Pete's sake, Mary, what of?"

"I'm not sure.....I....I've just got a feeling."

"Oh, Mary, let's get in the house" demanded John impatiently.

As they walked through the oaken doorway into the pitch darkness within, they shivered.

"Its colder in here than it is out there" John shuddered. Just then a voice came out of the darkness to their left--

"Well, if you're cold my boy, come and warm yourself by the fire....and don't leave Mary there.....bring her in so we can see her. Bring her in."

John was incredulous. "Uncle Tom!" he exclaimed. "Have you been here all the time?"

John couldn't believe his eyes. There was his uncle, standing in the library, with a beautiful fire roaring in the fireplace.

"John" gasped Mary, "This house was dark--it was black. Where did that fire come from? Who are those men?"

"That man is my Uncle Thomas. Uncle Tom--have you been here all afternoon? We almost froze out in the car. We haven't eaten all day. Why didn't you let us in?"

"Nonsense. We just returned. We've been away for a while, haven't we?" crooned Thomas with an alarming air of confidence.

"But I didn't see your car, Uncle."

"Oh, John, John, John, my boy. What a simple mechanist you are! No self respecting sorcerer travels by automobile. Didn't you learn that yet?"

"John, who is that man?" Mary tugged at John's shirt. Her face was ashen white.

"I told you, that's my uncle--oh, excuse me--Uncle Tom, this is Mary. We're going to be mar--"

"We know, John. That's why you're here" interrupted Thomas.
"Not him" cried Mary, "HIM!! That old man with the glaring eyes. Why is he staring at me like that?"

John gaped at Mary, then looked back at his uncle, who was smiling confidently.

"There's only my uncle there, Mary, what's wrong?"

"My God John--can't you see him leering at me? Don't you see that sickly, hateful grin? What in God's name is going on in here?"

At that moment Mary saw something that made her stomach turn. The old man's eyes lit up even more and he leered at her with a greater intensity--then the man's head turned around--slowly--360°--on top of his immobile body. And then he disappeared!

"Jesus Christ!" Mary sobbed in disbelief. "This is insane!"

Just then John noticed his aunt lying on her back on a table draped in scarlet off in one corner of the room. There were several little brass bowls placed around her on the table, in which some sort of incense or something was burning.

"Aunt Mineara" John exclaimed, as he rushed over to her.

"John--don't leave me alone in this place" cried Mary.

"Aunt Mineara....what's wrong? Uncle Thomas, is she sick? She looks so pale...so grey.....Is she.......dead?"

Uncle Thomas only smiled. John stared at him in disbelief. Then Thomas said, "No, John. I didn't kill her."

"How did you know what I was thinking?" gasped John.

Suddenly the old grandfather clock standing across the room chimed half past seven. Mary was sobbing incontrollably, and Uncle Thomas was still smiling.

"Neptune has crossed over into Scorpio" announced Thomas. "The time has come."

"Uncle Thomas!" shouted John, "What the hell is the matter with you? Your wife is seriously ill--perhaps dead--and all you can do is spout astrology?" John rushed towards his uncle, and went to shake some sense into him.....but his hands passed right through his uncle's body!

"Things have changed since you went away, John. Things have changed with Mineara, too. Look!"

John turned around to look back at his aunt--and was dumbfounded. Mineara was slowly rising up into the air. Her body was stiff and flat, and must have been floating at least 10 inches above the table top. Her head had turned and her eyes were now open. She hissed as she grinned at John. Her eyes were yellow, and seemed to glow.
"My dear God" said John.

"He is nothing of this!" bellowed Thomas. "Look about you boy! Does He provide miracles such as this?" Thomas crossed his arms over his chest and then motioned with them through the air.

Suddenly the room was full of music, and little blue balls of light danced about the furniture. A cold wind filled the room, and the drapes began to billow and flutter with the breeze. Books fell from the shelves, and the music got louder and louder, while Thomas just laughed and laughed. John felt something tugging at his pants. He looked down and saw about a dozen tiny figures. There were some sort of little men--they couldn't have been more than 18 or 24 inches tall--pulling at his legs. It was like a nightmare. They were green and ugly--naked little bastards with long, pointed tails and gleaming yellow eyes.

"Let go of me--my God--let me go!" cried John as he struggled to push the little creatures away. Then he felt a sharp twinge of pain--and then another, and another. They were starting to bite at him.

"My God, my God.....help me!" John screamed as he watched the blood trickling from his hands and wrists. Slowly the determined little creatures pulled him to the floor. Three of them crowded around his head, reaching for his eyes with their scaly claws.

Just then there was a blinding flash of light, and John felt a sharp pain on the right side of his head. Suddenly, he was looking down into the room from somewhere up near the ceiling. He could see his aunt lying on the table--immobile. His uncle was staring up at him and smiling confidently. Mary was down on her knees, with her face in her hands, sobbing. And then he saw his body, lying face up on the floor beneath him, eyes staring blankly, mouth hanging open limply, as if in a trance....

"That's very good, boy!" conceded Thomas. "Maybe you do have some of your father's blood in you, after all. Now just stay up there for a while and keep out of the way!"

"Rise Isadora. The time has come. We are re-united at last!"

Thomas was staring intently at Mary. Slowly she stood up and faced him. Her face was changed. She didn't look frightened or upset anymore, but she did look much older. Her hair appeared darker, almost black.

"Yes. Lord Thomas. I have returned to you." The words that came from Mary's lips were alien--the voice was huskier, and she spoke with a strange foreign accent.

"Thank you, John boy, for returning my Isadora to me. She is not really your Mary, you know. That was only this irrelevant lifetime. She was mine once. Seven hundred years ago we had a glorious life together. But what do you know of such things?"

Thomas waved his arms and the room began to grow dark. The fire flickered, and then disappeared without a trace of smoke. John saw Thomas embrace Mary, whispering "It has been so long, my dear.....so long." And the room got darker, and darker, and darker.
Paranormal Discussion Experiment

Names __________________________________________________ Group # ______

DYAD DISCUSSION INSTRUCTIONS

The task that you and your partner have is to analyze The Case of John and Mary and come up with as many "normal" explanations for the supposedly "paranormal" events reported as you can. That is, your concern should be with the truth or falsity of the case. You are to assess the probable validity or falsity of the claims involved by deciding whether the paranormal events reported could possibly be explained in some other more normal terms. For example, seeing a ghost may be a hallucination, and apparent ESP could be "just a coincidence," or could be the mutual reading of nonverbal and situational cues.

Record the results of your group discussion on the Task Analysis Form which is attached. Your productivity in this regard will be compared to that of the other participants in this experiment, so please try to do your best. Record your analyses by briefly identifying the incident involved (and its page number in the case), and then very briefly summarizing your explanation. You and your partner will have 20 minutes to work on this task.
<table>
<thead>
<tr>
<th>Incident (pg. #)</th>
<th>Explanation</th>
<th>Quality Rating</th>
</tr>
</thead>
</table>

Continue on reverse side if necessary
The task that you and your partner have is to share your feelings about The Case of John and Mary. That is, you should ignore the question of whether what is reported in the case is "really" true or false, and concentrate rather on your own subjective feelings, or "gut level reactions" to the sorts of events portrayed in the case. How would you feel if you were in either John or Mary's shoes? What might your reaction be to such strange and unprecedented experiences? You should not only explore your own feelings, but your partner's as well. Try to understand how he or she would feel in response to such events.

You may go about this sharing process in any way you wish. You may want to make some notes for yourself about particularly important aspects of the case for you, aspects that you would like to share or discuss with your partner. Or you may just want to doodle a bit as you think. An additional sheet of paper is attached to this one in case you want to write anything down during the experiment. However, you are not required to do so. You and your partner will have 20 minutes to work on this task.
Paranormal Discussion Experiment

NOTE AND DOODLE FORM
Paranormal Discussion Experiment

RESPONSE BOOKLET

Name __________________________________ Date ______________________

This booklet contains a series of items relating to your experiences in your discussion dyad and to your perceptions of your partner. Your answers in this booklet constitute the major dependent measures in this experiment, so please take your time in filling it out, and be both careful and honest in your responses.

Again, please rest assured that all of your responses will be kept strictly confidential. Neither your partner nor anyone else will ever see them. So please do be totally honest.
For both of the following items, select the one response that most accurately describes your feelings towards your discussion partner, and mark that response with a checkmark or an "X". Be sure to mark only one response for each item.

Personal Feelings (check one)

___ I feel that I would probably like this person very much.
___ I feel that I would probably like this person.
___ I feel that I would probably like this person to a slight degree.
___ I feel that I would probably neither particularly like nor particularly dislike this person.
___ I feel that I would probably dislike this person to a slight degree.
___ I feel that I would probably dislike this person.
___ I feel that I would probably dislike this person very much.

Working Together in an Experiment (check one)

___ I believe that I would very much dislike working with this person in an experiment.
___ I believe that I would dislike working with this person in an experiment.
___ I believe that I would dislike working with this person in an experiment to a slight degree.
___ I believe that I would neither particularly dislike nor particularly enjoy working with this person in an experiment.
___ I believe that I would enjoy working with this person in an experiment to a slight degree.
___ I believe that I would enjoy working with this person in an experiment.
___ I believe that I would very much enjoy working with this person in an experiment.
For each of the following items, read the statement and then mark your response by circling one and only one X on the seven-point scale provided below the item to indicate your degree of agreement or disagreement with that item. Be sure to respond by circling an X on the scale; if you respond by marking the scale at a point other than one of the Xs your data will have to be discarded. For all fifteen of the following items, you are to rate your discussion partner.

1. I think that he (she) could be a friend of mine.
   X--X--X--X--X--X--X--X--X
   strongly agree strongly disagree

2. It would be difficult to meet and talk with him (her).
   X--X--X--X--X--X--X--X--X
   strongly agree strongly disagree

3. He (She) just wouldn't fit into my circle of friends.
   X--X--X--X--X--X--X--X--X
   strongly agree strongly disagree

4. We could never establish a personal friendship with each other.
   X--X--X--X--X--X--X--X--X
   strongly agree strongly disagree

5. I would like to have a friendly chat with him (her).
   X--X--X--X--X--X--X--X--X
   strongly agree strongly disagree

6. I think he (she) is quite handsome (pretty).
   X--X--X--X--X--X--X--X--X
   strongly agree strongly disagree

7. He (She) is very sexy looking.
   X--X--X--X--X--X--X--X--X
   strongly agree strongly disagree
8. I find him (her) very attractive physically.

   X---------X--------X---------X--------X--------X---------X

   strongly strongly
   agree disagree

9. I don't like the way he (she) looks.

   X---------X--------X---------X--------X--------X---------X

   strongly strongly
   agree disagree

10. He (She) is somewhat ugly.

     X---------X--------X---------X--------X--------X---------X

   strongly strongly
   agree disagree

11. He (She) is a typical goof-off when assigned a job to do.

     X---------X--------X---------X--------X--------X---------X

   strongly strongly
   agree disagree

12. I have confidence in his (her) ability to get the job done.

     X---------X--------X---------X--------X--------X---------X

   strongly strongly
   agree disagree

13. If I wanted to get things done, I could probably depend on him (her).

     X---------X--------X---------X--------X--------X---------X

   strongly strongly
   agree disagree

14. I couldn't get anything accomplished with him (her).

     X---------X--------X---------X--------X--------X---------X

   strongly strongly
   agree disagree

15. He (She) would be a poor problem solver.

     X---------X--------X---------X--------X--------X---------X

   strongly strongly
   agree disagree
Respond to the following items by circling the appropriate point on the scale below the item. Again, be certain to circle only one point on the scale.

On the topic of paranormal phenomena, how similar or dissimilar do you feel your partner's attitudes and beliefs were to your own?

very similar

very dissimilar

In general (that is, in all realms, not only in the area of paranormal phenomena), how similar or dissimilar do you feel your partner's attitudes and beliefs are to your own?

very similar

very dissimilar

During what percentage of your 20 minute dyad interaction time would you estimate that either you or your partner were talking?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Short Answer:

1. Were all of the instructions clear and understandable in this experiment? If not, what was unclear?

2. How well have the scales in this response booklet allowed you to express your true feelings? If you had any problems expressing your feelings on these scales, please explain:

3. What do you think the purpose of this experiment is?

4. Do you have any comments or suggestions regarding this experiment?

5. Have you ever personally experienced any psychic phenomena? If yes, please explain:
APPENDIX B

Research Materials from Study 2

Contents:

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Paranormal Discussion Experiment

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On the basis of your score on the PBI, you will be assigned a partner with whom you will carry out a specified discussion task in another room of the lab. This task will be based upon a case (The Case of Jill and Henry), purported to involve paranormal phenomena. You will receive the case along with your further instructions shortly.

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Thanks for your help through your careful participation in this study.
Jill Hastings was an eighteen year old freshman at Boston College at the time of these events, in October of 1976. It all started at the Sorority's Halloween Party. Jill's friend, Kate, had invited her to the party, promising her the "time of her life," because the local pop guru, Henry Robinson, (better known on campus as "The Amazing Ahmid", or just "Ahmid" for short) would be performing. Ahmid, as he liked the girls to call him, was a self-proclaimed "sorcerer" along the lines of Don Juan in Carlos Casteneda's books. He dropped out of Harvard in 1963, and settled in a loft on the south side of Boston. Here he avidly took up the study and practice of the occult. Henry had an IQ of 175, so it was easy for him to read a book a night on the subject. He had mastered hypnosis, astrology, palmistry, numerology, graphology, phrenology, physiognomy, radiesthesia, and yoga, as well as telepathy, clairvoyance, precognition, psychokinesis, and mediumship. He had a little shop in his apartment where he did psychic readings and provided psychic counseling, at fees ranging from $5.00 to $50.00. Henry also moonlighted as an entertainer. His act, as "The Amazing Ahmid," was quite successful in the greater Boston area (particularly on college campuses). Ahmid would guess people's names and ages, predict the future, materialize and de-materialize small animals, and bend keys, spoons, rings, etc., through his tremendous mind power.

At the Halloween Party, the girls held a seance, with Henry as the medium. They tried to contact the spirit of Abraham Lincoln. After about an hours chanting and concentrating, one of the girls thought she saw Lincoln's face looking in through the window. Another girl was sure she heard gunshots. They all felt strong psychic impressions of the Civil War Era.

Later that evening, Henry offered to demonstrate levitation. The heaviest girl in the room, Ruby Callahan, was chosen as the subject. The four smallest girls present were chosen to take part in the experiment. Jill, at 5'2", was one of these. She didn't see any way in which she and the other three girls could lift Ruby using only their fingertips, as Henry insisted (Ruby had stopped revealing her weight when she passed 220 pounds!). But the girls did as they were told--stacking their hands alternately on Ruby's head as she sat in an old wooden chair, and chanting rhythmically the words presented by Ahmid. Then, at his signal, they all suddenly moved their hands from the top of Ruby's head, extended their forefingers, and placed these forefingers under Ruby's knees and armpits. Then, at Henry's command, "Lift!", the four girls easily lifted Ruby into the air, and held her there for a time, before lowering her back to her seat.

Jill was amazed! She didn't seem to exert any effort at all--Ruby just seemed to rise up into the air! After the party, she asked Henry how it worked....

"Bioenergy," he replied. "You know--psychic energy--the aura--psi fields--animal magnetism. Hell, I don't care what you call it--its all the same thing. Its the universal energy that unites man to the cosmos. Nineteenth century physicists referred to it as the "ether." It can be
controlled through practice, you know. Can bring tremendous benefits to
the initiated....tremendous benefits."

"What do you mean, 'benefits'?" asked Jill.

"Power!" exclaimed Henry. "When you control the Force--you control
the universe:"

"But," he hesitated, "that's secret knowledge. Only for the initi-
ated. It's just got to be in your Karma, that's all."

Jill was interested. The one thing that bothered her most about her
current situation was her lack of "power." Here it was, only halfway
through her first semester in college, and she realized that there was no
way she could go on living with her parents and commuting to school from
there. She needed her privacy! And besides, parents are so damned nosey!
They always want to meet everybody you go out with. They always expect
you to be home by a certain hour, and they bitch at you when you're late.
And they always expect you to be studying! What a drag!

"Hmmmm-m-m-m" mumbled Henry under his breath, "this could be fruit-
ful."

"What did you say, Ahmid?" asked Jill.

"I said, you could be a 'Hopeful'."

"What's a 'Hopeful'?' she inquired.

"Someone destined to be initiated into the Inner Circle of the Un-
iverse. It depends on your past lives--you know, where you are in the
cycle of reincarnation."

"Oh.........sure." Jill said weakly. What was this guy anyway, she
wondered. Some of the stuff he talked about was just plain nuts. Being
raised a Catholic, Jill knew that pagan beliefs of other religions vio-
lated the Ultimate Truth revealed by the Catholic Church. At least that's
what they made her learn back in Catechism. But all that seemed so far
away now.....

Henry was staring into her eyes. He had such an intense gaze! His
eyes, dark and deep set, almost seemed to glow inside his head. Jill
felt a shiver run up her spine, and suddenly felt very cold.

"I can read your aura" said Henry.

"All of the reds and oranges in the perimeter indicate that you've
been experiencing a lot of emotional turmoil. But the purple around your
shoulders could be a good sign. I'd have to do a more detailed reading
back at the Center."

Henry smiled, and beckoned her. For a moment, she thought she saw
him clad in long, flowing robes--almost like Christ, only in black. His
shoulder length black hair and beard only added to the image. And those
eyes.......
Jill started to walk out with Henry. Then she faltered. Before she had a chance to speak, Henry interjected--

"Don't worry. Your father is out playing poker and getting drunk, and your mother fell asleep two hours ago. We've got time."

"How did you know what I was thinking about?" Jill exclaimed. "And how can you be so sure about my parents?"

She looked at the clock. Twelve thirty already. If her dad was home, he would be fuming!

"Trust me, Esmeralda..." whispered Henry, as he stared deeply into her eyes and took her arm, escorting her out through the door.

It only took them a few minutes to get across town to the "Center." Henry's "Center for Investigations in the Occult" was located in the small loft above a bankrupt theater that he called "home." Jill felt a little nervous, and couldn't figure out why she had agreed to go with Ahmed. It was almost as if she were being controlled by some outside force.....she shuddered at the thought.

"Take your stuff off and lets get down to business," Henry directed as they walked in the door.

"What?" Jill was still panting after climbing up the three flights of stairs. "Hey--this place is spooky. How come there's no lights on the stairway?" Jill inquired nervously.

"Interferes with the Spirits." muttered Henry. "I don't use any electricity." And with that he moved about the room, lighting candles.

"Take off your coat, shoes, and all jewelry. Then sit over there." He pointed to a large, velvet cushion on the floor in front of a massive black drapery.

Henry lit some incense or something in the two burners on either side of the velvet cushion.

"Sit down, cross your legs, close your eyes, and relax." he said, as he guided her over to the cushion and arranged her legs in a half lotus position. "I'll be right back."

Henry disappeared into a walk-in closet at the rear of the room, which must have been the kitchen. Jill had looked at her watch before she put it down on the table. Almost one o'clock. She wondered if her parents were waiting up for her. She shifted her position slightly and inhaled the incense deeply. It smelled so good.....and it seemed to make her feel so warm all over. Jill vaguely heard Henry rattling around in the kitchen, but slowly found herself drifting off into a lightheaded daydream.

Suddenly Jill jerked alert with amazement. She distinctly heard her mother call her name, and "saw" her--in her old, baggy pink nightgown, looking into her room at home.
Just then Ahmid returned.

"Drink this. It will help you to center." he directed. "I sense a spiritual presence with us here. Do you feel anything?"

Jill coughed as she finished off the little concoction that Ahmid had given her.....

"Phew!......wow......what?....ah, yeah, I guess I do--I feel sort of warm--but with goosebumps. Its kind of funny. What was in that drink, anyway?"

"Some herbs and other substances, in an alcohol base.....designed to sensitize you to the Spiritual World. You are a very important person, do you know that, Jill?" Ahmid sat down directly in front of her, so that his knees were touching hers.

"Look at me....Jill.....look into my eyes. Concentrate on floating...floating........floating........"

Jill felt another wave of warmth course across her body. She felt herself drifting......floating.....

After about ten minutes, Ahmid's eyes suddenly closed, and he seemed to squint and grunt and struggle for a time. Then suddenly his eyes and mouth opened in unison. Teeth bared, his glowing eyeballs literally protruding from his skull, he shouted at her:

"Woman! Esmeralda! Someone is here to contact you. Are you blind? Can you not see?!?"

Jill's jaw dropped and she straightened up in terror. That was not Ahmid's voice! It was a woman's voice! But so strained and raspy--as if it had been silent for hundreds of years. She wanted to run--to get out of that crazy place--but she couldn't move. She was rooted to her seat!

Suddenly she heard a low growl somewhere off to her right. Then it got louder. She managed to turn her head, and saw for the first time a magnificent German Shepard dog, crouched underneath the table in the corner by the door to the kitchen. The dog's teeth were bared in a snarl, and the hair was standing on end across its arched back. It stared unceasingly at a blank spot on the wall across the room.

As Jill watched that spot on the wall--a human face slowly emerged from the plaster! Then a hand.....and an arm. The hand and arm pointed directly at her, and then the creature's eyes opened!

They were yellow--hideously yellow. And they seemed to radiate a dull, orangish light towards her. Then the lips began to move. The face quivered and jerked, struggling to gain control. Jill felt as if she were going to vomit. Then it happened...........

"Tragedy will befall your family, Esmeralda! Did you not learn your lesson yet? How long has it been? How many lifetimes? And how many deaths will it take?"
As the face spoke, Jill suddenly bolted for the door. She ran down the stairs in the dark with the agility of an athlete. When she reached the sidewalk, she ran for Tremont Street to hail a cab.

The driver gave her a funny look as she scurried into the cab.

"1210 Evergreen Street in Waltham" she said, trying to control her shaking.

"You got money to pay for this, Chickie?" came the reply.

Jill looked at herself. No shoes...no coat...tears streaming down her face, with the raw wind blowing loudly on this November 1, All Souls Day, at 3:30 am.

"That's my home." she sobbed. "My dad will pay."

The cabbie saw that she was distraught. This was no streetwalker, after all, he thought. She didn't look hurt, though. Best to just get the poor kid home.

They drove in silence, except when the still air was punctuated by Jill's sobs. It had started to rain, and the swish-swish-swish of the cab's wipers had almost put Jill to sleep.

"Here we are, kid." came the low, gruff voice. "You want I should wait here or come up to the door with you?"

"I'm OK. I'll be right back."

As Jill stepped out of the car, she noticed that every light in the house was on. As she walked up the steps, her mother suddenly opened the door, crying.

"Oh, Jilly!" she sobbed, and hugged her daughter tightly.

"Hey--I'm OK mom. I just had to help clean up after the party, you know. But I need ten bucks for the cab--believe it or not, somebody stole my purse and shoes and coat at the party."

Her mother said nothing more. Still sobbing, she went back into the house to fetch her purse. Suddenly, a chill ran up Jill's spine. She was wearing her pink nightgown under her robe!

When she returned, Jill asked "Where's daddy? Out drinking again or something? I would have expected to hear him thundering as usual by now."

"Pay the cab." said her mother. She stared into her daughter's eyes, and Jill saw the countenance of a beaten woman. Her face reflected the agonizing pain of imminent defeat---of the final battle lost.

Jill paid the cabbie and returned to the house. Her mother was on the phone:
"Yes. Alright. We'll be right down there. But...are you sure there's no hope?................OK................OK.............
Yes, I understand......Goodbye."

Then she turned to Jill:

"Get some clothes on Jill, we have to go out." She turned and walked towards the stairs.

"Go out? Go out where? It's almost four o'clock in the morning. I'm tired. I want to go to bed."

Suddenly her mother reeled about, her face tightened in anger--her fists clenched.

"You're tired! You want to go to bed! My God--how can you be so self-centered?!!" At this point the woman broke down in tears again, and sobbed loudly and uncontrollably.

"Momma.......what's the matter?"

"Where's daddy, momma?..........where's daddy?"

Mrs. Hastings only sobbed more loudly and uncontrollably. Suddenly, Jill's blood ran cold. She remembered the face--and she knew.

"That was the police on the phone. Your father is dead...."

"He was out drinking and came home around 1:00. I had fallen asleep. I went to check on you before we went to bed, and you were still out. Your father was enraged! He was too drunk to go out! I told him so! But he wouldn't listen. He stormed off in the car to rescue you from those 'sex-fiends' at the college."

Then the police called. He ran head on into a tree on Chestnut Street. I don't know how, but the car caught fire. And no one was around, anyway. They couldn't have helped him."

"We have to go down and identify the body."

The selection procedures employed in this experiment have resulted in the pairing of you with your partner. I expect that this pairing should facilitate the richness of your discussion. The task that the two of you have is to analyze The Case of Jill and Henry, and come up with as many "normal" explanations for the supposedly "paranormal" events reported as you can. That is, your concern should be with the truth or falsity of the case. You are to assess the probable validity or falsity of the claims involved by deciding whether the paranormal events reported could possibly be explained in some other more normal terms. For example, seeing a ghost may be a hallucination, and apparent ESP could be "just a coincidence," or could reflect the mutual reading of nonverbal and situational cues.

You and your partner should work on this task together. Once you both agree on an explanation for an event, you should each record that explanation briefly on the Task Analysis Form which is attached. Your productivity in this regard will be compared to that of the other participants in this experiment, so please try to do your best. Record your analyses by briefly identifying the incident involved (and its page number in the case), and then very briefly summarizing your explanation. You and your partner will have 20 minutes to work on this task.
Paranormal Discussion Experiment

<table>
<thead>
<tr>
<th>Incident/pg. #</th>
<th>Explanation</th>
<th>Quality Rating</th>
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Continue on reverse side if necessary.
Paranormal Discussion Experiment

DYAD DISCUSSION INSTRUCTIONS

The selection procedures employed in this experiment have resulted in the pairing of you with your partner. I expect that this pairing should facilitate the richness of your discussion. The task that the two of you have is to share your feelings and beliefs about The Case of Jill and Henry. You should de-emphasize the question of whether what is reported in the case is "really" true or false, and concentrate instead on your own beliefs and subjective feelings, or "gut level reactions" to the sorts of events and phenomena portrayed in the case. How would you feel if you were in Jill's shoes? What might be your reaction to such strange and unprecedented experiences? Have you ever personally had any psychic experiences? You should explore not only your own feelings and beliefs, but your partner's as well. Try to understand what he or she thinks and feels about such events.

You may go about this sharing process in any way you wish. You may want to make some notes for yourself about particularly important aspects of the case for you, aspects that you would like to share or discuss with your partner. Or you may just want to doodle a bit as you think. An additional sheet of paper is attached to this one in case you want to write anything down during the experiment. However, you are not required to do so. You and your partner will have 20 minutes to work on this task.
Paranormal Discussion Experiment

NOTE AND DOODLE FORM
In addition to collecting data on paranormal phenomena, this experiment is also exploring the realms of interpersonal perception. This Response Booklet contains a series of rating scales dealing primarily with your perceptions of and feelings toward your discussion partner. Obviously, I realize that it is difficult to form a detailed impression of another person after only 20 minutes of interaction. However, for the purposes of this experiment, it is very important for you to think very carefully about your impressions of your partner. Your ratings on the following scales are the major dependent variables in this experiment. Thus, it is extremely important for you to read and respond to each item carefully and honestly. While care is important, you should not linger over individual items for too long. Generally, your first impression is the best response, once you have carefully read and understood an item.

Several rules for response are crucial to the success of this experiment:

1. Read each item carefully and be sure that you understand it.
2. Mark the response scale appropriately by circling one and only one of the "X"s on the scale. If you circle more than one "X", or if you mark the scale at some point other than one of the "X"s, your data will have to be discarded.
3. In order for the data to be statistically analyzed, you must respond to every item. If you do not respond to one or more items, your data will have to be discarded.

You may find some of the scales difficult to respond to, in view of the circumstances of the experiment. It is very important that you respond as best you can to all of the scales, in spite of any such problems.

Before you begin responding, please take a moment to reflect on your interaction with your partner, and to think about your feelings toward him or her, based on your impressions during that interaction.

One final comment: All of your responses on these scales will be strictly confidential. Neither your partner nor anyone else will ever see them. So please, for the sake of the experiment, be totally candid in all of your responses. Thank you for your help.
Instructions: Likert Items

The following six pages contain a series of items on a type of scale known as a "Likert Scale" among psychologists. For each item, you should read the statement(s) and mark your response by circling one and only one "X" on the response scale. Be sure to mark only one response for each item. Be sure to respond to every item.

For all of the following items, you are to rate your feelings toward your discussion partner.
Personal Feelings  (Circle only one "X")

X  I feel that I would probably like this person very much.
X  I feel that I would probably like this person.
X  I feel that I would probably like this person to a slight degree.
X  I feel that I would probably neither particularly like nor particularly dislike this person.
X  I feel that I would probably dislike this person to a slight degree.
X  I feel that I would probably dislike this person.
X  I feel that I would probably dislike this person very much.

Working Together in an Experiment  (Circle only one "X")

X  I believe that I would very much dislike working with this person in an experiment.
X  I believe that I would dislike working with this person in an experiment.
X  I believe that I would dislike working with this person in an experiment to a slight degree.
X  I believe that I would neither particularly dislike nor particularly enjoy working with this person in an experiment.
X  I believe that I would enjoy working with this person in an experiment.
X  I believe that I would very much enjoy working with this person in an experiment.
I think that he(she) could be a friend of mine.

X------------X------------X------------X------------X
strongly agree

X------------X------------X
strongly disagree

I think that he(she) is quite handsome (pretty).

X------------X------------X------------X------------X
strongly agree

X------------X------------X
strongly disagree

I think that he(she) is one of those people who quickly wins respect.

X------------X------------X------------X------------X
strongly agree

X------------X------------X
strongly disagree

It would be difficult to meet and talk with him(her).

X------------X------------X------------X------------X
strongly agree

X------------X------------X
strongly disagree

He(She) is very well groomed.

X------------X------------X------------X------------X
strongly agree

X------------X------------X
strongly disagree

I would enjoy working with him(her) at the same job.

X------------X------------X------------X------------X
strongly agree

X------------X------------X
strongly disagree

He(She) is very sexy looking.

X------------X------------X------------X------------X
strongly agree

X------------X------------X
strongly disagree

He(She) seems to be a very admirable person.

X------------X------------X------------X------------X
strongly agree

X------------X------------X
strongly disagree

I would not be interested in meeting with him(her) socially.

X------------X------------X------------X------------X
strongly agree

X------------X------------X
strongly disagree

In general, his(her) physical appearance is very unattractive.

X------------X------------X------------X------------X
strongly agree

X------------X------------X
strongly disagree
I couldn't get anything accomplished with him/her.

| X--------X--------X--------X--------X--------X--------X |
| strongly agree strongly disagree |

I would invite him/her to join my club or other social group.

| X--------X--------X--------X--------X--------X--------X |
| strongly agree strongly disagree |

I don't like the way he/she looks.

| X--------X--------X--------X--------X--------X--------X |
| strongly agree strongly disagree |

I feel that I know him/her personally.

| X--------X--------X--------X--------X--------X--------X |
| strongly agree strongly disagree |

I would enjoy having lunch with him/her.

| X--------X--------X--------X--------X--------X--------X |

The clothes he/she wears are not becoming.

| X--------X--------X--------X--------X--------X--------X |
| strongly agree strongly disagree |

I would ask his/her opinion before making an important decision.

| X--------X--------X--------X--------X--------X--------X |
| strongly agree strongly disagree |

I would praise his/her suggestions.

| X--------X--------X--------X--------X--------X--------X |
| strongly agree strongly disagree |

I have confidence in his/her ability to get the job done.

| X--------X--------X--------X--------X--------X--------X |
| strongly agree strongly disagree |
He(She) just wouldn't fit into my circle of friends.

Most people would react very favorably to him(her) after a brief acquaintance.

He(She) is somewhat ugly.

He(She) is a typical goof-off when assigned a job to do.

I have great confidence in his(her) good judgment.

I think that he(she) and I are quite similar to each other.

I would never want to study with him(her).

I find him(her) very attractive physically.

We could never establish a personal friendship with each other.
I would vote for him/her in a class or group election.

\[ X--------X--------X---------X---------X---------X---------X \]

strongly
agree

I definitely would not enjoy his/her company.

\[ X--------X--------X---------X---------X---------X---------X \]

strongly
agree

He(She) is not very good looking.

\[ X--------X--------X---------X---------X---------X---------X \]

strongly
agree

I would never invite him/her to accompany me to a party.

\[ X--------X--------X---------X---------X---------X---------X \]

strongly
agree

If I wanted to get things done, I could probably depend on him/her.

\[ X--------X--------X---------X---------X---------X---------X \]

strongly
agree

A member of the opposite sex would probably regard him/her as extremely attractive physically.

\[ X--------X--------X---------X---------X---------X---------X \]

strongly
agree

He(She) would be a poor problem solver.

\[ X--------X--------X---------X---------X---------X---------X \]

strongly
agree

I would like to have a friendly chat with him/her.

\[ X--------X--------X---------X---------X---------X---------X \]

strongly
agree
Overall, I feel that I like my partner:

X-----X-----X-----X-----X-----X-----X-----X
very much
not at all

Overall, I feel that I respect my partner:

X-----X-----X-----X-----X-----X-----X-----X
very much
not at all
Instructions: Semantic Differential Items

The following three pages contain a series of bipolar adjective scales known as "Semantic Differential Scales" among psychologists. The "X"'s on the following scales represent possible choice points on a continuum between the two opposite adjectives. For each scale, you should circle the "X" on the continuum that you feel is most descriptive of your discussion group partner.

Example:

careful X-----X-----X-----X-----X-----X-----X careless

If you feel that your partner is an extremely careful person, you would circle the left-most "X". If you feel that your partner is an extremely careless person, you would circle the right-most "X". If you do not feel that your partner falls at either extreme on this characteristic, you would circle one of the other "X"'s as appropriate.

For each item, read both adjectives carefully and mark your responses by circling one and only one "X" on the response scale. Be sure to respond by circling one of the "X"'s - do not mark the scale at any other point. Be sure to respond to every item.

For all of the following items, you are to rate your discussion partner.
likable X-----X-----X-----X-----X-----X-----X unlikable

cruel X-----X-----X-----X-----X-----X-----X kind

beautiful X-----X-----X-----X-----X-----X-----X ugly

thoughtless X-----X-----X-----X-----X-----X-----X thoughtful

intelligent X-----X-----X-----X-----X-----X-----X unintelligent

unattractive X-----X-----X-----X-----X-----X-----X attractive

friendly X-----X-----X-----X-----X-----X-----X unfriendly

incompetent X-----X-----X-----X-----X-----X-----X competent

good-looking X-----X-----X-----X-----X-----X-----X plain

cold X-----X-----X-----X-----X-----X-----X warm

sincere X-----X-----X-----X-----X-----X-----X insincere

sloppy X-----X-----X-----X-----X-----X-----X well-groomed
<table>
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<th>Description</th>
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<td>unreliable</td>
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<td>generous</td>
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pleasant X-------X-------X-------X-------X-------X unpleasant
neurotic X-------X-------X-------X-------X-------X stable
clean X-------X-------X-------X-------X-------X dirty
unsociable X-------X-------X-------X-------X-------X sociable
wise X-------X-------X-------X-------X-------X foolish
listless X-------X-------X-------X-------X-------X energetic
relaxed X-------X-------X-------X-------X-------X nervous
bad X-------X-------X-------X-------X-------X good
appealing X-------X-------X-------X-------X-------X unappealing
ignored me X-------X-------X-------X-------X-------X was attentive
mature X-------X-------X-------X-------X-------X immature
untidy X-------X-------X-------X-------X-------X tidy
polite X-------X-------X-------X-------X-------X impolite
narrow-minded X-------X-------X-------X-------X-------X open-minded
Instructions: Other Scales

The remaining pages contain a series of addition scales and some open-ended questions. Please respond appropriately by either circling one "X" on the scale, or writing out your response, as indicated for each item.
On the topic of paranormal phenomena, how similar or dissimilar do you feel your partner's attitudes and beliefs were to your own?

very similar

very dissimilar

In general (that is, in all realms, not only in the area of paranormal phenomena), how similar or dissimilar do you feel your partner's attitudes and beliefs are to your own?

very similar

very dissimilar

To what degree do you feel that your first impression of liking for your partner changed during your 20 minute interaction?

very not much at all

To what degree do you feel that your first impression of respect for your partner changed during your 20 minute interaction?

very not much at all

To what degree do you feel that your first impression of the physical attractiveness of your partner changed during your 20 minute interaction?

very not much at all

During what percentage of your 20 minute dyad interaction time would you estimate that either you or your partner were talking?

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Briefly, and in your own words, please explain what made you feel the way you did about your partner:

Have you ever had any psychic experiences? If yes, please explain briefly:
Thank you for your careful participation in this experiment. While you are waiting for everyone to finish filling out their Response Booklets, please take a moment to go through your Response Booklet and make certain that you have circled one and only one response for every item.
APPENDIX C

Paranormal Belief Inventory

Contents:

Paranormal Belief Inventory: Form 2.........................155
Scoring Key for PBI Form 2.................................159
PARANORMAL BELIEF INVENTORY: FORM 2

Directions: This booklet contains a series of 30 statements about events or relationships in the world. I am interested in whether you believe these statements are definitely true, may possibly be true, or are definitely false. Different people believe that different statements are true. I am interested in what your beliefs are, regardless of what other people might say.

Read each of the following statements and then indicate whether you agree, disagree, or are uncertain about the statement by completely blackening the space for the appropriate alternative in the test booklet. If you agree that a statement is true, blacken alternative (A) (from the YES column) in the booklet. If you are not sure whether a statement is true or false, blacken alternative (B) (from the POSSIBLY column) in the booklet. And if you disagree with a statement, believing it to be false, blacken alternative (C) (from the NO column) in the test booklet. Be sure to respond to every statement.

If you have any comments on any items, write them at the bottom of this page along with the number of the item that you are commenting on.

Please do not discuss the items with your neighbors as you are filling out the scale, and please do not say anything about the items or the inventory as people are working on it, since this sort of thing could influence other's responses.
<table>
<thead>
<tr>
<th>YES</th>
<th>POSSIBLY</th>
<th>NO</th>
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<tbody>
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YES  POSSIBLY  NO

(A)  (B)  (C)  15. Dowsing (the farmer's art of "water witching") can be used to locate underground water supplies, since the forked "witching stick" will dip downwards when the person walks above a hidden body of water.

(A)  (B)  (C)  16. Angels really exist.

(A)  (B)  (C)  17. Some houses are really "haunted," that is to say, they are inhabited by ghosts or spirits.

(A)  (B)  (C)  18. A good medium can sometimes contact spirits of the dead at a seance.

(A)  (B)  (C)  19. Voodoo can actually be used to harm people magically.

(A)  (B)  (C)  20. It is possible for an object to be dematerialized (that is, to just suddenly disappear off the face of the earth).

(A)  (B)  (C)  21. Some people have actually had contact with extraterrestrial creatures (i.e., beings from another planet).

(A)  (B)  (C)  22. There are mysterious, invisible forces in nature that can be used to personal advantage by people trained in occult methods (such as wizards, witches, or sorcerers).

(A)  (B)  (C)  23. Humans are united with all things in the universe through a "universal energy" that exists everywhere, but has not yet been discovered or recognized by science.

(A)  (B)  (C)  24. I believe that at times I have used ESP (extrasensory perception) to figure out what someone else was thinking.

(A)  (B)  (C)  25. Some people have an ability called psychokinesis, through which they can make physical things move, without touching them, by using mind power alone.

(A)  (B)  (C)  26. Some ancient Egyptian curses really have the power to harm violators of a Pharoah's tomb (for example, members of the archeological party who discovered the tomb of King Tut (Tutankhamen) are all supposed to have died soon thereafter under mysterious conditions).

(A)  (B)  (C)  27. Some people can use psychometry to extract information from physical objects (for example, a psychic may describe a killer by sensing information from an object found at the scene of the crime).
28. Some people can implant images on photographic film simply by mental concentration.

29. Sometimes I can make people do things just by concentrating on what I want.

30. There really is such a creature as the Abominable Snowman.
Please do not begin scoring until you are told to do so.

PARANORMAL BELIEF INVENTORY: SCORING KEY

Name _________________________________________ 2. ______

Date ________________________ Sex ______

1. ______

3. ______

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28. ______

29. ______

30. ______

Items in the Paranormal Belief Inventory are keyed such that agreement with an item indicates a belief in a paranormal phenomenon. Score each item by writing the response score in the appropriate space in the data sheet on the right hand side of this page.
 Whenever the response is (A) (in the YES column), score two (2) points for that response. Whenever the response is (B) (in the POSSIBLY column), score one (1) point for that response. Whenever the response is (C) (in the NO column), score zero (0) points for that response. After you have scored all 30 responses, add up your individual response scores to determine your total score on the inventory and write this number in the space in the lower right hand corner of this page.

Total Score: ______
APPENDIX D

New Hampshire Social Attraction Scales

Contents:

I. Liking Factors.................................................................161
II. Respect Factors...............................................................163
III. Physical Attractiveness Factors.................................165
IV. Social Distance Factors................................................167

Numbers on the scales indicate the scoring values for each response. During administration, these numbers should be replaced with X's so as not to bias subject's responses.
I. Liking Factors

A. Liking

Note: The first item has been reworded slightly for use in non-dyadic settings. Although both items of Byrne's Interpersonal Judgment Scale loaded moderately on this factor, those two items are omitted from the following scale to maintain its presentational continuity and adaptability for use in non-academic settings.

Overall, I feel that I like this person:

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I think that he(she) could be a friend of mine.

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It would be difficult to meet and talk with him/her.

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I would enjoy working with him/her at the same job.

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<th>7</th>
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<tbody>
<tr>
<td>strongly</td>
<td>agree</td>
<td>strongly</td>
<td>disagree</td>
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I would invite him/her to join my club or other social group.

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I would enjoy having lunch with him/her.

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Most people would react very favorably to him/her after a brief acquaintance.

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</tr>
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</table>
We could never establish a personal friendship with each other.

1--------2--------3--------4--------5--------6--------7
strongly strongly
agree disagree

I definitely would not enjoy his/her company.

1--------2--------3--------4--------5--------6--------7
strongly strongly
agree disagree

I would like to have a friendly chat with him/her.

7--------6--------5--------4--------3--------2--------1
strongly strongly
agree disagree

B. Likability

likable 7------6------5------4------3------2------1 unlikable
thoughtless 1------2------3------4------5------6------7 thoughtful
friendly 7------6------5------4------3------2------1 unfriendly
sincere 7------6------5------4------3------2------1 insincere
pleasant 7------6------5------4------3------2------1 unpleasant
unsociable 1------2------3------4------5------6------7 sociable

C. Easygoing Sociability

quarrelsome 1------2------3------4------5------6------7 good-natured
tolerant 7------6------5------4------3------2------1 intolerant
uncooperative 1------2------3------4------5------6------7 cooperative
pleasant 7------6------5------4------3------2------1 unpleasant
ignored me 1------2------3------4------5------6------7 was attentive
polite 7------6------5------4------3------2------1 impolite
narrow-minded 1------2------3------4------5------6------7 open-minded
II. Respect Factors

A. Respect

Note: The first item has been reworded slightly for use in non-dyadic settings.

Overall, I feel that I respect this person:

7--6--5--4--3--2--1
very much not at all

I think that he(she) is one of those people who quickly wins respect.

7--6--5--4--3--2--1
strongly agree strongly disagree

I would ask his/her opinion before making an important decision.

7--6--5--4--3--2--1
strongly agree strongly disagree

I would praise his/her suggestions.

7--6--5--4--3--2--1
strongly agree strongly disagree

I have confidence in his/her ability to get the job done.

7--6--5--4--3--2--1
strongly agree strongly disagree

He(She) is a typical goof-off when assigned a job to do.

1--2--3--4--5--6--7
strongly agree strongly disagree

I have great confidence in his/her good judgment.

7--6--5--4--3--2--1
strongly agree strongly disagree
I would vote for him/her in a class or group election.

7 strongly agree 6 strongly disagree
5 agree 4 disagree
3 strongly agree 2 strongly disagree
1

If I wanted to get things done, I could probably depend on him/her.

7 strongly agree 6 strongly disagree
5 agree 4 disagree
3 strongly agree 2 strongly disagree
1

He(She) would be a poor problem solver.

1 strongly agree 2 strongly disagree
3 agree 4 disagree
5 strongly agree 6 strongly disagree
7

B. Competence

intelligent 7 strongly agree 6 strongly disagree
5 agree 4 disagree
3 strongly agree 2 strongly disagree
1 unintelligent

incompetent 1 strongly agree 2 strongly disagree
3 agree 4 disagree
5 strongly agree 6 strongly disagree
7 competent

wise 7 strongly agree 6 strongly disagree
5 agree 4 disagree
3 strongly agree 2 strongly disagree
1 foolish
III. Physical Attractiveness Factors

A. Physical Attractiveness

I think that he(she) is quite handsome (pretty).

7--------6--------5--------4--------3--------2--------1
strongly agree strongly disagree

He(She) is very well groomed.

7--------6--------5--------4--------3--------2--------1
strongly agree strongly disagree

He(She) is very sexy looking.

7--------6--------5--------4--------3--------2--------1
strongly agree strongly disagree

I find him(her) very attractive physically.

7--------6--------5--------4--------3--------2--------1
strongly agree strongly disagree

He(She) is not very good looking.

1--------2--------3--------4--------5--------6--------7
strongly agree strongly disagree

A member of the opposite sex would probably regard him(her) as extremely attractive physically.

7--------6--------5--------4--------3--------2--------1
strongly agree strongly disagree

B. Grooming Attractiveness

unattractive 1----2----3----4----5----6----7 attractive

good looking 7----6----5----4----3----2----1 plain

sloppy 1----2----3----4----5----6----7 well-groomed
C. Physical Beauty

beautiful 7----6----5----4----3----2----1 ugly
unattractive 1----2----3----4----5----6----7 attractive
good looking 7----6----5----4----3----2----1 plain
appealing 7----6----5----4----3----2----1 unappealing
IV. Social Distance Factors

A. Rejection

I couldn't get anything accomplished with him/her.

1 strongly agree 2 3 4 5 6 7 strongly disagree

I would never want to study with him/her.

1 strongly agree 2 3 4 5 6 7 strongly disagree

We could never establish a personal friendship with each other.

1 strongly agree 2 3 4 5 6 7 strongly disagree

B. Informal Social Acceptance

I definitely would not enjoy his/her company.

1 strongly agree 2 3 4 5 6 7 strongly disagree

C. Intimacy

I feel that I know him/her personally.

1 strongly agree 2 3 4 5 6 7 strongly disagree
REFERENCES


