

THE UNIVERSITY OF CALGARY

A PHYSIOLOGICAL EXPLORATION OF EMPATHY



by

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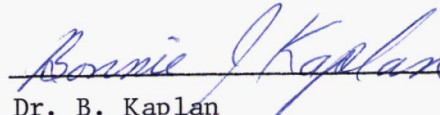
The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "A Physiological Exploration of Empathy" submitted by John W. Robinson in partial fulfillment of the requirements for the degree of Master of Science.



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## ABSTRACT

Within the literature there is the claim that when two people develop an empathic relationship there is a matching of their affective responses. Affective responses are accompanied by physiological responses. Thus, if empathy involves matching of affective responses, it should also involve matching of physiological responses.

Twenty-one counsellors' and clients' physiological activity was continuously and simultaneously monitored during counselling interviews. Finger skin temperature and skin conductance were the physiological variables used and the Relationship Inventory Empathic Understanding sub-scale was the measure of empathy. A number of ways of measuring the degree to which the physiological responses of counsellor and client match were developed.

Results showed that matching of phasic physiological responses is correlated with empathy and matching of tonic physiological responses is not correlated with empathy. By inference it is asserted that phasic affective matching is correlated with empathy. It is also suggested that matching of tonic physiological responses may be indicative of a sympathetic relationship. Suggestions for incorporating physiological measurement techniques into present methods of measuring and teaching empathy are made, as well as ideas for future research.

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## CHAPTER I

### INTRODUCTION

Empathy in its broadest sense refers to the sensitivity of an individual to the feelings of another person. Individuals who exhibit high levels of empathy are those who frequently and appropriately respond to the feelings of others. Wide agreement as to the nature of empathy stops here. When Gladstein (1977) reviewed the current literature on empathy he suggested that the different views of the nature of empathy may be placed on a cognitive/affective continuum.

The affective perspective of empathy can be described as the ability to take on the feelings, attitudes, or emotions of the other. Feshbach's (1975) definition of empathy is an example of this perspective. "Empathy is defined as a match between affective response of a perceiver and that of a stimulus person" (p. 26). The phrase "match between affective response" is key here. The closeness of the match has not been specified. Feshbach and Roe (1968) suggest however, that the term empathy be restricted to "the experiencing of an emotion similar to that of another" (p. 134). Stotland, Sherman and Shaver (1971) also speak of empathy as a matching of feelings and Iannotti (1975) uses the phrase "a matching of feelings" to describe empathy.

Empathy viewed as a cognitive process refers to the role-taking ability. Involved here is the cognitive process of figuring out how the other is feeling from the other's behavior. Hogan (1975)

expresses it as "the process of representing to oneself the expectations that others hold with regard to one's behavior" (p. 15). Mead (1934) speaks of an internal, imaginative and fantasy activity. Weinstein's (1969) view of empathy may also be placed at the cognitive end of the continuum. "First, the individual must be able to take the role of the other accurately; he must be able to correctly predict the impact that the various lines of actions will have on the other's definition of the situation" (p. 757).

The middle point of the continuum is occupied by those who believe the perceiver experiences the feelings of the other by decoding the other's message and then encoding a message communicating the experience of sensing the other's feelings. Rogers' (1975) definition fits into this category.

The way of being with another person which is termed empathic has several facets. It means entering the private perceptual world of the other and becoming thoroughly at home in it. It involves being sensitive, moment to moment, to the changing felt meanings which flow in this person, to the fear or rage or tenderness or confusion or whatever, that he/she is experiencing. It means temporarily living in his/her life, moving about in it delicately without making judgments, sensing meanings of

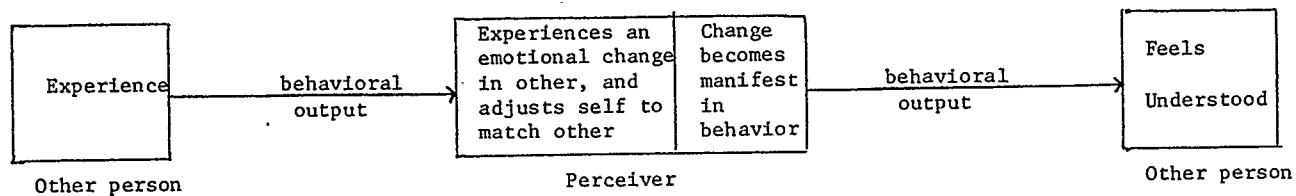
which he/she is scarcely aware but trying not to uncover feelings of which the person is totally unaware, since this would be too threatening. It includes communicating your sensing of his/her world as you look with fresh and unfrightened eyes at elements of which the individual is fearful. It means frequently checking with him/her as to the accuracy of your sensings, and being guided by the responses you receive. (p. 4)

Aronfreed's (1969) conception of empathy also belongs at the middle point of the continuum. Empathy is "a similarity between the observer's affective state and the affective experience which the observer perceives (or cognizes) another person to be having" (p.292).

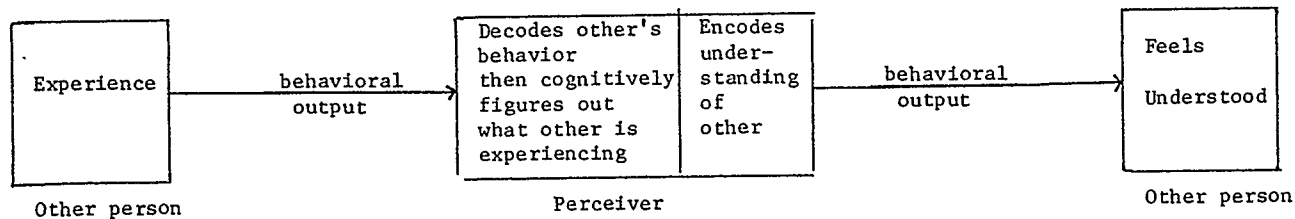
Shantz (1975) points out that in the literature on empathy in children there is a dichotomy in that empathy is viewed as being either primarily of an affective nature or of a cognitive nature. Cognitive empathy is seen as understanding how another feels and is demonstrated by accurately answering the question "What is the other person feeling?" On the other hand affective empathy is described by Shantz (1975) as feeling the same emotion as the other person and is demonstrated by answering the question "How do you feel?" with the same emotion as the stimulus person.

The three views of the process of empathy can be schematically represented, as seen in Figure 1.

### AFFECTIVE VIEW OF EMPATHY



### COGNITIVE VIEW OF EMPATHY



### COGNITIVE/AFFECTIVE VIEW OF EMPATHY

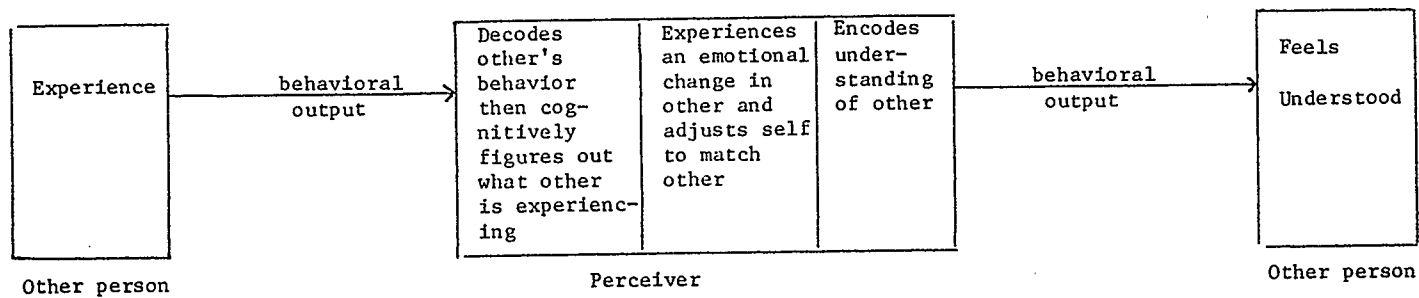


Figure 1

Three Views of Empathy

Thus there are three predominant views of empathy -- cognitive, affective/cognitive, and affective. The cognitive view states that empathy is a two part process involving a cognitive inference of what the other is feeling and a communication of this understanding to the other. The affective view defines empathy as the matching of two people's affective states. This matching of affective states manifests itself in the way the two people act toward each other. The affective/cognitive view sees empathy as involving both affective matching, and the cognitive ability to decode another's behavior and the ability to encode a message communicating the state of matching the other's affect.

Researchers in the fields of psychophysiology and psychobiology have clearly shown that affective reactions are accompanied by physiological reactions. Butterflies in the stomach, cold sweaty hands, and a fluttering heart are common reminders of this relationship. As early as 1922, physiologists (Lange, 1922) were using physiological events as indicators of emotional activity. Lang (1971), after reviewing several articles studying the relationship between physiological activity and emotions, states "all agree that flushed face, rapid pulse, and irregular breathing (physiological events) of human beings under stress is no less an emotional expression than angry words or flying fists" (p. 76). Grings and Dawson (1978) have written an entire book about bodily reactions associated with emotions.

### Hypothesis

Some writers claim that affective matching is part of the process of empathy. If this is true, then it seems reasonable to expect that the physiological reactions of a counsellor and client should match when an empathic relationship exists between the two. This thesis will test out the existence of the hypothesized relationship between affective matching and empathy by monitoring the physiological activity of counsellors and clients during counselling sessions. It is hypothesized that there is a relationship between the degree of correspondence of physiological activity of a counsellor/client dyad and the degree to which the members of the dyad have established an empathic relationship.

## CHAPTER II

## REVIEW OF THE LITERATURE

Physiological Referents

The overt behavior that counsellors observe, by which they infer affective states, are always accompanied by physiological change (Lang, 1971; Lacey, 1958; and Schlosberg, 1954). The physiological changes are numerous and oft-times subtle, but are amenable to quantification, measurement, and monitoring. Some of the earliest published work in this area was by Lasswell (1935) who recorded physiological measures from volunteer subjects in a psychoanalytic interview situation. The basic procedure was to continuously record physiological responses (his primary measures were skin resistance and heart rate) and verbal material of all sessions. Lasswell (1935) concluded from his work that "changes in active affect are positively associated with pulse rate, and changes in tension are positively associated with electrical skin conductivity" (p. 23). Di Mascio, Boyd and Greenblatt (1957) in a case study of one patient and therapist over 44 psychotherapy sessions, found tension and antagonism, as measured by the Bales' (1951) system of Interaction Process Analysis, to be significantly correlated ( $p < .05$ ) with heart rate lability and skin temperature. Dittes (1957) studied a patient over the course of psychotherapy. He reports that exploration by the patient of sexual matters was accompanied by electrodermal responses, which gradually disappeared as therapy progressed and

the patient adjusted to issues of sexuality in her life. Grendlin and Berlin (1961) examined the nature of "felt data" by using physiological measures. Statements using the demonstrative pronoun (e.g., "This feeling", "this all-tied-up way I feel") are indicators that a person is experiencing felt data. A person is thought to be making therapeutic movement when this occurs. The seventeen subjects used in this study showed a rise in the number of electrodermal responses and an increase in skin resistance when they were experiencing felt data. Kawakami's (1970) replication of this study produced similar results. Craig and Wood (1969) used electrodermal activity and heart rate as a measure of affect arousal in their study of vicarious experiencing. Rosseler, Brach, Thum and Collins (1975) correlated eight physiologic variables with ratings of affective intensity of a client during psychotherapy. The ratings of affect correlated significantly with respiration amplitude, respiratory rate, pulse volume, skin conductance, and number of galvanic skin responses.

Reviews of literature in this area (Lacey, 1958; Kaplan & Bloom, 1960; Shapiro & Crider, 1969; Shapiro & Schwartz, 1970; Lang, 1971; Schwartz & Shapiro, 1973; and Grings & Dawson, 1978) have all drawn the conclusion that the techniques for monitoring physiological change provide a reliable index of emotional change. For example:

In all the studies reviewed so far, the picture  
is unmarred. Autonomic and skeletal-motor responses



are sensitive indicators, even in the hurly-burly of the interview situation. They are objective, they reveal correlations with affect, describe the total effect of a single interview, the variation within interviews, and the long-term course of therapy. (Lacey, 1958, p. 172)

Electrodermal activity, given its high sensitivity to psychological stimulation and its ease of measurement, appears to be an excellent dependent variable in social psychophysiological research. The material presented in this chapter illustrates how cognition, emotion, and social environment each influence these measures. (Schwartz & Shapiro, 1973, p. 410)

In summary, many experimental studies have demonstrated that overt behavior and affect are always accompanied by physiological concomitants. Although physiological monitoring has not reached the point of accurate prediction of overt behavior or affective status the fact has been established that physiology and emotions are related.

Physiology and Empathy

A team of workers at the Massachusetts Mental Health Center published a series of studies in the early 1950's in what they called "Interpersonal Physiology" (A. Di Mascio, R. Boyd, M. Greenblatt & H. Solomon, 1955; R. Coleman, M. Greenblatt, & H. Solomon, 1956; and A. Di Mascio, R. Boyd, & M. Greenblatt, 1957). Prior to these studies Boyd and Di Mascio (1954) had found correlations between autonomic physiological data and psychotherapeutic interaction. Basically what they did in these studies was connect a client and a therapist to a polygraph and simultaneously record their physiological activity during the course of psychotherapeutic interviews.

Their first study of this series (Di Mascio et al, 1955) looked at the social parameters of a psychotherapeutic interview by using the Bales Interaction Process Categories (Bales, 1951). They were also interested in seeing how tension levels of the therapist and the patient changed with varying interaction. To do this they simultaneously recorded both the therapist's and the patient's EKG and the patient's respiration, finger skin temperature, and psychogalvanic resistance. An observer also coded various categories of interactional process. Data were collected over 38 meetings of a therapist and a patient. The study found many important processes occurring during the psychotherapeutic sessions. The finding that is important to this thesis is that "the psychiatrist's and the patient's pulse rates often varied together and at other times varied

inversely from each other" (p. 9). They suggested that the concordance between the pulse rates was related to rapport but cautioned that the evidence was very tentative. They did not record the therapist's respiration, finger skin temperature, or psychogalvanic resistance so they could not comment on the relationship between the therapist and patient on these measures.

The next article coming from the Massachusetts Mental Health Center entitled "Physiological Evidence of Rapport During Psychotherapeutic Interviews" (Coleman et al, 1956) further analyzed the data that had been used in the previously reviewed study. They first sought to see if a relationship existed between the patient's emotional expression and fluctuations of his heart rate. This was accomplished by placing the patient's emotional expression into four categories: anxiety, depression, extrapunitive hostility, and intra-punitive hostility. They found that "extra-punitive hostility was associated with an average heart rate three beats per minute faster than depression ( $p < .001$  level)" (p. 73); anxiety 11 beats per minute faster than depression ( $p < .001$  level); intra-punitive hostility four beats per minute faster than depression ( $p < .001$ ). No comparisons could be made between anxiety and intra-punitive hostility because the two categories never existed together in sufficient numbers in the same interview. There was no statistical difference between extra-punitive hostility and intra-punitive hostility. Having established that the patient's heart rate changed with different

emotions, they went on to look at the relationship between the therapist's heart rate and the patient's emotions. They found that "in general, the results indicate that the heart rate fluctuates continuously in accordance with shifts in affect, that qualitatively different affects are associated with discernably different levels of heart rate, and that the therapist in this case exhibited an overall 'physiologic relationship' with the patient" (p. 74).

It should be noted that the above quotation begins with "in general". At times, there was not this "physiologic relationship". They hypothesized that what was "disturbing the relationship" was the therapist's preoccupation with situations in his own life or occurrences in the interview which would "bear on the therapist's own unresolved conflicts" (p. 75). They tested this hypothesis by examining the comments the therapist dictated, immediately following each session, for indications that the therapist had been disturbed during the session. This examination lead to the following qualification of Coleman's et al. (1956, p. 74) passage quoted above "...evidence of a positive physiological relationship of the therapist to the patient is in general found only during those interviews in which the therapist was rarely disturbed by his own preoccupations or by material in the patient's transference which would bear on the therapist's unresolved conflicts" (p. 75). They felt that the physiological relationship which they had observed was a manifestation of empathy.

The third article by this research team (Di Mascio et al., 1957) again analyzed the data reported in the 1955 study. This 1957 article reported physiological correlates of tension and antagonism during psychotherapy. Rank order correlations were reported of various measures of tension and antagonism with each of the following: 1) therapist's heart rate, 2) patient's heart rate, 3) therapist's heart lability, 4) patient's heart lability, and 5) patient's skin temperature. The Bales' (1951) Interaction Process Analysis was used to define five types of interaction related to tension and antagonism: 1) patient's tension, 2) patient's tension release, 3) patient's disagreement, 4) patient's antagonism, and 5) patient's neutral or nonaffective responses. The results showed that the patient reacted differently physiologically for "tension" as compared to "antagonism". For the "tension" categories, it was noted that the reaction of the therapist's heart rate was similar to the patient's in that heart rate increased for both. The patient's and the therapist's heart rate reactions were dissimilar when the patient showed "antagonism" in that the therapist's heart rate increased and the patient's decreased. There were no significant correlations between heart rate and either "tension release" or "neutral" categories. It was thought that this showed that there is only a relationship between the patient's and the therapist's functionings when the patient is making affectively charged statements. In summing up their findings they say, "these relationships suggest a positive 'physiological identification' of the therapist with patient when the latter is

expressing 'tension' or 'tension release' but a negative one when he is expressing direct 'antagonism'" (Di Mascio et al. 1957, p. 103). As in the Di Mascio et al. (1955) and Coleman et al. (1956) studies, the data suggest that there is a physiological relationship between the therapist and the patient at certain times during the interviews.

Malmo, Boag and Smith (1957) conducted a study which is somewhat similar to the three reported above. Nineteen female psychoneurotics were divided into two groups. Both groups told a story from a TAT card. The subjects from the first group received praise for their story, and the second group received criticism. All subjects were asked to reply to the examiner's comments, then the experimenter made some reassuring remarks. Following this, another examiner entered the room and the first examiner left. This examiner questioned the subject about the test and asked her some other questions. The purpose of this second examiner was to obtain data on the subjects' response to a neutral person to compare with the stigmatized first examiner.

What is similar to the other studies is that both examiners and each of the subjects were connected to physiological recording devices. (one of their subjects was also the patient that we heard so much about in the previous studies). Muscle tension (EMG) and heart rate were the physiological variables recorded. The relevant finding here was that both examiner and subjects responded differently to the different experimental conditions (praise and criticism). Also of

interest is that by analyzing the examiners' diary notes they were able to isolate examiner's "bad" days and "good" days. "On the examiner's 'bad' days the patients' (subjects') heart rate rose significantly more than on the examiner's 'good' days" (p. 113). The authors could not, however, detect a physiological difference in the examiners as related to their "good" or "bad" days.

This study in some ways supports the work that was done at the Massachusetts Mental Health Center. It supports the Center's work in that it shows that people respond differently physiologically in different social situations. It also supports the notion that the subject or patient responds physiologically to the emotional state of the examiner or therapist. One would not have expected Malmö et al. (1957) to find a "physiological relationship" between the subjects and the examiner because there was little opportunity for an empathic relationship to develop. The Malmö et al. (1957) findings are somewhat conflicting in that they did not show a relationship between the physiological state of the examiner and his report of "good" and "bad" days.

Patric Linton (1977) and his associates (Travis, Kuechenmeister and White) attempted a replication of the work done at the Massachusetts Mental Health Center but abandoned the study because of difficulties quantifying the moment-by-moment changes in the therapist's empathy. They decided that a more fruitful way of studying physiological relationships would be to look at a more definable aspect of social

interaction. They chose to look at heart rate concordance between the experimenter and subject during the process of hypnosis and used as covariables scores from the 16 PF, a personality test developed by Cattell, Eblert and Tatsuoka (1949). Before the experiment began each of the twenty-one subjects filled out the 16 PF and were divided up into two groups depending upon whether they were highly susceptible to hypnosis or not very susceptible. The experiment, itself, was divided into three phases: 1) Each subject was hypnotized, 2) Subject and hypnotist reviewed a video tape of the first phase, 3) Subject and hypnotist carried on a conversation about hypnosis or anything they wanted to talk about. The first phase lasted twelve minutes, the second fourteen, and the last five minutes. Heart rate values were obtained simultaneously and continuously throughout the experiment. Results showed that there were no significant similarities of heart rates during the conversation phase or the tape review phase. During the hypnotic phase there were significant heart rate similarities. The similarities were not related to degree of hypnotizability but were related to scores of the 16 PF.

The report of this study leaves many unanswered questions. Linton et al. (1977) claim that certain personality factors of the subjects were correlated to heart rate covariation in the hypnotic phases. One wonders if the experimenter's personality was similar to the profile which was associated with heart rate covariation. There is



evidence in the literature that an empathic relationship is more easily established when the two people involved have similar personalities (Cronbach, 1955; Kreb , 1975; and Stotland, Sherman & Shaver, 1971).

In the discussion of their study Linton et al. (1977) say "The fact that there was no concordance during phases two and three of this experiment would suggest that concordance was not due to empathy.

If the hypnotist had developed an empathic relationship during phase one, this should theoretically have continued into the last two phases" (p. 150). They appear to assume that once an empathic relationship develops, it continues. This assumption may be false.

As well, they do not give a description of what was involved in the hypnotic phase. There is no way of telling to what degree an empathic relationship might have developed in the hypnotic phase.

One is left with puzzling thoughts -- What was going on in the hypnotic phase which was not occurring in the latter two phases?

Is hypnosis related to the phenomenon of physiological relationships?

Does hypnosis involve empathy?

Kaplan (1963) carried out a study in which he observed small group psychotherapy. Electrodermal recordings were obtained from a therapist and two schizophrenic patients during a total of thirty-seven therapy sessions. The measures were the number of spontaneous skin conductance responses and the total amplitude of electrodermal activity in a prescribed time. An observer rated the types of interactive behaviors. The important finding here was that both

therapist and patients responded differently according to the types of interactive behavior.

Kaplan, Burch, Bloom, and Edelberg (1963) used the same methodology in observing subjects in small peer group arrangements. They tested the notion that when a strong affective relationship exists between members of a peer group, the affective responses of group members will vary together and will be reflected in correlated physiological activity within the group. Groups of medical students were organized to represent (a) affectively positive, (b) affectively negative, and (c) neutral arrangements on the basis of a questionnaire in which students were asked to designate those peers that they liked and those they disliked. The groups met for five discussion sessions of 45 minutes during which their behavior was observed and electrodermal behavior recorded. It was found that subjects who engaged in interpersonal relations with peers they liked or disliked, exhibited more correlated physiological activity than subjects who were neutral to each other.

The Kaplan studies support the notion that in certain interpersonal relationships there is correlated physiological activity. It seems to disconfirm the notion that this activity is related to empathy, on an a priori basis, in that people who dislike each other should have a difficult time establishing an empathic relationship. The method they use for scoring the skin conductance responses may account for this result. They scored frequency and amplitude of responses during a prescribed time period for each of the subjects and then

correlated these scores, and so were not scoring the degree of concordance amongst the subjects, moment-by-moment. Kaplan's method of scoring may be more indicative of physical exertion and mental activity of the groups rather than the degree to which there was a "physiological relationship" amongst the group members.

No further studies relating empathy (as this concept is used in counselling) to physiology could be located. Upon summarizing the literature just reviewed, the following points stand out. A consistent finding was that affective changes are differentially reflected by physiological activity. There is evidence to support the existence of a physiological relationship occurring between two people. The nature of the interpersonal relationships which fosters this physiological relationship is not clear. As was suggested in Chapter 1, if physiological relationships indeed arise out of dyads, then these relationships coincide with the concept that empathy involves the matching of affective states of counsellor and client.

## CHAPTER III

## METHODOLOGY

Subjects

A sample of twenty-one counsellor-client dyads was used in this study. Three of the counsellors were from the teaching staff of the Counselling Psychology program at the University of Calgary, seven were Ph. D. students in the Counselling Psychology program at the University, six were counsellors at Student Counselling Services of the University, and five were Counselling Psychologists from various agencies in Calgary. Doctoral degrees were held by ten of the counsellors; all other counsellors held at least a Masters degree. Three of the counsellors brought their own clients; the other clients were student volunteers from an undergraduate course in education. The student volunteers' cooperation was gained by the experimenter making a presentation at the students' class. They were told the purpose of the study was to explore physiological activity during counselling interviews and that both counsellor and client would be connected to physiological recording equipment. The minimum qualifications of the counsellors were given and it was explained that further counselling would be available for those who desired it. Volunteers who had actual concerns (they were told that this was not to be a role play of fabricated concerns) they wished to talk over with a counsellor gave their names to the experimenter. Sex was not felt to be an important variable and so was not controlled

for. Ten counsellors were female and 11 male. Sixteen clients were female and five male.

### Instruments

Finger skin temperature (FST) and skin conductance (SC) of both counsellor and client were simultaneously recorded. FST and SC have been found to be good indicators of affect (Di Mascio et al., 1957; Rosseler et al., 1975). Grass DC 7 P1 pre-amplifiers and Chart Drive Amplifiers were used to amplify the signals from Yellow Springs thermistors and skin conductance electrodes. The skin conductance electrodes were Grass E5 cup disc, silver-plated electrodes. Grass EC-2 Electrode Cream was used as the electrolyte. The analog skin temperature signal from the Grass equipment was converted to digital form by an Autogen I 500 and 5400. The I 500 is an optically isolated analog to digital converter, and the 5400 is a microprocessor controlled data acquisition system. Both pieces of equipment are manufactured by Autogenics System Incorporated (ASI), 809 Allston Way, Berkley, California. FST was averaged over a one minute time period by the Autogen 5400 and then values for both counsellor and client were printed by the Autogen printer. SC of counsellor and client were recorded on a polygraph.

The Barrett-Lennard Relationship Inventory Form OS--64 (1964) Empathic Understanding sub-scale was used as the measure of empathy between the counsellor and client. The Barrett-Lennard Relationship

Inventory (RI) has been used in over two-hundred studies (Barrett-Lennard, 1972). Test-retest correlation for the Empathic Understanding sub-scale is .89, and Spearman-Brown split-half correlations range from .82 to .93 (Gurman, 1977). Kurtz and Grummon (1972) reported that client-perceived empathy as measured by the RI correlated significantly with four of the six outcome measures of psychotherapy and approached significance ( $p < .1$ ) with the other two measures. The Kurtz and Grummon (1977) study reports correlations of outcome with five other measures of empathy. Of the five other measures tested only the Empathic Understanding in Interpersonal Process Scale (Carkhuff, 1969) showed any correlation with outcome. This Carkhuff scale correlated with only one outcome measure though the RI correlated with four outcome measures, as stated above. Krutz and Grummon (1977) in summarizing their findings say that the RI Empathic Understanding sub-scale "shows a stronger relationship to outcome than any of the other empathy measures" (p. 114). The RI is based on Rogers' (1957) conception of empathy which, as earlier presented, considers the nature of empathy to be both a cognitive and affective process. Thus the scale does not bias the measure of empathy as would a measuring instrument which views empathy in a purely cognitive or purely affective light.

The Empathic Understanding sub-scale of the RI consists of 16 items such as "He does not realize how sensitive I am about some of the things we discuss". The client indicates three degrees of

agreement or disagreement, with no neutral ground provided. The scale has a range of -48 to +48, the higher the score the greater the degree of empathy.

### Procedure

Each counsellor was asked to conduct two, one-half hour, counselling interviews with his/her client in a sound proof, electrically shielded booth while both were connected to the physiological recording equipment.

Efforts were made to reduce the anxiety level of both counsellor and client. The physiological recording equipment was housed in an adjacent control room and each session was monitored by closed circuit television so that the physical presence of the experimenter would not disturb the dyad. The first interview served as an adjustment period during which both became accustomed to the setting. Only data from the second interview was used in the analyses.

The counsellors and clients were told that the purpose of the experiment was to investigate their physiological activity during counselling interviews. They were not told that only data from the second interview would be used. After the procedure of the experiment and the safety features of the booth were explained, and a consent of participation form signed, both counsellor and client were connected to the physiological recording equipment. The counsellor and client were then asked to chat for about ten minutes. This time allowed

their bodies to become acclimatized to the temperature and humidity of the room. As well, this time was used by the experimenter to adjust the physiological recording equipment. After this ten minute period, the two were instructed to begin the half-hour counselling interview. The same procedure was followed for the second interview with the RI being filled out at the end of this second interview.

All of the student volunteers talked about real life concerns. The counselling interviews were very similar to what one would expect to see in a setting such as a university counselling center.

#### Definition of Measurement Units

The finger skin temperature (FST) of the counsellor and client was averaged and recorded every minute of the 30 minute counselling interview. FST was measured in ASI units. An ASI unit is the numeric value displayed by the 5400 and printed by the Autogen printer to three decimal places. One ASI unit was calibrated to equal .7 degrees Celsius. This calibration procedure was purely arbitrary. The balance voltages of the Grass pre-amplifiers were adjusted so that the Autogen 5400 read zero ASI units for both counsellor and client at the end of the acclimatization period. Thus the ASI units recorded represented change in FST relative to the FST at the end of the acclimatization period. The degree to which the FST of each counsellor/client dyad corresponded was determined by obtaining Pearson Product Moment correlation coefficients. The scores correlated were FST (in ASI



units) of the counsellor and client printed by the Autogen printer during the second counselling interview. This correlation coefficient is referred to as CFST.

The gain on the two Grass pre-amplifiers, measuring skin conductance, was set so a pen deflection on the chart record of one millimeter equalled .6 micromohs/millimeter<sup>2</sup>. The experimenter wanted both a tonic and phasic measure of physiological activity because this is an exploratory study and no theoretical rationale could be found that indicated that one type of measure would be better than the other. FST provided a tonic physiological measure and so skin conductance response as opposed to skin conductance level was measured.

The following is the procedure used for scoring the SC chart records. The last 20 minutes of the second interview was examined. Only the last 20 minutes of the 30 minute counselling interview was scored because frequent adjustments of the balance voltage were often required during the first 10 minutes. The procedure was basically to note responses of counsellor or client and then to check if there was a corresponding response by the other.

Four types of corresponding responses were defined by the experimenter. This was done because a search of the literature revealed no indication of what significant response types would be in a situation such as this. The literature quantifies stimulus-evoked SC responses. These responses are quantified in terms of amplitude and latency. Amplitude is the rise in SC from the onset to the peak of a response. Latency is the time from onset of a stimulus to response

onset. In this experiment there are no exogenous stimuli, hence the literature gives no guidelines on how to define a response. The following is a description of the four response types used in the study.

1. SCR I: An SC response greater than 5 millimeters and less than 10 millimeters (the first response) by either counsellor or client, and a second response, by the other, greater than 5 millimeters occurring in less than 7 seconds of the first response. This is illustrated in Figure 2. Grings (1974) suggests that most SC responses occur in less than 7 seconds of a stimulus, and so the 7 second criterion was chosen. The criterion amplitude of 5 millimeters was chosen on the basis of pilot work done by the experimenter.

While a subject either sat still or engaged in light conversation, most of the responses were less than 5 millimeters.

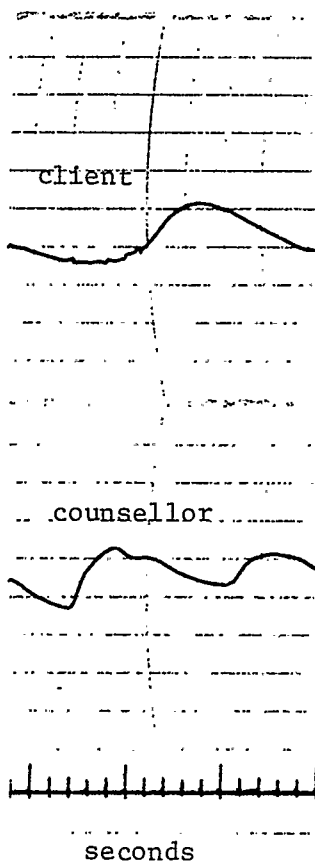
2. SCR II: An SC response greater than 10 millimeters (first response) by either counsellor or client, and a second response, by the other greater than 10 millimeters occurring not sooner than 7 seconds, and not more than 40 seconds later than the first. Figure 3 illustrates this. Pilot work showed that at times a counsellor or client would produce a large SCR which seemed to relate to an event in the counselling interview as late as 40 seconds after that event. For example, the counsellor would confront the client, simultaneously producing an SCR, and then the client would respond to the confrontation also producing an SCR as much as 40 seconds after the confrontation. Thus it was hypothesized that response time in a counselling interview might more typically be 40 seconds than the 7 seconds suggested by

Grings (1974) who reported on research done with external stimuli.

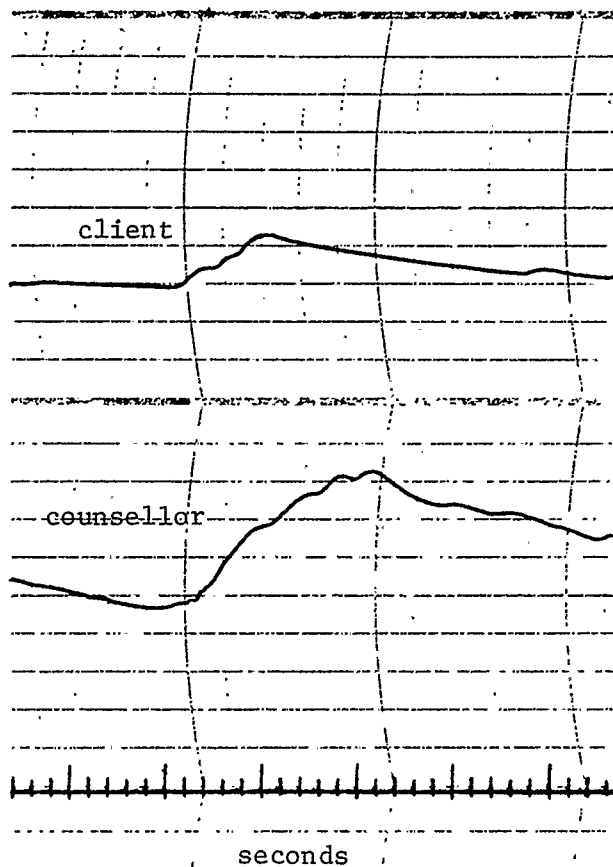
3. SCR III: An SC response greater than 10 millimeters (the first response) by either counsellor or client, and a second response greater than 10 millimeters by the other occurring in less than 7 seconds of the first. (see Figure 4) Pilot work revealed that interventions of the counsellor, or self-disclosure and expressions of emotion by the client resulted in SCR amplitudes greater than 10 millimeters by both counsellor and client, and both produced these responses within 7 seconds of the other. These responses appeared to be the best indicators that the counsellor and client were being sensitive to each other's affective changes.

4. SCR IV: A composite measure of the three types of responses was created. This was done because it was hoped that in compiling all three types of SCR a better predictor of empathy would be obtained. It is the total number of SCR I, SCR II and SCR III per counsellor/client dyad. Each SCR III was given a weight of 2 in relation to a weight of 1 for the other types, in deriving this composite measure. The reason for this was because SCR III is composed of particularly large responses (at least twice as great in amplitude as SCR I), occurred very close in time (less than 7 seconds), and as stated above appeared to be the best indicator that counsellor and client were sensitive to each other's affect.

The raw score from the empathic understanding sub-scale of the RI was used as a measure of the degree to which the dyad had established



Example 1



Example 2

$$] 3 \mu\text{mhos/mm}^2$$

Figure 2. SCR I - Example 1: Counsellor and client responses had amplitudes greater than 5mm and less than 10 mm, and both occurred within a 7 second time period.

Example 2: Although the counsellor's response was of amplitude greater than 10 mm, the client's response was less than 10 mm and greater than 5 mm. Because the client's response fell in the type I category the responses were scored as type I.

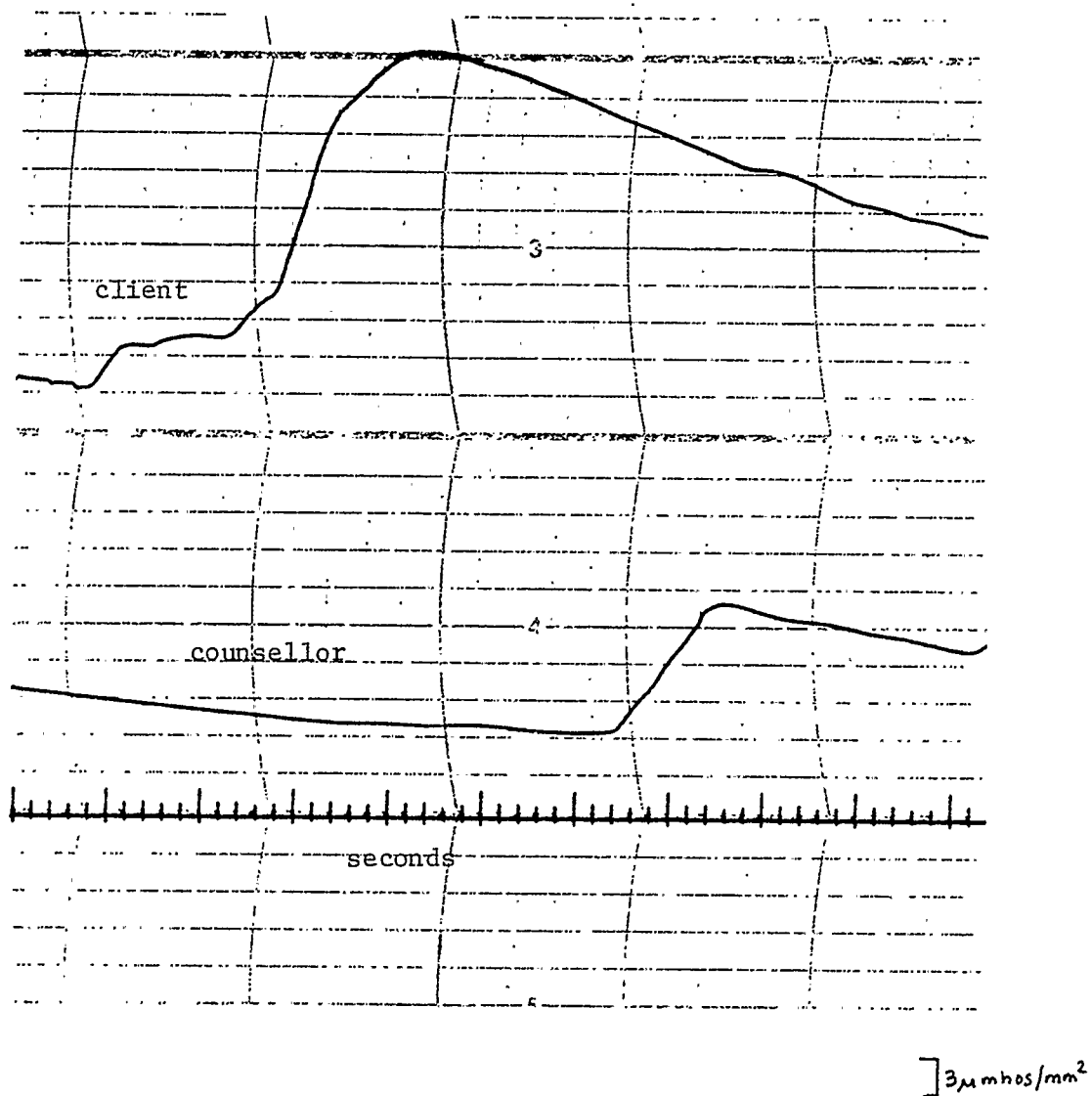


Figure 3. SCR II -

Counsellor and client responses had amplitudes greater than 10 mm. and both responses were at least 7 seconds apart, but not further apart than 40 seconds.

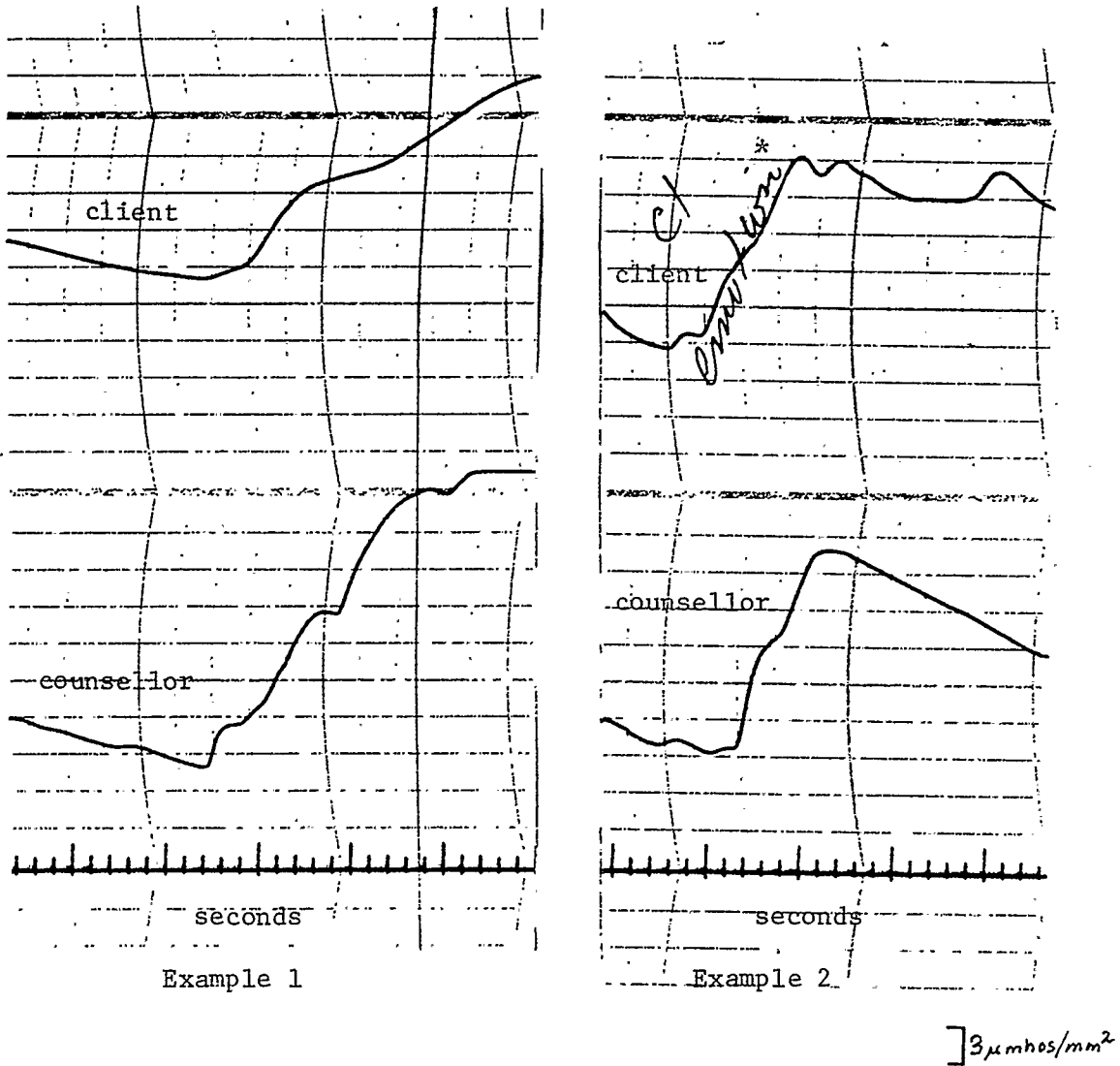


Figure 4. SCR III -

In both examples, the counsellor and client responded within 7 seconds of each other with responses of amplitudes greater than 10 mm.

\* "cl emotion" is a notation by the experimenter signifying an expression of emotion by the client.

an empathic relationship. The larger the score the greater the empathic relationship.

### Hypotheses

- Hypothesis I       $H_o$  - The correlation between CFST (the correlation between counsellor and client finger skin temperature) of the counsellor/client dyads and empathy as measured by the empathy sub-scale of the Relationship Inventory is not significantly different from zero.
- $H_a$  - The correlation between CFST of the counsellor/client dyads and their empathy scores is significantly different from zero.
- Hypothesis II       $H_o$  - The correlation between the number of SCR I (corresponding skin conductance responses type I) of the counsellor/client dyads, and empathy as measured by the empathy sub-scale of the Relationship Inventory is not significantly different from zero.
- $H_a$  - The correlation between the number of SCR I of the counsellor/client dyads and empathy is significantly different from zero.

- Hypothesis III     $H_o$  - The correlation between the number of SCR II (corresponding skin conductance responses type II) of the counsellor/client dyads, and empathy as measured by the empathy sub-scale of the Relationship Inventory is not significantly different from zero.
- $H_a$  - The correlation between the number of SCR II of the counsellor/client dyads and empathy is significantly different from zero.
- Hypothesis IV     $H_o$  - The correlation between the number of SCR III (corresponding skin conductance responses type III) of the counsellor/client dyads, and empathy as measured by the empathy sub-scale of the Relationship Inventory is not significantly different from zero.
- $H_a$  - The correlation between the number of SCR III of the counsellor/client dyads and empathy is significantly different from zero.
- Hypothesis V     $H_o$  - The correlation between the number of SCR IV (corresponding skin conductance responses type IV) of the counsellor/client dyads, and empathy as measured by the empathy sub-scale of the Relationship Inventory is not significantly different from zero.



$H_a$  - The correlation between the number of SCR IV of the counsellor/client dyads and empathy is significantly different from zero.

### Statistical Analysis

Hypothesis I was tested by correlating values of CFST for each counsellor/client dyad with their corresponding RI empathy score using the Pearson Product Moment correlation coefficient. This analysis was done to determine if the degree to which FST of the counsellor and client correlate, is correlated with the degree to which the counsellor and client had established an empathic relationship.

Hypotheses II, III, IV and V were tested by correlating, respectively, the number of type I, II, III and IV SC responses with the counsellor/client's empathy score. This determines if the degree of correspondence of the counsellor's and client's SC responses is correlated to the degree to which the counsellor and the client have established an empathic relationship.

Two-tailed tests of significance were performed with a critical probability level set at .05.

## CHAPTER IV

## RESULTS

The raw data is reported in Table 1. The correlations between all variables can be found in Table 2.

Hypothesis I

The null hypothesis that the correlation between CFST (the correlation between counsellor and client finger skin temperature) of the counsellor/client dyads and empathy, as measured by the empathy sub-scale of the Relationship Inventory, is not significantly different from zero is accepted. The correlation coefficient is .143.

Hypothesis II

The null hypothesis that the correlation between the number of SCR I (corresponding skin conductance responses type I) of the counsellor/client dyads, and empathy, as measured by the empathy sub-scale of the Relationship Inventory is not significantly different from zero is rejected. The correlation coefficient is .453 ( $p < .05$ ). Thus there is a moderate positive linear relationship between empathy and SCR I.

Hypothesis III

The null hypothesis that the correlation between the number of SCR II (corresponding skin conductance responses type II) of the

counsellor/client dyads, and empathy as measured by the empathy sub-scale of the Relationship Inventory, is not significantly different from zero is accepted. The correlation coefficient is .033.

#### Hypothesis IV

The null hypothesis that the correlation between the member of SCR III (corresponding skin conductance responses type III) of the counsellor/client dyads, and empathy as measured by the empathy sub-scale of the Relationship Inventory is not significantly different from zero is rejected. The correlation coefficient is .671 ( $p < .0005$ ). This is the highest correlation between any of the physiological variables with empathy. There is a strong positive linear relationship between empathy and SCR III.

#### Hypothesis V

The null hypothesis that the correlation between the number of SCR IV (corresponding skin conductance responses type IV) of the counsellor/client dyads, and empathy as measured by the empathy sub-scale of the Relationship Inventory is not significantly different from zero is rejected. The correlation coefficient is .609 ( $p < .005$ ). Thus, there is a strong positive linear relationship between empathy and SCR IV.

The overall probability of a type I error for the above five hypotheses is .226.

TABLE 1

## Raw Data

DYAD	SCR I	SCR II	SCR III	SCR IV	CFST	EMPATHY
1	15	3	4	26	.22	31
2	23	0	4	31	.28	36
3	35	3	8	54	.81	38
4	9	3	6	24	.54	37
5	2	1	0	3	.18	10
6	3	1	0	4	.85	16
7	28	2	6	42	.11	33
8	18	1	4	27	.73	42
9	6	2	4	16	-.48	40
10	9	2	5	21	.11	37
11	10	1	4	19	.40	33
12	13	5	4	26	.14	32
13	27	1	4	36	.10	39
14	9	0	9	27	.08	43
15	8	3	4	19	-.40	2
16	10	2	1	14	.56	16
17	10	0	0	10	-.51	18
18	0	0	0	0	.93	20
19	26	0	1	28	-.37	25
20	10	1	1	14	-.61	25
21	16	1	1	20	.13	30
MEAN	13.67	1.62	3.33	21.95	0.178	28.71
STAN.DEV.	9.356	1.32	2.65	12.99	0.463	11.92

TABLE 2  
Correlation Coefficients

	SCR I	SCR II	SCR III	SCR IV	CFST	EMPATHY
SCR I	1					
SCR II	.078	1				
SCR III	.430	.294	1			
SCR IV	.911	.281	.741	1		
CFST	.011	.001	.110	.054	1	
EMPATHY	.453	.033	.671	.609	.143	1

NOTE: The critical value of  $r$  is .4329 at the .05 level of significance, with 19 degrees of freedom.

### A Posteriori Results

A factor analysis of the variables was done to determine the underlying pattern of the variables and to summarize the interrelationships among the variables. Two factors emerged when using principal factoring as can be seen in Table 3. SCR I, SCR III, SCR IV and empathy load on factor 1. SCR II loads most heavily on factor 2. CFST is not related to either factor. Its estimated communality in the analysis with the other variables is .09155. The principal factoring with iteration attempts to have all variables load significantly on factor 1, and so extract a general factor. The second factor tends to be bipolar, as can be seen in Table 3. An orthogonal rotation using varimax was done in an effort to simplify the factor structure. This procedure attempts to simplify the columns of the factor matrix by maximizing the variance of the squared loadings in each column. Table 4 shows that a similar matrix is found, with factor 2 being strengthened by a higher loading of SCR II. To further explore the interrelationship amongst the variables an oblique rotation was done. This procedure allows the factors to be correlated if such correlations exist in the data. Again, as can be seen in Table 5, the factor structure is similar to that produced by the other two methods.

Summarizing, two factors emerge from the variables. Factor 1 is composed of SCR I, SCR III, SCR IV and empathy. SCR II is most closely associated with factor 2. CFST appears to be unrelated to any of the other variables.

The same three factoring procedures were done excluding SCR IV. This was done because SCR IV is linearly related to SCR I, SCR II and SCR III as it is a composite measure of these three variables. Tables 6, 7 and 8 show that SCR III and empathy are most closely related to factor 1 and SCR II again is seen to be most closely associated with factor 2. By excluding SCR IV a clearer relationship between SCR III and empathy can be seen. SCR III and empathy, with loadings of .865 and .845 respectively, contribute most to factor 1 when using the principal factor with iterations method.

TABLE 3  
Factor Matrix Using Principal Factor  
With Iterations

	Factor I*	Factor 2**
SCR I	.85017	- .2455
SCR II	.30699	.79305
SCR III	.6610	.11797
SCR IV	.96761	- .05228
CFST	.08673	- .00929
EMPATHY	.60930	- .10060

\* Eigenvalue = 2.87216

\*\* Eigenvalue = 1.05627



TABLE 4  
Factor Matrix After Varimax Rotation

	Factor 1*	Factor 2**
SCR I	.88470	- .01966
SCR II	.09368	.84522
SCR III	.60885	.28332
SCR IV	.94874	.19723
CFST	.08622	.01323
EMPATHY	.61474	.05877

\* Eigenvalue = 2.56912

\*\* Eigenvalue = 0.91608

TABLE 5  
Factor Structure After Oblique Rotation\*

	Factor 1	Factor 2
SCR I	.87239	.07041
SCR II	.21585	.85036
SCR III	.64364	.34377
SCR IV	.96735	.29269
CFST	.08723	.02193
EMPATHY	.61675	.12098

\* Delta = 0

TABLE 6  
 Factor Matrix Using Principal Factor  
 With Iterations - Excluding SCR IV

	Factor 1*	Factor 2**
SCR I	.52818	- .06651
SCR II	.21568	.50643
SCR III	.86500	.21282
CFST	.12930	- .06265
EMPATHY	.84501	- .29596

\* Eigenvalue = 1.80448

\*\* Eigenvalue = .37771

TABLE 7

Factor Matrix After Varimax Rotation -

Excluding SCR IV

	Factor 1*	Factor 2**
SCR I	.57637	.07712
SCR II	.05956	.54719
SCR III	.70730	.46894
CFST	.04240	.00171
EMPATHY	.81755	-.01931

\* Eigenvalue = 1.80448

\*\* Eigenvalue = .39771

TABLE 8  
Factor Structure After Oblique Rotation\* -  
Excluding SCR IV

	Factor 1	Factor 2
SCR I	.56971	.15619
SCR II	.12456	.55012
SCR III	.79090	.56343
CFST	.08172	.00852
EMPATHY	.85146	.09552

\* Delta = 0

The important results of the study are:

1. SCR I, SCR III and SCR IV are positively correlated with empathy.
2. CFST and SCR II are not correlated with empathy.
3. Factor analysis shows that SCR I, SCR III, SCR IV and empathy are related.
4. CFST and SCR II are not related to the factor described in statement 3.
5. When SCR IV is excluded from the factor analysis the same factor structure emerges.

## CHAPTER V

## DISCUSSION

Within the literature there is the claim that in order for an empathic relationship to develop between two people there must be a matching of affective responses. Others claim that there need not be this matching. It has been clearly established that changes in affective states are accompanied by physiological change. Thus, if affective matching is part of the process of empathy, then one would expect that the physiological activity of a counsellor and client will match when an empathic relationship exists between the two. The purpose of this study was to test the existence of this hypothesized relationship between matching of affect and empathy by monitoring the finger skin temperature (FST) and skin conductance (SC) of counsellors and clients during counselling interviews.

The data suggest the number of times a counsellor and client simultaneously (defined here as occurring within a time period of less than 7 seconds) produce SC responses during a counselling interview is significantly correlated ( $p < .05$ ) with the degree to which the counsellor and client have established an empathic relationship. This supports the claim that affective matching is involved in the process of empathy.

Finger skin temperature correlation (CFST), as measured in this study, between counsellor and client does not appear to be related to the degree to which the two have established an empathic relationship. The same is true with reference to the number of SC responses of

counsellor and client which occur more than 7 seconds apart but not more than 40 seconds (SCR II).

The composite measure of corresponding SCR types (SCR IV) did not result in a better predictor of empathy than the other types as was originally hoped. This was due to the low correlation of SCR II with empathy.

The factor analysis showed that SCR I, SCR III, SCR IV and, empathy all load on Factor 1, and that CFST and SCR II are not related to this factor. This suggests that the construct measured by variables loading on Factor 1 is different from CFST and SCR II. The same factor structure appears when SCR IV is excluded and so will be disregarded in this analysis. Looking carefully at each variable that loads and does not load on this factor, one can come to an understanding of what the construct being measured by Factor 1 might be.

SCR I and SCR III are measures of skin conductance responses (SCR's) of a counsellor and client which occur in less than 7 seconds of each other. SCR II is the same type of measure as SCR I and SCR III but requires that the interval between responses exceed 7 seconds. CFST is the correlation of FST scores averaged over a minute. From this, it can be seen that time is an important variable in determining the type of physiological responses that are related to empathy, in that only responses of counsellor and client which occur simultaneously were seen to be related to empathy.



Continuing further with this line of thought, the correlation between CFST and empathy ( $r = .143$ ) shows that there is no significant correlational relationship, but seven of the counsellor/client dyads' CFST's had correlation coefficients greater than .4; and four counsellor/client dyads had correlation coefficients less than  $-.4$  (with 28 degrees of freedom an  $r = .4$  is significant at the .05 level). What accounts for this variance in CFST is not known, but some guesses can be made. Physiological data can be examined from two temporal perspectives -- tonic and phasic. Tonic refers to events that have relatively long continuity in time; states of the organism or effects of gross or persistent stimulation. Phasic events are more rapid changes and of the consequence of discrete stimulus input. While this distinction is in some ways arbitrary, and carries no absolute temporal definition, it is a useful way to organize physiological data in considering relationships to psychological phenomena. Measuring FST as it was measured in this study (averaging over one minute) is a tonic measurement and representative of what might be called level of affective arousal. A comparable skin conductance measure would be skin conductance level which is a tonic level measure. SCR I and SCR III were defined to measure instantaneous physiological responses; a momentary phasic measurement, as opposed to a tonic level measurement. Affect may be categorized in terms of both level, and also moment-to-moment changes (phasic activity). For example one person as compared to another may have a high anxiety level,

which also fluctuates or shows phasic activity. As the measure of affective level in this study (FST) did not correlate with empathy, and the phasic measure of affect (SCR I and SCR III) did show a significant correlation with empathy, it may be hypothesized that the affective matching process that is related to empathy is the matching of phasic affective activity and not the matching of level of affect.

Rogers (1957) defines empathy as sensing "the client's private world as if it were your own, but without ever losing the "as if" quality...the client's anger, fear, or confusion as if it were your own, yet without your own anger, fear, or confusion getting bound up in it" (p. 99). When a person loses the "as if" perspective overidentification with the other is likely to occur and the relationship becomes more of a sympathetic than empathic relationship. This line of thought suggests that empathy involves the matching of momentary phasic affective changes and sympathy would be the state when two people have matching affective levels. This suggests that empathy does not require two people to feel the same but for one person to be sensitive to the moment-to-moment changes of the other's affect. This, of course, requires further experimentation (to be discussed later in this chapter).

This suggestion is based on the assumption that phasic physiological activity is comparable to phasic affective activity, and tonic physiological activity is comparable to tonic affective activity.

Research indicates that this is the case if affect is defined in gross terms such as arousal and anxiety (Lang, 1971; Raskin, 1973). It should also be noted that there are initial level differences amongst individuals which affects the meaning of both phasic and tonic physiological measures. Because this is an exploratory study it was not felt to be necessary to control for this. The literature contains some suggestions for dealing with initial differences, which is called the law of initial values, that future researchers may find useful (Wilder, 1967; Sternbach, 1966; Lacey, 1956).

Caution should be exercised in interpreting FST of this study. Some of the subjects commented that they found the booth stuffy and warm. Ambient room temperature was 21 Celsius to 25 Celsius, with the fluctuation during an interview session being not greater than 1.5 Celsius. The change in room temperature was mostly due to heat given off by the video camera. When the subjects were questioned on their comments that the room felt warm and stuffy, it appeared that their comments were as much a result of the air being very still and the total lack of noise in the booth as it was about the absolute temperature. The suggested room temperature for doing temperature biofeedback is 23.8 Celsius to 26.7 Celsius (Feedback Thermometer Handbook, Cyborg Corporation, Boston, 1977). Others seem to prefer a cooler room. Grendin and Berlin (1961) used a room at 73 Fahrenheit (22.8 Celsius) and Vanderpool and Barratt (1970) used a room controlled at 72 Fahrenheit (22.2 Celsius). The point here is that a ceiling effect may have occurred in some of the cases.

The results of this study support the findings of research conducted at the Massachusetts Mental Health Center reviewed in Chapter 2 (Di Mascio et al., 1955; Coleman et al., 1956; and Di Mascio et al., 1957). This study has found that in certain cases a "physiological relationship" (Di Mascio et al., 1955) was evident in that skin conductance responses of counsellors and clients on occasion occurred simultaneously and finger skin temperature of certain counsellor/client dyads produced significant correlations. The research team from Massachusetts thought that the physiological relationship they observed was evidence of empathy. Greenblatt (1972) even went so far as to say that "physiological concordance depends upon the ability of the therapist to adopt and maintain a therapeutic empathic attitude towards the client" (p. 148). It should be remembered that a physiological relationship is defined only as the similarity of physiological reactions of two people (Coleman et al., 1956). The conjecture that physiological relationships are a manifestation of empathy was made on the basis of impression - no measure of empathy was used in these studies. The only evidence they had for this claim was that on days when the therapist said he was functioning well there was a greater chance that a physiological relationship was observed. This study refines the claims made by the Massachusetts team. 1) Physiological relationships may be of a phasic or of a tonic nature. 2) Only physiological relationships of a phasic nature are related to empathy.

The Linton et al., (1977) study which proposes to be a replication of the work done in Massachusetts, like the Massachusetts studies, did not use a measure of empathy. It is impossible to determine if the heart rate (a phasic physiological measure) concordance they observed during hypnosis was related to empathy. Given the assertion that phasic affective matching is evidence of empathy, one may hypothesize that hypnosis involves empathy.

A comment on the Kaplan studies (Kaplan, 1963; Kaplan et al., 1963), made in Chapter 2, was that their method of scoring skin conductance responses may be more an index of physical exertion and mental activity than matching of emotions. This comment was made because their scoring method considered frequency and amplitude of response during a prescribed time period. Frequency of response is usually associated with effort. This study is not subject to this comment. Instead of judging similarity of physiological activity on the basis of similarity of response frequency, this study scored incidences of corresponding responses (corresponding responses meaning that one response had to occur within a certain time period of the other response).

Nonetheless, frequency of response and its associated physiological state -- effort -- may be an intervening or confounding variable and has implications for further research. (It should also be noted that response frequency varies among individuals regardless of social situation.) For example, the following argument can be made.

1. The harder a counsellor and client work, the higher their frequency of physiological responding.
2. Higher response frequency increases the probability for responses to be scored as corresponding.
3. Hard work by counsellor and client results in highly empathic relationships.
4. Thus, effort was largely responsible for the correlation of empathy with SCR observed in this study.

The impression gained by the experimenter while watching the interviews and the tracings on the chart record supports Statement 1. The more effort expended, the higher the rate of responding. Statement 2 is a logical truth, but there is not a linear relationship between response frequency and number of corresponding responses. What was observed was that there was a number of cases where counsellor and client had high response frequencies but there were few instances of SCR I and SCR III. As well there were a number of cases where response frequency was low but most responses were corresponding. The result was that in the cases described above the absolute number of corresponding responses did not vary with response frequency. Higher response frequency was more typically reflected by occurrences of SCR II. Statement 3 was supported to a degree. That is, a certain amount of effort seemed to be required to establish an empathic relationship, but it was sometimes the case that a client tried very hard to let the counsellor know what the concern was (or keep the counsellor from finding out) and the counsellor tried very hard to understand the

client (or have the client accept advice) with their efforts not aiding the development of an empathic relationship. Thus it seems to be the case that effort to a degree did act as a confounding variable in this study but was not primarily responsible for the observed correlation between empathy, and SCR I and SCR III.

The fact still remains that response frequency does have an impact on the method of scoring corresponding responses used in this study, and hence its possible use as a measure of empathy. This is because greater response frequency does provide more opportunity for incidents of corresponding responses. As stated above, individuals differ in basal response frequency, and response frequency appears to be affected by effort. The effect of response frequency on this particular method of measuring physiological response matching can be investigated by controlling for differences in response frequency. Further researchers may want to do this by reporting correspondence as the ratio borne by the number of corresponding responses to the total number of responses. For example, if a counsellor and client together respond 100 times and there are 20 incidents of corresponding responses, the degree of correspondence would be 20 per cent.

The above discussion has drawn some implications from the results of this study. The main points are summarized below.

1. There is a positive correlational relationship between the number of times a counsellor and client simultaneously

- produce SC responses (SCR I and SCR III) and empathy.
2. CFST and SCR II do not correlate with empathy.
  3. Affective matching of the type measured by SCR I and SCR III is correlated with empathy.
  4. SCR I and SCR III are phasic physiological measures, and CFST is a tonic physiological measure.
  5. SCR I and SCR III are indicators of phasic affective matching, and CFST is an indicator of tonic affective matching.
  6. Phasic affective matching is related to empathy.
  7. Tonic affective matching is not related to empathy but may be related to sympathy.

#### Toward a Comprehensive Model for Teaching and Measuring Empathy

Concern has recently been voiced about the present usage of the word empathy. Hackney (1978) notes that there are at least 21 definitions of empathy in the counselling literature. His article traces the evolution of the concept of empathy. Empathy, as the term was originally used in counselling meant a state and an associated process. The state is a feeling or empathic state, and the process is a communication process. C.R. Rogers, who originally introduced the word empathy to counselling (Hackney, 1978), did not confuse the state with the process as many recent users of the concept do. Rogers (1957) spoke of empathy as "sensing the client's private world" (p. 99) and perceiving "the internal frame of reference of another"



(1959, p.210). Sensing and perceiving are internal and unobservable states. Rogers (1957) also spoke of the need to communicate the understanding gained from an empathic state. Thus, according to the original conceptualization there is an empathic state, and communication of this state, which together result in an empathic relationship.

Efforts to operationalize empathy so that its presence can be measured and so that people can be trained to establish empathic relationships has resulted in empathy meaning a communication process (Hackney 1978). Efforts to quantify an empathic relationship have especially lead to this. Some of C. B. Truax's work illustrates how far this has evolved. For example, Truax (1966) reports that he found no difference in mean accurate empathy ratings with or without using clients' statements when using his own Accurate Empathy Scale (1961). That is, only what the counsellor said was used to judge the quality of the empathic relationship developed between the counsellor and the client. Truax (1970) moved the usage of the term empathy even further toward meaning a communication skill by saying that empathy is more than just the ability of the counsellor to sense the client's private world but "involves both the therapist's or counsellor's sensitivity to current feelings and his verbal facility to communicate this understanding in a language attuned to the client's current feelings" (p. 1). The most commonly used instruments to measure empathy rate only verbal responses of a counsellor (Gladstein, 1977).

As well, Hackney (1978) points out that most counsellor education programs teach empathy as a set of communication skills.

The criticism being made here is not that communication skills are unimportant when training counsellors to develop empathic relationships or when measuring empathic relationships. The criticism is that out of the necessity to operationalize empathy the communication process has come to be equated with empathy, overshadowing the state of empathy itself. As Hackney (1978) reminds us:

Empathy is not a communication process. It is not words or statements. These are (we hope) the manifestations of empathy, and we can't be altogether sure that they are that. The researcher's stance is comparable to taking an intelligence test score and presuming it to be the actual intelligence of a human being.

(p. 37)

Until now a technique for measuring the internal state of empathy has not been available. Researchers and teachers of empathy have had to rely, out of necessity, on verbal behavior. The technique of simultaneously monitoring counsellors' and clients' skin conductance used in this study provides an easily quantifiable means of monitoring the previously unobservable state of empathy. The results of this study, of course, show only that empathy as measured by the RI is correlated with only one particular way of scoring one physiological

variable; and so much research needs to be done before this relationship can be accepted. Neither do the results allow one to say that phasic affective matching is necessary for an empathic relationship to be established. If one accepts, firstly, that empathy is a state which is manifest in phasic affective matching and, secondly, that the understanding gained of another person as a result of this state needs to be communicated in order for an empathic relationship to develop, then a more comprehensive means of measuring empathic relationships and training people to establish empathic relationships can be developed.

There is the possibility that skin conductance biofeedback can be used to aid counsellor trainees' learning of how to establish empathic relationships. The results of this study indicate that when an empathic relationship is established phasic physiological responses match. One may not assume, however, that the reverse is true -- that when phasic physiological responses match empathy occurs. This latter relationship would have to be true in order for biofeedback to be beneficial in the training of counsellors. The hypothesis that when phasic physiological responses match empathy occurs is testable. The hypothesis may be tested by training dyads, through the use of biofeedback, to exhibit phasic affective matching and then observing if trained dyads develop empathic relationships with greater ease than dyads which do not receive this training. There is a major difficulty in using biofeedback in this manner. The very observation of feedback by the counsellor and client could significantly alter their physiological responses. Great benefit would be derived from a biofeedback training

program which is able to overcome these obstacles. For example, Hackney (1978) commented that counsellor training programs presently train people who are sensitive to other people's affect but lack communication skills. People who are not sensitive are selected out. Biofeedback to insensitive counsellor trainees of their own physiological activity and the client's may be of aid in increasing sensitivity.

If phasic affective matching is shown to be highly related to empathy then the rating of empathic relationships can become a highly objective, reliable exercise. The scoring of a chart record of skin conductance responses is quick and objective. This method of measuring empathy combined with present verbal methods should provide the researcher with a much more comprehensive and valid measure of empathy because it will be measuring both the empathic state and the communication process.

This study also suggests a means by which empathy may be differentiated from sympathy. Sympathy, as was suggested earlier in this chapter, may be the state which is experienced where two people have matching affective levels. Mendaglio (1979) points out that it is difficult to tell an empathic response from a sympathetic response when judging only a counsellor's verbal behavior. Counsellor trainees often have difficulty finding the line between an empathic state and a sympathetic state. By using physiological techniques the researcher and counsellor may be able to readily see the difference between empathy and sympathy.

### Limitations of the Study

The implications which can be drawn from this study are limited by the following factors:

1. Increased sample size would have strengthened the significance of the results.
2. Only data from one meeting of counsellor/client dyads were used.
3. Most of the client subjects were student volunteers and so the client sample is not typical of clients in general.
4. Both clients and counsellors knew that in all likelihood they would be meeting for only two sessions, hence time pressure was greater than that which is usually present in counselling situations.

### Recommendations for Further Research

Much more research is needed before the implications stated above are accepted. The following are some recommendations:

1. A replication of this study should be first priority. Other types of both phasic and tonic measures of physiological activity should be used. For example heart rate, blood pressure, pupil size, muscle potential, respiration -- to name but a few. Different populations of people should be used; only counselling psychologists were used in this study. Records should be kept over the entire course of

counselling; only one interview was scored in this study. Different instruments for measuring empathy should also be used.

2. The effect of SC response frequency on the method of scoring correspondence should be investigated. One way of doing this is to compare correlations of correspondence, as measured in this study, with correlations of correspondence, using the per cent procedure described above.
3. A study should also be done comparing phasic and tonic measures of physiological activity with empathy and sympathy. The purpose of this would be to determine if sympathy can be differentiated from empathy by observing if the interacting dyads are exhibiting phasic or tonic affective matching.

## REFERENCES

- Aronfreed, J. "The concept of internalization". In Goslin, D. (Ed.); Handbook of Socialization Theory and Research. Chicago: Rand McNally, 1969.
- Bales, R.F. Interaction Process Analysis. Cambridge, Mass.: Addison-Wesley Press, 1951.
- Barrett-Lennard, G.T. Resource Bibliography of Reported Studies Using the Relationship Inventory. Unpublished paper, University of Waterloo, Waterloo, Canada. 1972.
- Boyd, R., and Di Mascio, A. "Social behavior and autonomic physiology". J. Nervous and Mental Disease. 120, 202-204, 1954.
- Carkhuff, R.R. Helping and Human Relations Vol. 2. New York: Holt, Rinehart & Winston. 1969.
- Cattell, R., Eber, H., and Tatsuoka, M. Sixteen Personality Factor Questionnaire. Champaign, Illinois : Institute for Personality & Ability Testing. 1939.
- Coleman, R., Greenblatt, M., and Solomon, H. "Physiological evidence of rapport during psychotherapeutic interviews". Disease of the Nervous System. 27 (3), 71-77, 1956.
- Craig, K., and Wood, K. "Physiological differentiation of direct and vicarious affect arousal". Canadian J. of Behav. Science. 2 (1), 99-105, 1969.
- Cronbach, L.J. "Processing affective scores on 'understanding' and assumed similarity". Psychological Bulletin. 55, 177-193, 1955.
- Di Mascio, A., Boyd, D.W., Greenblatt, M. "Physiological correlates of tension and antagonism during psychotherapy". Psychosomatic Medicine. 29 (2), 99-104, 1957.
- Di Mascio, A., Boyd, R., Greenblatt, M., and Solomon, H. "The psychiatric interview". Diseases of the Nervous System. 26 (1), 4-9, 1955.
- Dittes, J.E. "Galvanic skin response as a measure of patient's reaction to therapist's permissiveness". J. of Abnormal and Social Psychology. 55, 295-303, 1957.
- Feshbach, D.F. "Empathy in children: Some theoretical and emperical considerations". The Counselling Psychologist. 5 (2), 25-29, 1975.
- Feshbach, D.F., and Roe, K. "Empathy in six and seven year olds". Child Development. 39, 133-145, 1968.



- Gladstein, G.A. "Empathy and counseling outcome: An emperical and conceptual review". The Counseling Psychologist. 6 (4), 70-79, 1977.
- Grendlin, E. and Berlin, J. "Galvanic skin response correlates of different modes of experiencing". J. of Clinical Psychology, 7, 71-77, 1961.
- Greenblatt, M. "Discussion of papers by Saslow and Lacy". In E. Rubinstein and M. Parloff (Eds.); Research in Psychotherapy Vol. I Washington, D.C.: American Psychological Association, 1959.
- Greenblatt, M. "Two heart beats in three quarter time". Psychiatric Annals. 2 (7), 6-II, 1972.
- Grings, W.W. "Recording of electrodermal phenomena". In R. Thompson and M. Patterson, Bioelectric Recording Techniques Vol. 1-c. New York: Academic Press, 1974.
- Grings, W., and Dawson, M. Emotions and Bodily Responses. New York: Academic Press, 1978.
- Gurman, A. "Patient's perception of the therapeutic relationship". In A. Gurman and A. Razin, Effective Psychotherapy: A Handbook of Resources: Oxford, Pergamas Press, 1977.
- Hackney, H. "The evolution of empathy". Personnel and Guidance Journal. 57 (1), 35-38, 1978.
- Hogan, R. "Empathy: A conceptual and psychometric analysis". The Counseling Psychologist. 5 (4), 14-18, 1975.
- Iannotti, R. "The nature and measurement of empathy in children". The Counselling Psychologist 5 (2), 21-25, 1975.
- Jordan, C.S. and Sipprelle, C.H. "Physiological correlates of induced anxiety with normal subjects". Psychotherapy: Research and Practice. 9 (1), 18-21, 1972.
- Kaplan, H.B. "Social interaction and GSR activity during group psychotherapy". Psychogomatic Medicine. 25, 140-145, 1963.
- Kaplan, H., and Bloom, S. "The use of sociological and social-psychological concepts in physiological research: A review of selected experimental studies". J. of Nervous and Mental Disorders. 131, 128-134, 1960.

- Kaplan, H., Burch, H., Bloom, S., and Edelberg, R. "Affective orientation and physiological activity (GSR) in small peer groups". Psychosomatic Medicine. 25, 245-252, 1963.
- Kawakami, H. "GSR and plethysmographic changes during different modes of reference to experiencing". Psychologia. 13, 121-129, 1970.
- Kreb, D. "Empathy and altruism". Journal of Personality and Social Psychology. 32 (6), 1134-1146, 1975.
- Kurtz, R.R., and Grummon, D. "Differential approaches to the measurement of therapist empathy and their relationship to outcome". Journal of Counseling and Clinical Psychology. 39, 1972.
- Lacey, J. "The evaluation of autonomic responses: Toward a general solution". Ann. of the New York Academy of Science. 2, 126-164, 1956.
- Lang, P. "The application of psychophysiological methods to the study of psychotherapy and behavior change". In A. Bergin and S. Garfield, Handbook of Psychotherapy and Behavior Change. Toronto: John Wiley & Son Inc., 1971.
- Lange, C.G. "The emotions" (Denmark, 1885). Translated by I. Haupt In K. Dunlop (Ed.), The Emotions. Baltimore: Williams & Wilkins, 1922.
- Lasswell, H.D. "Verbal references and physiological changes during the psychoanalytic interview". Psychoanalytic Review. 22, 10-24, 1935.
- Linton, P., Travis, R., Kuechenmeister, C., and White, H. "Correlation between heart rate covariation, personality and hypnotic state". The Am. J. of Clinical Hypnosis. 19 (3), 1977.
- Malmo, R., Boag, T., Smith, A., "Physiological study of personal interaction". Psychosomatic Medicine. 29 (2), 105-119, 1957.
- Marascuilo, L. Statistical Methods for Behavioral Science Research. New York: McGraw-Hill, 1971.
- Mead, G.H. Mind, Self, and Society. Chicago: University of Chicago Press, 1934.
- Mendaglio, S. Empathy and Assumed Similarity Some Implications for Theory and Practice. Paper presented at the Canadian Guidance and Counselling Association Conference, St. John's, Newfoundland, June, 1979.

- Raskin, D. "Attention and Arousal". In W. Prokasy and D. Raskin (Eds.) Electrodermal Activity in Psychological Research (Eds.) New York: Academic Press, 1973.
- Roessler, R. and Collins, F. "Personality correlates of physiological responses to motion pictures". Psychophysiology. 6 (6), 732-739, 1970.
- Roessler, R., Bruch, H., Thum, L., and Collins, F. "Physiologic correlates of affect during psychotherapy". American Journal of Psychotherapy. 29, 26-37, 1975.
- Rogers, C.R. "The necessary and sufficient conditions of therapeutic personality change". Journal of Consulting Psychology. 21, 95-103, 1957.
- Rogers, C.R. "A theory of therapy, personality and interpersonal relationships as developed in the client centered framework". In S. Koch (Eds.) Psychology: A Study of a Science. Vol. 3. New York: McGraw-Hill, 1959.
- Rogers, C.R. "Empathy: An unappreciated way of being". The Counseling Psychologist. 5 (2), 2-10, 1975.
- Schwartz, G., Shapiro, D. "Social Psychophysiology". In W. Prokasy and D. Raskin (Eds.) Electrodermal Activity in Psychological Research. New York: Academic Press, 1973.
- Selegman, L. "Skin potential as an indicator of emotionality". Journal of Counseling Psychology. 22 (6), 489-493, 1975.
- Schlosberg, H. "Three dimensions of emotion". Psychological Review. 61, 81-88, 1954.
- Schantz, C.U. "Empathy in relation to social cognitive development". The Counseling Psychologist. 5 (2), 18-21, 1975.
- Shapiro, D., and Crider, A. "Physiological approaches in social psychology". In G. Lindzey & E. Aronson (Eds.) The Handbook of Social Psychology. Vol. III (2nd ed.) Reading, Mass.: Addison-Wesley, 1-49, 1969.
- Shapiro, D., and Schwartz, G.E. "Psychophysiological contributions to social psychology". Annual Review of Psychology. 21, 87-112, 1970.
- Sternback, R. Principles of Psychophysiology. New York: Academic Press, 1966.

- Stotland, E., Sherman, S., and Shaver, K. Empathy and Birth Order: Some Experimental Explorations. Lincoln: University of Nebraska Press, 1971.
- Truax, C. "A scale for the measurement of accurate empathy". Psychiatric Inst. Bulletin. I(2), 1961.
- Truax, C. "Influence of patient statements on judgement of therapist statements during psychotherapy". Journal of Clinical Psychology. 22 (3), 335-337, 1966.
- Truax, C. A tentative scale for the measurement of accurate empathy (rev.). Unpublished paper, University of Calgary, 1970.
- Vanderpool, J., and Barrett, E. "Empathy: Toward a physiological definition". Disease of the Nervous System. 3 (July), 464-467, 1970.
- Walters, E.D. "Skin temperature biofeedback for empathic sensitivity in counseling students". Kansas State University Dissertation Abstracts International. March Vol. 38 (9-A), 5261, 1978.
- Weinstein, E.A. "The development of interpersonal competence". In D. Goslin (Ed.), Handbook of Socialization Theory and Research. Chicago: Rand McNally, 1969.