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THE EFFECTS OF LABORATORY TRAINING ON
INTERPERSONAL NEED ORIENTATIONS

by

Waldron Perry Smith, Jr.

A Dissertation Submitted to the Faculty of the
DEPARTMENT OF COUNSELING AND GUIDANCE
In Partial Fulfillment of the Requirements
For the Degree of
DOCTOR OF EDUCATION
In the Graduate College
THE UNIVERSITY OF ARIZONA

1973
I hereby recommend that this dissertation prepared under my direction by Waldron Perry Smith, Jr. entitled The Effects of Laboratory Training on Interpersonal Need Orientations be accepted as fulfilling the dissertation requirement of the degree of Doctor of Education.

Gordon A. Hartman
Dissertation Director

After inspection of the final copy of the dissertation, the following members of the Final Examination Committee concur in its approval and recommend its acceptance:

Richard J. Smith
Herbert Wilson
Philip L. Smock

*This approval and acceptance is contingent on the candidate's adequate performance and defense of this dissertation at the final oral examination. The inclusion of this sheet bound into the library copy of the dissertation is evidence of satisfactory performance at the final examination.
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SIGNED: Waldoon P. Smith
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ABSTRACT

Laboratory Training is an educational method used in a variety of settings (i.e., education, government, religion, and industry). It includes the combination of an educational technique referred to as the T-group method of sensitivity training and other techniques such as lectures and group problem solving exercises. Although the content varies in different settings, most practitioners share common goals:

1. Increased self-awareness concerning one's own behavior.
2. Increased sensitivity to the behavior of others.
3. Increased ability to analyze continually one's own interpersonal behavior for the purpose of helping oneself and others to achieve more effective and satisfying interpersonal relationships.

The basic premise underlying the use of Laboratory Training with members of organizations is that with increased interpersonal competence, individuals will be more effective on their jobs, thereby enhancing the effectiveness of their organizations.

This study was designed to determine if Laboratory Training produces significant changes in the interpersonal need orientations (e.g., the behavior individuals express and want in
interpersonal relations with others) of participants. Whether behavior changes are noticeable to others in the back-home work setting was also considered.

The subjects were one hundred technical supervisors at Bell Telephone Laboratories, Inc. They were all males ranging from twenty-six to sixty-four years of age. Their educations varied from high school diplomas through Ph. D.'s. The typical subject was between the ages of twenty-six and forty with a Master's Degree in Engineering. There were four experimental and two control groups. The experimental groups received six days of Laboratory Training.

Schutz's Fundamental Interpersonal Relations Orientation Questionnaire (FIRO-B) was used as the basic measuring instrument. FIRO-B measures three areas of interpersonal need: inclusion, control, and affection. Back-home observer reports were used to determine if people in the work setting could observe any changes in individuals as a result of training.

The experimental subjects were measured at the beginning of training, and again two months and four months following training. The control subjects were measured two months before training and at the beginning of training. Pearson product-moment correlations of FIRO-B scores comparing before training scores with two months and four months after scores for each experimental group were determined. The differences in the correlations between the trained experimental groups and the
untrained control groups were tested at the .05 level. The back-home observer reports were coded to compare differences in the experimental and control groups as noted by observers back on the job.

For the hypotheses tested, the following results were obtained: (1) Laboratory Training was effective in changing participants' expressed and wanted inclusion needs; (2) Laboratory Training was not effective in changing participants' expressed or wanted control needs; (3) Laboratory Training was effective in changing participants' expressed affection needs; it was not effective in changing their wanted affection needs; and (4) observers in the work setting did not notice significant change in the behavior of individuals following Laboratory Training; however, noted changes were in the direction of increased effectiveness in interpersonal relations.

The results of this study indicate that Laboratory Training can produce changes in individuals' interpersonal need orientations consistent with the goals of training. The result is a technical supervisor who has more effective and satisfying relationships with others. The amount and type of change is related to age, however. The younger subjects experienced the most change, while those over age forty showed considerably less change. These changes do not seem to "fade-out" with the passage of time. The changes increase, rather than diminish, with the passage of time (at least up to four months).
CHAPTER 1

INTRODUCTION

Laboratory Training is an educational method used in a variety of settings (i.e., education, government, religion, and industry). It includes the combination of an educational technique referred to as the T-group method of sensitivity training and other techniques such as lectures and group problem solving exercises. Although the content varies in different settings, most practitioners share common goals (Campbell and Dunnette 1968):

1. Increased self-insight and self-awareness concerning one's own behavior and its meaning in a social context.
2. Increased sensitivity to the behavior of others.
3. Increased awareness and understanding of the types of processes that facilitate or inhibit group functioning and the interactions between different groups.
4. Increased diagnostic skill in social, interpersonal and inter-group situations.
5. Increased action skill.
6. Increased ability to analyze continually one's own interpersonal behavior for the purpose of helping oneself and
others to achieve more effective and satisfying interpersonal relationships.

Different training laboratories place differing emphases upon the above goals. Training in some settings emphasizes the personal growth of individuals in interpersonal competence. This study focuses on the use of Laboratory Training as a method for the development of managers within an industrial setting. The basic premise underlying this use of Laboratory Training is that with increased interpersonal competence, the managers will be more effective on their jobs, thereby enhancing the effectiveness of their organization (Argyris 1962, 1964).

Campbell and Dunnette (1968) critically reviewed most of the significant research on the effectiveness of Laboratory Training for management development. They reported mixed results and found that the quality of research left something to be desired. Failure to specify training outcomes in advance, lack of comparable control groups and the use of poorly researched measuring instruments were common shortcomings of the studies reviewed.

Harrison (1967) stated that there exists a kind of cult of originality among laboratory trainers. This causes them to value invention and variation in training designs. This tradition among trainers makes it quite difficult to compare the results of one training session with the results of another.
Schein and Bennis (1965) expressed a concern about the "fade-out" of individual learnings following return to the work environment. Miles (1965) analyzed training laboratories as temporary games.

Definitive research on the lasting effectiveness of Laboratory Training is scarce. Researchers rarely have had access to their subjects before and after the training session under study.

The Problem

Statement of the Problem

The purpose of this study was to determine if Laboratory Training produces significant changes in the interpersonal need orientations and behavior of individual participants. The subjects of the study were measured before an intensive week-long training laboratory and again, two months and four months after their return to their regular organizational environments.

Significance of the Problem

Across the nation thousands of people annually participate in Laboratory Training. Millions of dollars are expended to develop leaders and to improve the functioning of organizations. Therefore, it seemed appropriate to attempt to assess the effects of Laboratory Training.

This study was an attempt to circumvent the traditional problems in the evaluation of Laboratory Training. The training
laboratories of the study used the same trainers and the same standardized training design. There was access to the subjects both before and after training. There were reasonably comparable control groups. All subjects were participants in an ongoing management development program within the same organization.

The Hypotheses

The following null hypotheses provided order and direction for the study:

Hypothesis I: There will be no significant change in the expressed inclusion needs of individual participants following Laboratory Training.

Hypotheses II: There will be no significant change in the wanted inclusion needs of individual participants following Laboratory Training.

Hypothesis III: There will be no significant change in the expressed control needs of individual participants following Laboratory Training.

Hypothesis IV: There will be no significant change in the wanted control needs of individual participants following Laboratory Training.

Hypothesis V: There will be no significant change in the expressed affection needs of individual participants following Laboratory Training.
Hypothesis VI: There will be no significant change in the wanted affection needs of individual participants following Laboratory Training.

Hypothesis VII: Observers in the work setting will observe no noticeable change in the behavior of individual participants following Laboratory Training.

Assumptions and Limitations

Assumptions of the Study

The following assumptions applied to this study:

1. It was assumed that the trainers were qualified to provide Laboratory Training in this setting.
2. It was assumed that the subjects were representative of the population from which they were selected.
3. It was assumed that the time intervals for measurement specified by this study were appropriate.
4. It was assumed that the measurement instruments were valid in the context in which they were used.

Limitations of the Study

The following limitations applied to this study:

1. There are always questions concerning the appropriateness of the criteria to be used for measuring changes. Perhaps there are other criteria that might be more appropriate.
2. It is unfortunate that the measuring instruments do not have equivalent forms. There may be a danger in using them too often with the same subjects. The use of control groups should mitigate against this, however.

3. Participant and observer attitudes about the study may have some effect upon their behavior.

4. The subjects (e.g., engineers) of this study may not be typical of subjects in other institutional settings. Replication of the study in other settings may be necessary before we can generalize with any degree of confidence.

**Definitions**

The following definitions are offered as a basis for common understanding of some of the terms that were used in this experiment:

**Expressed Need:** The need to behave toward others in a particular way.

**Focused Exercise:** An exercise designed to generate some specific behavior so that a particular area can be studied (e.g., the communication process) or to practice some skill which is important for future learning (e.g., how to observe group action).

**Interpersonal Need for Affection:** The need to establish and maintain a satisfactory relation with others with respect to love and affection. "Satisfactory relation" includes (1) a psychologically comfortable relation with others somewhere on a
dimension ranging from initiating close, personal relations with everyone to originating close, personal relations with no one; and (2) a psychologically comfortable relation with people with respect to eliciting behavior from them on a dimension ranging from always originating close, personal relations toward the self, to never originating close, personal relations toward the self (Schutz 1958).

**Interpersonal Need for Control:** The need to establish and maintain a satisfactory relation with people with respect to control and power. "Satisfactory relation" includes (1) a psychologically comfortable relation with people somewhere on a dimension ranging from controlling all the behavior of other people, to not controlling any behavior of others; and (2) a psychologically comfortable relation with people with respect to eliciting behavior from them somewhere on a dimension ranging from always being controlled by them to never being controlled by them (Schutz 1958).

**Interpersonal Need for Inclusion:** The need to establish and maintain a satisfactory relation with respect to interaction and association. "Satisfactory relation" includes (1) a psychologically comfortable relation with people somewhere on a dimension ranging from originating or initiating interaction with all people to not initiating interaction with anyone; and (2) a psychologically comfortable relation with people with respect to eliciting behavior from them somewhere on a dimension ranging
from always initiating interaction with the self to never initiating interaction with the self (Schutz 1958).

Interpersonal Need Orientation: The interpersonal needs of an individual for inclusion, control, and affection as measured by the FIRO-B Questionnaire (Appendix A).

Laboratory: A week-long training event consisting of several separate training groups. The membership of each training group including the staff remains constant for the entire week. However, several groups are trained concurrently.

Laboratory Training: The general term which encompasses a number of experienced-based learning techniques (e.g., T-groups, role-playing, focused exercises, theory lectures). The goals are to foster in participants (1) greater insight into self and awareness of one's impact on others, (2) an increased sensitivity to the feelings of others and how this affects oneself, and (3) an increased understanding of group dynamics.

Organization Development: The field of endeavor concerned with the development of organizations or social systems, in addition to the development of individuals.

T-Group: This is a type of experience-based learning. Participants work together in a small group over an extended period of time, learning through analysis of their own experiences, including feelings, reactions, perceptions, and behaviors—sometimes referred to as sensitivity training or an encounter group.
Trainer: A professional person who conducts Laboratory Training.

Wanted Need: The need to have others respond toward the self in a particular way.
CHAPTER 2

REVIEW OF RELATED LITERATURE

A review of the literature associated with this study is discussed in this chapter. Included are sections on the development of Laboratory Training, instruments used in the evaluation of Laboratory Training, and the use of Laboratory Training for Management Development.

The Development of Laboratory Training

Most of the early research on Laboratory Training focused on how individuals behave in the training group, the relationship between personality and perceptions of other group members, the perceptions of the group by its members, the relationship of group composition to subgroup structure, anxiety level and member satisfaction (Stock 1964). These studies were primarily based on naturalistic observations, and beginning and close of training measures. Most of these studies were conducted at training laboratories at Bethel, Maine, under the auspices of the National Training Laboratories.

This section is divided into four subsections, as follows: the behavior of individuals in training groups, the relationship between personality and group structure, changes in perception of the self and others, and variations in training goals and design.
The Behavior of Individuals in Training Groups

A number of early studies emphasized the stages through which effective training groups evolve. Those most pertinent to this study are briefly reviewed in this subsection.

Back (1948) studied the development of two T-groups with regard to participation patterns and type of interaction among group members. He used a modification of a rating scale developed earlier by Bales and Strodbeck. Back measured each group during the first half of their meetings and again during the second half of their meetings. Bales and Strodbeck (1951) conducted a similar study in 1946. They both found that training groups evolve through stages of group development, described as orientation, evaluation, and control stages. They also found that concurrent with these transitions group members expressed more emotional reactions to each other. The earliest emotional reactions tended to be negative, while the later reactions tended to be positive. Back found that trainers consistently expressed more positive than negative feelings. He felt that the trainers might have influenced the shift in this direction among group members.

Horowitz and Cartwright (1953) studied five T-groups at Bethel in 1947 and found that the groups which displayed the most group cohesiveness were the most productive. Groups with greater "membership orientation" (defined as moving away from a concern about liking and disliking, and toward a concern for member contribution) showed more task accomplishment and awareness of
group structure. The corollary was that the less successful
groups tended to accept or reject member contributions, not by
their merit, but by how well the contributor was liked or dis­
liked. Horowitz, Lyons, and Perlmutter (1951) found similar
results in several groups studied during 1949.

Barron and Krulee (1948) in a study of another T-group
at Bethel found that group growth followed a definite pattern
characterized as initial resistance, gradual understanding and
acceptance of a method of operation for the group, followed by
well-organized and productive meetings. They felt that partici­
pants gained new insights into their own behavior and gained new
skills for understanding groups.

Thelen and Dickerman (1949) conducted a study based upon
the theoretical work of Bion (1959). They found that members of
a group quickly attempt to establish their place in a leadership
hierarchy, or pecking order. When the group leader resisted the
authoritarian atmosphere in which the concept of a pecking order
is rooted, frustration and conflict ensued. This phase was fol­
lowed by a period of group cohesiveness, based more upon wishful
thinking than reality. In the final stage the group became more
purposeful without losing its inter-member sensitivity and co­
hesiveness.

Stock and Ben-Zeev (1958) studied another group from the
theoretical position of Bion. They found that the emotional
content of meetings remained constant, while the group's level
of task accomplishment increased. They reported that group members learned to utilize affect in the service of task accomplishment. The group was most effective when it could integrate the intense expression of affect with creative and coherent discussion.

Hill (1955) conducted another study based upon Bion's categories of fight, flight, pairing and dependency behaviors in groups. He found relationships, based upon self-perceptual data, between the group's affective behavior and need characteristics. Hill (1958) later reported the development of subgroups based upon members' need characteristics.

Schutz (1958) postulated a three dimensional theory of interpersonal behavior, which he called Fundamental Interpersonal Relations Orientation (FIRO). According to Schutz, every individual has three interpersonal needs: inclusion, control, and affection. Each need is broken down into the need which the individual actively expresses toward other people and the extent to which the individual desires that such behavior be directed toward him. Inclusion, control, and affection constitute a sufficient set of areas of interpersonal behavior for the prediction and explanation of interpersonal phenomena. Therefore, behavior in these three interpersonal need areas should be observable in the interaction of groups. Schutz also developed a questionnaire, Fundamental Interpersonal Relations Orientation-Behavior (FIRO-B), to measure these areas of interpersonal needs.
Schutz's theory is quite consistent with the findings of Bales and Back. It also provides room for the other studies cited above. Because of the economy of Schutz's theory of interpersonal behavior and his well researched measuring instrument (FIRO-B), this theory will be a cornerstone of this study as will be demonstrated later.

The Relationship Between Personality and Group Structure

A number of studies were concerned with the relationship between the personalities of group members and group structure. This subsection reviews the more important of these studies.

Bennis and Peabody (1959) explored the relationship between personality dimensions and group structure. They found that groups moved through two stages: a concern with authority problems and then a concern with intimacy problems. Power struggles and concerns about the trainer characterized the first stage. Concerns about self-revelation and member intimacy characterized the second stage.

Norfleet (1948) found that maximum group productivity was achieved when members learned to value contributions based upon the objectives of the group, rather than personal liking or disliking of the individual contributor.

Gradolph (1958) conducted a study which compared the behavior of three kinds of groups. The groups were composed on
the basis of responses to a sentence-completion test. One group was composed of highly sociable members. A second group was composed of members who tended to withdraw. Two other groups were composed of a mixed membership based upon these dimensions. She reported that the members of the first group were more involved, expressed more affect and were interested in discussing their experiences in the group. The second group was uncommitted to the task and uninvolved with each other. The mixed groups were unable to complete their task and expressed frustration and anger. Gradolph concluded that mixed groups found it more difficult to agree upon a common way to accomplish their tasks.

Benne and Sheats (1948) discussed the need to identify, analyze and develop skills of leader and member roles as they affect group growth and production. They classified member roles into "group task roles," "group maintenance roles," and "individual roles." Successful groups seem to have a combination of members who provide group task roles and group maintenance roles.

Ben-Zeev (1958) reported that group members who participated with those other group members that they liked showed a tendency on projective tests to express warmth and to inhibit hostility. Those who did not participate with other members that they liked were found to express hostility and inhibit the expression of warmth.
Stock and Luft (1960) studied several groups composed by member preference for high structure or lack of structure. They found that high structure groups were fast moving, sociable, and shallow. Low structure groups tended to be highly verbal and process-oriented to the detriment of task accomplishment. Mixed groups with polarized high structure versus low structure subgroups experienced difficulty accomplishing anything at all.

Jenkins (1948) discussed the need for a group to give attention to its mechanics of operation if it is to be an effective producing unit. He expressed the need for a feedback mechanism to enable training groups to self-evaluate their group processes in order to improve individual member and total group performance.

Kelley (1948) reported upon the stability of first impressions in training groups. He found that the group was able to change its initial impressions as members became more self-revealing.

Lieberman (1958b) studied the influence of group composition on changes in the affective approach of individual members in two training groups at Bethel. He found that participants most attuned to the prevailing group atmosphere are least apt to change, since there is no pressure or opportunity to experiment with new behaviors. Those least attuned to the prevailing group atmosphere seem to change the most in those areas which have been particular emotional issues within the group.
Lippitt (1959) studied the effect of feedback on changes in individual behavior. His results indicated that there was close agreement between observers' and members' evaluations of individual behavior and that specific feedback procedures did facilitate significant change in individuals.

Watson (1950) administered a questionnaire at three points (beginning, middle, and end) of a training laboratory at Bethel. The responses indicated that the main functions of the T-group were to communicate principles and concepts, develop skills and techniques and develop sensitivity to others and insight into the self. Applications of learning, either to the back-home setting or in training others, were de-emphasized.

Weschler and Reisel (1959) described a T-group from the point of view of the subjective impressions of its members. Each member kept a diary of his personal reactions, insights, learnings, and assessments of group interactions. The authors were able to show the unique character and meaning of the experience for each person in the group.

Lakin (1960) studied the subjective reactions of twelve T-group members immediately following and six months after training. The reported themes concerned problems with authority, self-exposure, peer conflict, and self-insight. Those members most accepted by the group and the trainer and able to influence the group processes felt best about the experience. Themes related to cognitive aspects of group processes or learning of
skills were absent. Emotional disengagement seemed to occur at the six month interval.

Browne and Crowe (1953) conducted a study to determine if certain types of group members were likely to choose or reject specific other types. Group members were divided into five types: dependents, self-sufficients, rigids, inhibited hostiles, and overt hostiles. The results showed that rigid members tended to choose one another; self-sufficients chose one another and the rigid members; overtly hostiles chose one another and inhibited hostiles; dependents chose inhibited hostiles; and inhibited hostiles chose the dependent members.

Watson, Lippitt, Kallen, and Zipf (1961) conducted a study to identify the learnings which occurred at training laboratories at Bethel, the learnings which could be transferred to the back-home situation and the factors which might be related to these differences in learnings and applications. The study primarily utilized questionnaire and interview data. Their findings suggested that people who did not expect to learn anything new at Bethel, did not seem to learn much at Bethel. Those with positive expectations tended to value the experience more. Similarly those alienated or frustrated by the training experience seemed less inclined toward back-home applications. There was a suggestion that more responsive out-going persons were more successful in the back-home situation.

Miles developed a general theory about Laboratory Training in 1957 and applied it in a study of change conducted at a
laboratory for school principals in 1960. He suggested that the learner can be described in terms of successive stages. These stages include a desire for change, the unfreezing of old behavior patterns, involvement in training, and the reception of feedback. Ego strength, flexibility and need-affiliation facilitate these steps. It was felt that transfer of learnings back-home was facilitated when the individual learner felt that his learnings were relevant to his back-home situation and developed specific action plans to implement these new learnings. Miles (1960) developed an open-ended perceived-change questionnaire to measure back-home change. Bunker (1965) used a modification of this questionnaire to study the long-range effects of participation in the 1960 and 1961 summer laboratories at Bethel. Bunker's research was intended to replicate the Miles behavioral change findings with a more heterogeneous population. Both Miles and Bunker reported positive results.

Glidewell (1956) conducted a study for the second American National Red Cross School for Management Development based upon several training objectives: awareness of the multiple-causation of organizational problems; awareness of one's own involvement in the problem; and, awareness of problems as disorders of structure and function rather than deficiencies of morality and competence. Glidewell found that after training there was a trend for participants to take a more functional
view of organizational problems and become more aware of their own part in the problems.

Mathis (1955) combined Bion's and Lewin's concepts of group operation to develop a "trainability" index for learning and change among individual group members. From Bion's concepts he hypothesized that tendencies toward pairing and fighting would provide the individual member with supportiveness and aggressiveness to enable him to deal personally with problems in the group situation. From Lewin's concepts he hypothesized that internal conflict would stimulate individuals to search for solutions to problems arising through group interaction. Mathis felt that intrapersonal conflict combined with tendencies to fight and pair were therefore positive indicators for trainability. Tendencies toward dependency, flight and immobilization in stress situations were considered negative indicators. Studies of participants in Bethel and Chicago training laboratories confirmed his predictions.

Stock (1958) studied changes in the self-percepts of members of a training group. The seven members who changed most were compared with the seven who changed least. The least changed members had clearly defined self-concepts, were warm, work-oriented, independent, and interested in the group; somewhat a stereotype of the "good group member." The most changed members had less clearly defined self-concepts and seemed to use
the T-group as an opportunity to resolve some of their inconsistencies and conflicts.

Lieberman (1958a) studied the effects of different group cultures on individual change. It was found that in a group atmosphere of warmth and easy relationships with the trainer, counter-dependent members changed the most. Pairing and dependency members changed the least. In a group atmosphere of struggle for leadership, dependent members changed the most, while counter-dependent members changed the least.

Miles (1958) conducted a study to identify factors which influence the effectiveness of feedback. It was found that strong negative feedback was most effective in inducing change. Behavior relating to interpersonal relationships was more responsive to feedback than behavior related to task accomplishment.

Gibb and Platts (1950) and Gibb (1952) examined the specific effect of role playing with and without feedback, and the capacity for role flexibility. It was found that feedback was an effective procedure to enable individual members to achieve greater role flexibility and self-insight.

The studies discussed above indicate that there are relationships between the personality constellations of group members and the group structure that develops. The most effective groups for interpersonal learnings are those that can deal constructively with affect among group members. Learning seems to take place in successive stages: a desire for change, the
unfreezing of old behavior patterns, involvement in the training and the reception of personal feedback. Ego strength, flexibility and need affiliation facilitate these steps.

Changes in Perception of the Self and Others

A number of studies have focused on the change in an individual's self-perception during training. Increasing the accuracy of participants' perceptions of their own behavior is one of the major goals of Laboratory Training. Two such studies were conducted by Burke and Bennis (1961) and Gassner, Gold, and Snadowsky (1964). Burke and Bennis asked eighty-four participants in six different NTL groups to use adjectives to describe how they actually behave in their group, how they would like to behave, and how each of the other members behaves in the group. These rating scales were administered during the middle of the first week and again at the next to the last session of the third week. The pooled ratings were used to develop a group description of each member. Changes were statistically significant in the direction of greater congruence between ideal and actual self-descriptions and toward seeing themselves more nearly as others described them.

Gassner et al. (1964) conducted three studies using undergraduate students at City College of New York as subjects. Each experimental group had 45-50 experimental subjects and 25-30 control subjects. A checklist of forty adjectives was used as
the measuring instrument. They reported results for the experimental groups similar to those found by Burke and Bennis. However, the control group showed similar changes.

Grater (1959) conducted a similar study using the Bills Index of Adjustment and Values to obtain descriptions of "real self," "ideal self," and "average group member" before and after a twenty-two session leadership training course, which attempted to avoid interpersonal feedback and emotional reactions. Even though the common T-group elements were absent, Grater received results similar to those reported by Burke and Bennis, and Gassner. Discrepancies between real and ideal self were significantly reduced. Differences between descriptions of ideal self and the average group member were reduced also, but not significantly.

Bennis, Burke, Cutter, Harrington, and Hoffman (1957) conducted a similar study with twelve business administration students participating in training for a semester. During the semester, there were no significant changes.

It would seem well established that the way an individual sees himself often changes during the course of a T-group. It is difficult to say whether this happens as a result of training, the passage of time or by retaking a self-descriptive inventory (Campbell and Dunnette 1968).

Another goal of laboratory training is to increase participants' ability in the perception of others. A number of studies have focused on this goal.
Gage and Exline (1953) studied participants' skill in predicting how other group members would answer a questionnaire. They used a before and after measure with two NTL groups of fifteen and eighteen members. There was no significant change following three weeks of training.

Lohman, Zenger, and Weschler (1959) used the Gordon-Personal Profile with sixty-five students participating in T-groups at UCLA. The subjects completed the questionnaire for themselves and predicted how their trainers' would respond. There was no change in the students' descriptions at the end of a semester's training. There was a slight increase in predicting trainer responses.

Harrison (1966) used a modified version of a Kelly's Role Construct Repertory Test to gather self descriptions of 115 subjects and ten associates of each subject. The measures were taken before, three weeks following, and three months following training in an NTL laboratory. Harrison found no short term differences, but reported significant increases in the frequency of interpersonal concepts used to describe associates three months following training.

Oshry and Harrison (1966) studied possible causes of unresolved interpersonal work problems before and after a two-week NTL laboratory. They used forty-five middle managers as subjects. Results indicated that managers saw work problems as more
related to themselves and interpersonal relationships following training.

Bass (1962) showed the film "Twelve Angry Men" to thirty-four managers before and after two weeks of training. The subjects were asked to describe the behavior of the characters portrayed in the film. He reported that the subjects were more sensitive to interpersonal relationships portrayed in the film following training.

Clark and Culbert (1965) interviewed nine college students before and after participating in a T-group at UCLA. They concluded that four of the nine subjects were better perceivers of the group process following training.

In general, Laboratory Training seems to improve the accuracy with which participants perceive their own behavior and the behavior of others. It is to be expected that this will enable the participants to be more effective in future interpersonal relationships.

Variations in Training Goals and Designs

There are great variations in the goals and designs of training laboratories, as well as in trainer styles (Harrison 1967). Unfortunately, most people do not make this distinction and often discuss nude-marathon groups in the same breath with training programs for bank managers. There has been a slight beginning to specify in more explicit detail the types of
training outcomes associated with the various training goals and designs. Campbell and Dunnette (1968), for example, focused their review upon the use of Laboratory Training for management development.

Deep, Bass, and Vaughn (1966) studied the use of business gaming in addition to T-group training. They found that business game "companies" comprised of members of the same T-groups performed poorly in a competitive situation but reported less internal conflict, more ease of contact, and more openness among group members. While "companies" with multiple T-group membership performed significantly more effectively in the game, as measured by greater profits and gains in stock prices and reduced losses from poor planning and forecasting errors.

Bunker and Knowles (1967) reported comparisons of behavioral changes resulting from human relations laboratories of different lengths. They found longer duration training laboratories with more back-home applications to be more effective.

Miles, Milavsky, Lake, and Beckhard (1965) found training sessions with "family" groups of managers from the same division to be more effective on "back-home" performance criteria. Argyris (1962, 1964, 1965), Beckhard (1966), Bennis, Benne, and Chin (1961), Blake, Mouton, and Blansfield (1962), and others have reported similar results.

Some promising beginnings in associating trainer behaviors with the outcomes of training are being made also. Psathas
and Hardert (1966) studied the contributions of the trainer to the development of group norms. They categorized norms as concerns for: (1) feedback, (2) feelings, (3) acceptance concerns, (4) analyzing group interaction or process, (5) goal and task concern, (6) behavior experimentation, (7) leadership behavior, (8) member participation, (9) trainer membership and authority problem, (10) decision making, and (11) structure concerns. They found that different emphases upon trainer interventions affected the direction of group development.

Peters (1966) reported that members of a training group, because of identification, strove to be more like the trainer. It was found that the members' self-concept as measured on a semantic differential, increasingly converged with their concept of the trainer and with the trainers' self-concept.

Culbert (1968) found the trainers participating with high rates of self-disclosure, especially in the early stages of training, caused their groups to develop more self-awareness and self-disclosure.

Smith (1966) found that differences in group climate and trainer style led to quite different training outcomes. Groups with authority-oriented trainer styles showed the highest diagnostic ability scores. Groups with a data-oriented climate and a people-oriented trainer style showed the greatest change on the FIRO-B and the highest interpersonal awareness. This study demonstrates that a laboratory is not a unitary phenomenon.
Differences in laboratories are great enough to create measurably different kinds of experiences and outcomes.

The studies discussed above indicate that different training goals and designs are associated with different training outcomes. Different trainer styles also seem to affect the outcomes of training. The literature on these topics is relatively brief but some promising beginnings have been made.

**Instruments Used in the Evaluation of Laboratory Training**

This subsection describes some of the instruments that have been used to measure the effects of Laboratory Training.

A number of studies have used the Fundamental Interpersonal Relations Orientation-Behavior questionnaire (FIRO-B) (Schutz 1958) as the primary measuring instrument. Smith (1964) obtained responses from 108 British industrial managers before and after T-group training. He used forty-four students in discussion groups as controls. Smith reported no change for the controls but a significant change for experimental subjects. The biggest changes were among participants who originally expressed high control and low affection tendencies toward others. These changes were consistent with the goals of the Training Laboratory.

Schutz and Allen (1966) used FIRO-B with seventy-one participants in a Western Training Laboratories Program. Thirty students in an education class at the University of California,
Berkeley, were used as a control group. Data were gathered before, following two weeks of training, and again by mail six months following training. Schutz considered low correlations between before and after test scores as evidence of change. Greater changes were reported for those subjects who had experienced training. The lowest correlations were obtained between the pre-test and six months post-test. This agrees with Harrison's (1966) conclusion that T-group effects may only manifest themselves after some time.

Baumgartel and Goldstein (1967) used FIRO-B and the Allport-Vernon-Lindzey Study of Values (Allport, Vernon, and Lindzey 1960) with one hundred students in five sections of a semester long human relations course (including T-groups) at the University of Kansas. The instruments were administered at the beginning and end of the semester. There was a significant increase in wanted control and a significant decrease in wanted affection scales of the FIRO-B questionnaire. Most of these changes were attributed to high-valued females and low-valued males in the five groups. Only the religious scale was affected on the Study of Values.

Blake, Mouton, and Sloma (1965) used an attitude measure derived from the Management Grid Program to measure changes in union and management attitudes toward supervisory practices. Their interest was focused on changes in attitudes toward five distinct managerial styles: minimum concern for both production
and people (1,1), maximum concern for production and minimum concern for people (9,1), minimum concern for production and maximum concern for people (1,9), a moderate and balanced concern for both production and people (5,5), and a maximum concern for both production and people (9,9). The inventory was given before and after one week Management Grid Programs conducted for thirty-three managers and twenty-three union representatives. Before training, managers scored higher than union representatives on concerns for high production. Both management and union groups evidenced changes following training. Union representatives became more concerned about production, while managers became more concerned about people. This movement was directly related to the goals of the program.

Kernan (1964) used the Leadership Opinion Questionnaire (Fleishman, Harris, and Burt 1955) to study possible attitude changes among engineering supervisors. Kernan administered before and after instruments to an experimental group of forty and a control group of twenty supervisors from the same organization. The experimental group received three days of T-group type training. No significant differences were obtained for either group.

Kassarjian (1965) studied possible changes in inner versus other directedness in 125 subjects using a thirty-six item forced choice inventory derived from Riesman (Riesman, Glazer, and Denney 1953). A control group of thirty-five
subjects was used. No significant differences were observed following training.

Campbell and Dunnette (1968) indicated that FIRO-B has been the most promising standardized measuring instrument to date. It also has been one of the most commonly used instruments. Other virtues of FIRO-B are that it is based upon a theoretical view of group behavior that has been well researched and is shared by many laboratory trainers.

The Use of Laboratory Training for Management Development

Campbell and Dunnette (1968) conducted an extensive review of research studies related to the usefulness of Laboratory Training for influencing the behavior of people in organizations. This review included criteria for measuring the transfer of learning to the organizational setting. Campbell and Dunnette's distinction between internal and external measures of training effects has been adopted for this study. Internal criteria are measures linked directly to the content and processes of the training laboratory. These have no direct relationship to actual job behavior or organization goals. External criteria are those related directly to job behavior. Much of what follows is essentially a review of the ground previously covered by Campbell and Dunnette.

Studies by Boyd and Elliss (1962), Bunker (1965), Miles (1965), and Valiquet (1964) are often cited in support of the
ability of Laboratory Training to change job behavior. All four studies used a "perceived change" measure as the basic external criterion. The measure was an open-ended question asking a superior, peer or subordinate to report any changes in the subjects behavior over a specified period of time. The specific question used by Bunker, Miles, and Valiquet was as follows: "Over a period of time people may change in the ways they work with other people. Do you believe that the person you are describing has changed his/her behavior in working with people over the last year as compared with the previous year in any specific ways? If YES, please describe:". This question was usually directed at several (three to seven) observers for each subject. Boyd and Elliss interviewed the observers, while the other studies used a mailed questionnaire. All four studies gathered the perceived-change data several months following training.

All four studies used at least one control group. Bunker, Miles, and Valiquet asked the experimental subjects to nominate control subjects from a similar organizational position who had never participated in T-group training. It is not clear how Boyd and Elliss selected their control subjects.

Subjects in the Miles and Bunker studies were participants in National Training Laboratories' programs. Miles used thirty-four high school principals as experimental subjects and two groups of principals as control subjects. One group of
twenty-nine controls was selected by the nomination method. The other group of 148 controls was randomly selected from a national listing of school principals. Responses were obtained from an average of five observers per subject. Results obtained with the perceived-change measure were statistically significant. Behavioral changes were reported for 30% of the experimentals, 10% of the matched controls, and 12% of the randomly selected controls. Self-reported changes of 82%, 33%, and 21% were given for the three groups. The participants therefore reported more changes than the observers. An informal content analysis was conducted by Miles. He concluded that the nature of the changes included greater sensitivity to others, heightened egalitarian attitudes, greater communication and leadership skills, and more relaxed attitudes about the subjects' jobs.

Two other external criterion measures also were used in their studies: the Leadership Behavior Description Questionnaire (LBDQ) (Stogdill and Coons 1957), which was completed by observers and the Group Participation Scale (Pepinsky, Siegel, and Van Alta 1952), a peer rating form. Ratings of training behaviors (internal criteria) were obtained from trainers, participants, and peers. None of these measures was at all predictive.

Bunker's experimental group included 229 people from a number of NTL training laboratories conducted in 1960 and 1961. A substantial proportion had some leadership or managerial
responsibilities. The matching-by-nomination provided 112 control subjects. Measures of perceived-change were obtained from each experimental and control subject, and from five to seven observers approximately one year following training. Bunker content-analyzed the perceived change data within three major classes: overt operational changes, inferred changes, and global judgments. He reported statistically significant differences between the experimental and control groups. In all instances the greater changes were in the trained group. The greatest differences (20-25%) were in areas related to increased openness, receptivity, tolerance of differences, increased operational skill in interpersonal relationships, and improved understanding of self and others. Other categories, such as effective initiation of action, assertiveness, and self-confidence, showed no differences. Bunker emphasized that learnings varied greatly from individual to individual and there was no standard outcome.

The Boyd and Elliss study and the Valiquet study used managers from a single organization. Boyd and Elliss had an experimental group of forty-two managers trained during 1961 at a large Canadian public utility. Their two control groups included twelve individuals who received no training and ten managers who received human relations training employing lecture and discussion techniques. Perceived-change data were collected from each manager's superior, two peers, and two subordinates. The observers reported 65% change for the laboratory trained
group, 51% for the conventionally trained group, and 34% for the untrained group. The observers differed among themselves, however, regarding the nature of the changes. Boyd and Elliss concluded that no particular pattern could be regarded as a typical training outcome.

Valiquet randomly selected sixty participants from an ongoing laboratory-type program in a large corporation. T-group meetings and follow-up meetings designed to increase interpersonal skills for solving organizational problems were used. A low rate of response to a mailed questionnaire resulted in thirty-four subjects and only fifteen matched control subjects. An average of five observers were nominated for each experimental and control subject. Valiquet content-analyzed, by the Bunker categories, the responses received from the observers. He received results similar to those reported by Bunker, except for greater differences in the "risk taking" and "functional flexibility" categories. Valiquet attributed these differences to the fact that the training was conducted with co-workers in the work setting.

Campbell and Dunnette (1968) stated that the above investigations seem to form the backbone of the evidence used to support the utility of laboratory training for the development of individuals in organizations. The perceived changes which seemed to discriminate best between experimentals and controls have to do with increased flexibility in role behavior. Campbell
and Dunnette expressed some concern about the reliability of the observers' reports since the observers probably interacted with each other and probably knew which subjects had undergone training. Perceiver bias on what is remembered and reported in psychological research is a well-documented phenomenon. Furthermore, the relationship between increased sensitivity to others and increased flexibility and job effectiveness has not been demonstrated.

Underwood (1965) asked observers to rate behavior changes related to improved job performance. He used fifteen supervisors who had participated in in-plant T-group training as an experimental group and another fifteen supervisors who had not participated in training as a control group. Each subject nominated his own observer, who was given a sealed envelope with instructions for observing the subject. Nine individuals in the experimental group were reported to have changed compared to seven individuals in the control group. However, two and one-half times as many changes were reported for the experimental subjects. Underwood reported that his results suggested that the trained supervisors had more observed favorable changes in their behavior as related to job performance.

Another study by Morton and Bass (1964) was concerned with perceived changes in job behavior. Three months after training, 107 managers in an aerospace corporation were asked to report any critical incidents on the job, which they considered
related to training. They received responses from ninety-seven participants about 359 incidents. Almost all of the incidents were considered by the researchers to be an improvement in job performance.

Blake, Mouton, Barnes, and Greiner (1964) reported a study concerning the Management Grid Program, which is conducted in several stages. A series of instrumented T-group-like sessions, involving both theory and structured exercises, were conducted for the purpose of exploring interpersonal relationships among a group of managers and giving them feedback about their individual managerial styles. Blake et al. have described their ideal style of management. In brief, they emphasized maximum concern for both interpersonal relations and production problems. Advanced stages of the program, spread over a year, involved actual work teams comprised of several organization levels with direct reporting relationships to each other within the same corporation. Data of Blake et al. on perceived change were gathered from six hundred managers during 1962 and 1963. They gathered before and after data regarding net profit, controllable operating costs, unit production per employee, frequency of management meetings, management-promotion criteria, and frequency of transfers. Over the course of the training program the firm experienced a considerable increase in profits and a decrease in costs. This was attributed to a shift toward the attitudinal goals of the Management Grid Program.
Beer and Kleisath (1967) conducted another study of the Management Grid Program on 230 management people in one corporation. They used questionnaires dealing with perceptions of organizational functioning before and one year following a one week grid training program. No control groups were used. Beer and Kleisath reported that some of the results were in line with the objectives of the grid program, but not overwhelming so.

Zand, Steele, and Zalkind (1967) gathered questionnaire data about managerial style before, immediately after, and one year following training from ninety middle and top managers within a medium sized company. The questionnaire was designed to measure an individual's attitudes toward Theory X versus Theory Y styles of management (McGregor 1960). This was a dichotomy roughly equivalent to authoritarian and directive management versus democratic and participative management. No real change was found on the Theory X - Theory Y measure. They attributed this to the original strong orientation toward Theory Y.

Buchanan and Brunstetter (1959) used participant perceptions of how their departments changed as a result of Laboratory Training. All 224 managers in one department were used as the experimental group. All 133 managers of another department served as a control group. Data were gathered from both experimental and controls three to seven months following training. The experimental group reported a greater number of positive changes.
The questionnaire studies discussed above indicate quite mixed results. They all used non-validated instruments, were subject to possible observer bias and were open to numerous alternative explanations regarding results.

The research on Laboratory Training to date has provided a number of definitive findings. Training groups evolve through several stages. Schutz (1958) has described these as inclusion, control, and affection stages. There is a relationship between the personality constellations of group members and the group structure that develops. The most effective groups for interpersonal learnings are those that can deal constructively with affect among group members. Laboratory Training seems to improve the accuracy with which participants perceive their own behavior and the behavior of others. It is expected that this will enable the participants to be more effective in future interpersonal relationships. Different training goals and designs are associated with different training outcomes. Variations in trainer styles also affect the outcomes of training. Schutz's FIRO-B questionnaire and back-home observer reports have been the most promising measuring instruments to date.

Failure to specify training outcomes in advance, lack of comparable control groups, and the use of poorly researched measuring instruments were common shortcomings of the studies reviewed. Differences in trainer style and goals have made it quite difficult to compare the results of one training session
with another. Definitive research on the lasting effectiveness of Laboratory Training and its transfer to the back-home environment is scarce. Researchers rarely have had access to their subjects before and after the training session under study. The purpose of this study was an attempt to circumvent these traditional problems in the evaluation of Laboratory Training as a method for the development of managers within an industrial setting.
CHAPTER 3

THE SETTING, DESIGN, AND PROCEDURES
FOR THE EXPERIMENT

This chapter describes the setting, design of the experiment, and the procedures used in testing the hypotheses. Included in the chapter are descriptions of the organization which sponsored the study, the training site, the subjects, composition of the experimental and control groups, the trainers, the training program, the evaluation instruments, procedures in data collection, and statistical analyses of the data.

The Setting

Bell Telephone Laboratories sponsored this study as part of its regular ongoing effort at organizational improvement. Therefore, it would seem appropriate to briefly describe the organization setting which provided the subjects for the study and the training site.

Bell Telephone Laboratories, Inc. is the research and development organization for the Bell System. It was established in 1925 as a separate corporate entity with its own President and Board of Directors. Currently, Bell Telephone Laboratories has approximately 17,000 employees located at twenty-four plants in eleven states. The majority of these employees are located in
three major locations in New Jersey. Approximately two-thirds of the people employed are technical research and related technical support personnel. The remaining third are administrative support personnel. The company has two owners and two customers—namely, the American Telephone and Telegraph Company and the Western Electric Company. Bell Telephone Laboratories has long been regarded as the premiere industrial research organization in the world. Scientists at Bell Laboratories have twice won the Nobel Prize—for demonstrating the wave nature of matter and for the discovery of the transistor effect. Bell Laboratories people also conceived information theory, developed the basic structure of network broadcasting, pioneered sound motion pictures, created the new science of radio astronomy, developed and built the first digital computer, demonstrated the first inter-city transmission of television, invented high fidelity sound reproduction, created microwave radio and coaxial cable systems, and developed the first communications satellite (Telstar).

The major locations are in New Jersey in university-park type settings. The branch locations are usually located at Western Electric Company manufacturing plants to facilitate the continuity between research and manufacturing.

All training sessions in this study were held in the Flanders Hotel in Ocean City, New Jersey. The hotel has been a regular site for Bell Telephone Laboratories training programs since 1959. In fact, former and prospective participants in
human relations training refer to all programs at this site as the "Ocean City Program." The hotel is over one hundred miles from the nearest work location. The participants arrived on Sunday afternoons and left on the following Friday afternoon. All participants lived in the hotel. Since Ocean City is a beach resort town and the training sessions were held off-season, the town was a virtual ghost town during training. Therefore, there was little contact with the "outside world" during the period of training. This "cultural island" effect tended to heighten the impact of training.

Design of the Experiment

This section describes the subjects and the composition of the experimental and control groups.

Subjects

The subjects were one hundred technical supervisors at Bell Telephone Laboratories, Inc. The typical subject was a male engineer, with a graduate degree, between the ages of 26-40 (Table 1). This was quite typical of the population from which they were drawn (Table 2). They had no prior experience in Laboratory Training. The subjects were scheduled routinely for training in an ongoing management development program. Since over twenty divisions of the corporation regularly sent participants to training, local differences existed regarding the scheduling of participants. Each division was provided a quota for
Table 1. Breakdown of Subjects Into Experimental and Control Groups Compared by Age and Degree

<table>
<thead>
<tr>
<th>Group</th>
<th>25-30</th>
<th>31-40</th>
<th>41-50</th>
<th>51-60</th>
<th>61-65</th>
<th>None</th>
<th>B.S.</th>
<th>M.S.</th>
<th>Ph.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>4</td>
<td>13</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>II</td>
<td>10</td>
<td>8</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>III*</td>
<td>7</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>IV*</td>
<td>9</td>
<td>11</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>N = 30</td>
<td>39</td>
<td>17</td>
<td>8</td>
<td>6</td>
<td>13</td>
<td>15</td>
<td>46</td>
<td>26</td>
</tr>
</tbody>
</table>

*Control groups

Table 2. Educational Breakdown of Total Technical Supervisor Population Compared to the Study Sample

<table>
<thead>
<tr>
<th>Degree</th>
<th>None</th>
<th>B.S.</th>
<th>M.S.</th>
<th>Ph.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>3%</td>
<td>13%</td>
<td>58%</td>
<td>26%</td>
</tr>
<tr>
<td>Total subjects*</td>
<td>3%</td>
<td>17%</td>
<td>51%</td>
<td>29%</td>
</tr>
</tbody>
</table>

*Reflects the number of technical research supervisors in the sample. For purposes of this comparison, the ten subjects, who were drafting supervisors were removed. They did not have a degree, which is typical of this population of supervisors.
each session. Some routinely sent every supervisor, some solicited volunteers, etc. All subjects were of the same organizational level within the same company, but from widely separated organizational units. There were one hundred subjects in the study. Of these, forty-eight were used exclusively as experimental subjects, while fifty-two served as both experimental and control subjects at different points in time.

Groups

Four experimental groups were used. Groups I and II served exclusively as experimental groups. Groups III and IV served as both experimental and control groups. Each group had 23-27 members, subdivided into training groups of 8-10 members. Each participant belonged to two different groups, which remained constant throughout the training session: a day-time group, which worked on a semi-structured business game and an evening group, which was an unstructured T-group. Approximately one-third of the business game group were members of the same T-group and vice versa. This meant that participants spent all of the training session with some participants, part of the training session with other participants, and virtually none of the training situation with other participants.
Procedures for the Experiment

This section describes the trainers, the training program, the evaluation instruments, procedures in data collection, and statistical analyses of the data.

Trainers

Three trainers were used throughout the study. They were randomly assigned to training groups. All had master's degrees in Counseling and Guidance with a background in group work. Two of the trainers were males, while the third was a female. One session was supplemented by a fourth trainer who had a master's degree in Business Administration and a background in Laboratory Training. He is currently finishing a second master's degree in Counseling and Guidance. No particular instructions were given to the trainers other than to lead their groups in their usual manner. All of the trainers were on the payroll of Bell Telephone Laboratories and comprised the Management Development and Training Group.

Training Program

The training program had several distinct ingredients, each comprising approximately one-third of the training time. There were twelve 30-40 minute lectures delivered by the trainers to the total group. About half of the lectures dealt with topics concerning the life of the training program itself (i.e., social perception, feedback, frustration-aggression, supportive
and defensive climates, etc.). The other half of the lectures dealt with back-home applications (i.e., leadership styles, motivation, merging individual and organizational goals, etc.). Each lecture was followed by a free discussion session. There was a lecture at 8:30 each morning and another lecture at 1:30 each afternoon.

Participants were sent copies of Leavitt's (1964) Managerial Psychology and Orwell's (1946) Animal Farm as pre-conference readings. Assigned chapters were discussed each day following the lectures in subgroups of eight to ten. The readings usually coincided with the lecture material of the day.

The latter half of the mornings and the first half of the afternoons each day were devoted to a business game, entitled "Progressive Electronics." The task in this semi-structured business game was to re-design the Human Relations aspects of a mythical company quite similar to Bell Telephone Laboratories. The last half-hour of each work session was devoted to completion and discussion of a group dynamics oriented rating scale similar to those first developed by Blake, Mouton, Barnes, and Greiner (1964). Therefore, the "Progressive Electronics" game had both task-oriented and process-oriented goals and tasks.

Late afternoons were devoted to free time. Some participants read, some rode bicycles on the deserted boardwalk, played billiards, etc. Most used this opportunity to review the day's events and get better acquainted with each other.
The evenings were devoted to unstructured T-groups. Each group had its own meeting room and trainer. The T-groups were similar to those reported elsewhere in the literature by the National Training Laboratories and other organizations. Bradford, Gibb, and Benne (1964), Schein and Bennis (1965), and Weschler and Reisel (1959) have written good descriptions of typical T-groups. (This study earlier defined a T-group on page 8.)

In general, it can be said that each day had its own schedule and rhythm. Activities flowed from predominantly cognitive activities in the mornings into predominantly affective activities in the evenings. The afternoons were more of a mixture.

The week began with a social hour and buffet dinner on Sunday afternoon and concluded with a longer, somewhat noisier social hour and free evening on Thursday. Friday was primarily concerned with wrap-ups and "back-home" type applications. The participants returned to their regular work settings on the following Monday.

All four groups received training in the fall of 1969; Group I in September, Group II in October, Group III in November, and Group IV in December.
Evaluation Instruments

**Fundamental Interpersonal Relations Orientation-Behavior:**

The basic instrument for measuring change was Schutz's Fundamental Interpersonal Relations Orientation-Behavior (FIRO-B). FIRO-B (Appendix A) is based upon William Schutz's (1958) theory of interpersonal behavior in groups. Schutz postulated three fundamental areas of interpersonal need: inclusion, control, and affection. Each need is broken down into the need which the individual actively expresses toward other people and the extent to which the individual desires that such behavior be directed toward him.

The instrument is a questionnaire composed of six Guttman-type scales of nine items each, all intermingled. It yields a score from 0 to 9 on each scale. There are no equivalent forms.

The instrument has been used in previous research on Laboratory Training. Campbell and Dunnette (1968) in their review of the research literature on Management Development found FIRO-B to be one of the most promising instruments available for this type of study. It has a test-retest reliability of .76 and a .94 coefficient of internal consistency. The content validity is highly regarded (Buros 1965). Considerable data concerning concurrent, construct, and predictive validity were reported in Schutz (1958). Perhaps the most germane of these validation studies are those comparing scores on FIRO-B with political
attitudes, occupational choice, conformity, personality tests, and behavior measures. Comparisons of FIRO-B with already existent groups or individuals with known attitudes are significant at the .01 or .05 level. An earlier version of FIRO-B was correlated significantly at the .01 level with selected scales of several standard personality measures: the California F-scale, the Edwards Personal Preference Schedule, the Bales and Couch Value Profile, and the La Forge and Suczek Interpersonal Check-list. Schutz (1958) reported a number of studies comparing FIRO-B scores with observed behavior in groups. Most of these are significant at the .01 or .05 level.

Observer Reports: Bunker (1965), Miles (1965), and Valiquet (1964) used similar observer reports in their studies. The reports were a one-page xeroxed form asking one open-ended question: "Over a period of time people may change in the ways they work with other people. Do you believe that ______ has changed his behavior in working with people over the last two months as compared with the previous two months in any specific ways? If YES, please describe."

Copies of the forms sent at the end of two months and four months are included in the appendices.

Since the form was not a standardized instrument, it did not have a built-in scoring mechanism suitable for statistical manipulation. Therefore, the researcher sorted the observer reports into three categories: no change, some change, and much
change. The observer reports were coded 1 for no change, 2 for some change, and 3 for much change.

Procedures in Data Collection

The procedure to measure change is illustrated in Figure 1.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I (N=23)</td>
<td>T₁</td>
<td>T₂</td>
<td>T₃</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group II (N=25)</td>
<td>T₁</td>
<td>T₂</td>
<td>T₃</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group III (N=25)</td>
<td>T₁</td>
<td>T₂</td>
<td>T₃</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group IV (N=27)</td>
<td>T₁</td>
<td>T₂</td>
<td>T₃</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

T = Test

Figure 1. Time of Data Collection

Schutz's (1958) Fundamental Interpersonal Relations Orientation-Behavior questionnaire (FIRO-B) was used as the basic measuring instrument.

Groups I and II were tested at the opening of their week-long training sessions. Follow-up tests were administered through the mail two months and four months following completion of the training.
Groups III and IV served as control groups. They were tested two months prior to training. This pre-test was administered through the mail. A second test was administered at the opening of their week-long training sessions. A third test was administered through the mail two months following training.

Therefore, Groups I and II were measured for changes at the conclusion of the two months and four months periods following training. Groups III and IV were measured for changes at the conclusion of the two months period preceding training and again two months following training.

Groups III and IV provided additional control data, since they were measured for evidence of change during the two months period before training in addition to changes which occurred during the two months period following training.

One hundred FIRO-B questionnaires were completed at the training site. Two hundred were administered through the mail. All but seven of these were completed and returned. Those not returned were assumed to reflect no change.

In addition to the subjects' self-reports on the FIRO-B questionnaire, supplemental data about both experimental and control subjects were gathered from observers of selected subjects in the back-home setting. At the conclusion of each training laboratory, all subjects supplied the names of three "back-home" colleagues. Most subjects provided the names of their supervisor, a subordinate, and a peer as the observers. A
random sample of four subjects were selected from each group. There were twelve subjects in all. Their observers were sent the "Observer Report" form, discussed above.

These supplemental data were collected at the same points in time that the subjects completed the follow-up tests. Since the observers proved so cooperative, a complete sampling was done for all groups following training. Seventy percent of these forms (218) were returned at the end of two months. Sixty-five percent (193) were returned at the end of four months.

Therefore, it was possible to compare the self-reports of the subjects with "back-home" behavior change as perceived by observers. Chapter 4 will show that the changes were overwhelmingly in a direction that a layman would consider positive.

Statistical Analyses of the Data

There was concern about the equivalence of the subjects in the experimental and control groups. This, of course, could cause different results on the measuring instruments for the different groups. Random assignment of subjects to groups was not possible due to a variety of scheduling problems within the subjects' "back-home" work organizations. Therefore, it was decided to accept group members as scheduled by their work organizations and use a t-test to check the equivalency of the groups, as described below.
To check the comparability of the four groups, the following procedure was used. Mean scores for the six scales of the FIRO-B questionnaire were computed for each group. In testing the homogeneity of variances an F ratio was employed to ensure the validity of the t-test used. Since the variances were statistically homogeneous, the pooled variance t-test was used (Figure 2). A two tailed test at the .05 level of significance was employed.

\[
t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\left(\frac{\sum x_1^2}{n_1} + \frac{\sum x_2^2}{n_2} - \frac{2}{2}\right) \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}
\]

\[
\bar{X}_1 = \text{the mean of group 1}
\]
\[
\bar{X}_2 = \text{the mean of group 2}
\]
\[
\sum x_1^2 = \text{the sum of squared deviations from the mean for group 1}
\]
\[
\sum x_2^2 = \text{the sum of squared deviations from the mean for group 2}
\]
\[
n_1 = \text{the number of subjects in group 1}
\]
\[
n_2 = \text{the number of subjects in group 2}
\]

Figure 2. Formula and Legend for the t-Test of the Significance of Differences Between Means for Independent Small Samples
The study does not specify the optimum direction of change for an individual. It was accepted that the appropriate direction of change depended upon the personality of the individual at the outset of training. For example, the overly dominant would become less controlling, while the overly submissive would become more assertive. The before training scores were correlated with two months after and four months after training scores for each group. Pearson product-moment correlations accordingly were determined for each of the six scales on the FIRO-B questionnaire (Figure 3). Differences between experimental and control group correlations at the .05 level were considered evidence of change.

Differences between groups were determined by comparing the coefficients of correlation. To compensate for variability in the sampling distribution of the Pearson, depending as it does upon the size of both N and r, the recourse was to use Fisher's transformation to Z, whose standard error is related only to N and not to r. The full procedure in evaluating the differences between coefficients of correlation therefore was: to convert the r's to Fisher Z's (using the standard table), subtract the smaller Z from the larger Z, then check the difference (using the standard table) for significance at the .01 and .05 levels. This is a standard procedure recommended by J. P. Guilford (1965) and others.
Summary

In this chapter the setting, design of the experiment, and the procedures used in testing the hypotheses were described. Bell Telephone Laboratories, Inc. sponsored this study as part of its regular ongoing effort at organizational improvement. The company provided the training site and subjects. The training site was a hotel in Ocean City, New Jersey. The subjects were one hundred technical supervisors. They were all male, most had graduate degrees in engineering, and were between the ages of 26-40. Two groups of subjects were used exclusively as
experimental groups. Two other groups served as both experimental and control groups. The subjects were typical of the population from which they were drawn. The four trainers comprised the complete Management Development and Training Group of Bell Telephone Laboratories. They all had graduate degrees and a background in Laboratory Training. The training program was a week long and consisted of lectures, a human relations business game and T-groups. The evaluation instruments were the FIRO-B questionnaire and observer reports from the back-home work setting. Data from two of the experimental groups were collected at the beginning of training, and two months and four months following completion of training. Data from the two control groups were collected two months before training and at the beginning of training. These latter two groups subsequently became experimental groups and data were collected two months following training. A pooled variance t-test was used to check the comparability of the experimental and control groups before training. Differences between groups after training were determined by comparing the coefficients of correlation. Differences at the .05 level of significance were considered evidence of change. This is a standard procedure recommended by Guilford (1965) and others.
CHAPTER 4

RESULTS OF STATISTICAL ANALYSES

Comparative data regarding the subjects of the study before training are described in this chapter. The results of statistical analyses of data collected to test each hypothesis presented in Chapter 1 are also presented. Additional data are presented to analyze the effects of training by degree level and age grouping.

Comparability of Subjects

Comparison by Training Group

To assure comparability of the four groups before training, the following procedures were used. Individual and mean scores for the six scales of the FIRO-B questionnaire were determined for each group. In testing the homogeneity of variances an F ratio was employed to ensure the validity of the t-test used. Since the variances were statistically homogeneous, the pooled variance t-test was used. A two tailed test at the .05 level of significance was employed. There was one significant difference: Group I differed from Groups II and III on the wanted control score (i.e., they were more submissive) before
training. Otherwise there were no significant differences between any of the four groups, on any of the six scales, before training. Table 3 shows the before training mean scores for each of the groups.

Table 3. Comparison by Training Group of Before Training Mean Scores Using a Two tailed t-Test

<table>
<thead>
<tr>
<th>Group</th>
<th>FIRO-B Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expressed</td>
</tr>
<tr>
<td></td>
<td>Inclusion</td>
</tr>
<tr>
<td>I (N=23)</td>
<td>3.61</td>
</tr>
<tr>
<td>II (N=25)</td>
<td>3.28</td>
</tr>
<tr>
<td>III (N=25)</td>
<td>3.80</td>
</tr>
<tr>
<td>IV (N=27)</td>
<td>3.04</td>
</tr>
</tbody>
</table>

*Group I was significantly different at the .05 level from Groups II and III.

Group I which had the highest wanted control score (i.e., they were more submissive) before training, experienced the most change following training. At that time, they were no longer significantly different from the other groups on the wanted control score. A comparison of before and after training mean scores can be found in Appendix H.
Comparison by Degree Level

The same procedure was used to compare subjects by degree level. An F ratio was used to select the pooled variance t-test. Several significant differences were noted, as follows: the no degree subjects had fewer expressed control needs (i.e., they were less dominant), while the bachelor's degree subjects had higher wanted inclusion needs. Table 4 shows the before training mean scores for each degree level group.

Table 4. Comparison by Degree Level of Before Training Mean Scores Using a Two Tailed t-Test

<table>
<thead>
<tr>
<th>Degree Level</th>
<th>FIRO-B Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expressed Inclusion</td>
</tr>
<tr>
<td>No Degree (N=13)</td>
<td>3.38</td>
</tr>
<tr>
<td>Bachelor's (N=15)</td>
<td>3.53</td>
</tr>
<tr>
<td>Master's (N=46)</td>
<td>3.52</td>
</tr>
<tr>
<td>Doctor's (N=26)</td>
<td>3.76</td>
</tr>
</tbody>
</table>

*The No Degree Group of supervisors was significantly different at the .01 level from all other groups of supervisors.

**The Bachelor's Degree Group of supervisors was significantly different at the .05 level from the No Degree Group of supervisors.
The No Degree Group which had the lowest expressed control score (i.e., they were less dominant) changed the most on this scale following training. The Bachelor's Degree Group, however, experienced little change on the Wanted Inclusion Scale following training. This will be shown later as largely a function of age. A comparison of before and after training mean scores can be found in Appendix I.

Comparison by Age Group

The same procedure was used to compare subjects by age group. An F ratio was used to select the pooled variance t-test. Several significant differences were noted, as follows: the age 25-30 group had the lowest expressed affection score, while the age 31-40 group had the highest wanted affection score. These data are presented in Table 5.

The Expressed Affection scores for the Age 25-30 Group and the Wanted Affection scores for the Age 31-40 Group were the most atypical before training. Following training, they were no longer significantly different on these scores. A comparison of before and after training mean scores can be found in Appendix J.

Comparison of Observer Reports at the Conclusion of the Two Month Period Before Training

There were virtually no observed changes before training. Only three observers out of twenty-four noted any change during the two month period immediately preceding training. These data are presented in Table 6.
Table 5. Comparison by Age Grouping of Before Training Mean Scores Using a Two Tailed t-Test

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Ex-pressed Inclusion</th>
<th>Wanted Inclusion</th>
<th>Ex-pressed Control</th>
<th>Wanted Control</th>
<th>Ex-pressed Affection</th>
<th>Wanted Affection</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-30 (N=30)</td>
<td>3.53</td>
<td>2.60</td>
<td>4.03</td>
<td>3.83</td>
<td>2.13*</td>
<td>3.77</td>
</tr>
<tr>
<td>31-40 (N=39)</td>
<td>3.95</td>
<td>3.97</td>
<td>4.72</td>
<td>3.54</td>
<td>3.08</td>
<td>5.28**</td>
</tr>
<tr>
<td>41-50 (N=17)</td>
<td>3.47</td>
<td>3.82</td>
<td>3.88</td>
<td>3.94</td>
<td>2.41</td>
<td>3.00</td>
</tr>
<tr>
<td>51-60 (N=8)</td>
<td>3.38</td>
<td>2.50</td>
<td>3.88</td>
<td>3.88</td>
<td>3.25</td>
<td>4.88</td>
</tr>
<tr>
<td>61-65 (N=6)</td>
<td>3.17</td>
<td>4.50</td>
<td>3.50</td>
<td>3.67</td>
<td>2.33</td>
<td>4.83</td>
</tr>
</tbody>
</table>

*The Age 25-30 Group of supervisors was significantly different at the .05 level from the Age 31-40 and Age 51-60 Groups.

**The Age 31-40 Group was significantly different at the .01 level from the Age 41-50 Group. The Age 31-40 Group also was significantly different at the .05 level from the Age 25-30 Group.
Table 6. Changes in Members of Comparison Groups for the Two Month Period Before Training as Reported by Observers*

<table>
<thead>
<tr>
<th>Group</th>
<th>Observer 1</th>
<th>Observer 2</th>
<th>Observer 3</th>
<th>All Observers</th>
</tr>
</thead>
<tbody>
<tr>
<td>III</td>
<td>1.00</td>
<td>1.25</td>
<td>1.00</td>
<td>1.08</td>
</tr>
<tr>
<td>(N=25)</td>
<td>(N=4)</td>
<td>(N=4)</td>
<td>(N=4)</td>
<td>(N=12)</td>
</tr>
<tr>
<td>IV</td>
<td>1.00</td>
<td>1.50</td>
<td>1.50</td>
<td>1.33</td>
</tr>
<tr>
<td>(N=27)</td>
<td>(N=4)</td>
<td>(N=4)</td>
<td>(N=4)</td>
<td>(N=12)</td>
</tr>
<tr>
<td>Totals</td>
<td>1.00</td>
<td>1.38</td>
<td>1.25</td>
<td>1.21</td>
</tr>
<tr>
<td></td>
<td>(N=8)</td>
<td>(N=8)</td>
<td>(N=8)</td>
<td>(N=24)</td>
</tr>
</tbody>
</table>

*1 = no change, 2 = some change, 3 = much change.

In summary, there were a number of significant differences by Training, Degree, and Age Groups before training. Following training most of these significant differences had disappeared. There was one exception to this pattern: the Bachelor's Degree Group continued in their higher wanted inclusion score. This will be shown later as largely a function of age. Comparisons of before and after training mean scores can be found in Appendices H, I, and J.

**Statistical Analyses of Data Collected to Test the Hypotheses**

Testing Hypothesis I

Hypothesis I stated that there will be no significant change in the expressed inclusion needs of individual
participants following Laboratory Training. To test this hypoth-
esis, Pearson product-moment correlations comparing before train-
ing scores with two months and four months after training scores
for each group were determined. The differences in correlations
between the experimental and control groups were tested at the
.01 and .05 levels. (See Chapter 3 for details on the procedures
used.) These data are presented in Table 7.

The data indicated that the differences between the ex-
perimental and control groups were significant at the .01 level,
after two months (that is, two months following training for the
experimental groups). After four months (two months after train-
ing for the control groups), the differences between the exper-
imental and control groups were significant at the .05 level.
The experimental groups had sustained their earlier change,
while the control groups were moving in the direction of modest
change after training. Therefore, the null hypothesis was re-
jected. It was concluded that significant change in the ex-
pressed inclusion needs of individuals is produced by Laboratory
Training.

Testing Hypothesis II

Hypothesis II stated that there will be no significant
change in the wanted inclusion needs of individual participants
following Laboratory Training. To test this hypothesis, Pearson
product-moment correlations comparing before training scores
Table 7. Comparison of Pearson r Correlations of Before Training Scores with Two Months and Four Months After Training Scores on the Expressed Inclusion Needs Scale of FIRO-B by Training Group Using a Two Tailed t-Test

<table>
<thead>
<tr>
<th>Training Group</th>
<th>Mean Before Score*</th>
<th>Pearson r After Two Months</th>
<th>Pearson r After Four Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>3.61 Training</td>
<td>0.5667**</td>
<td>0.5778***</td>
</tr>
<tr>
<td>II</td>
<td>3.28 Training</td>
<td>1.4808**</td>
<td>0.5362***</td>
</tr>
<tr>
<td>III (N=25)</td>
<td>3.80</td>
<td>0.8504 Training</td>
<td>0.7525</td>
</tr>
<tr>
<td>IV (N=27)</td>
<td>3.04</td>
<td>0.6459 Training</td>
<td>0.6429</td>
</tr>
</tbody>
</table>

*There were no significant differences between groups on the mean before training scores.

**Difference between correlations of experimental and control groups significant at the .01 level.

***Difference between correlations of experimental and control groups significant at the .05 level.
with two months and four months after scores for each group were determined. The differences in correlations between the experimental and control groups were tested at the .01 and .05 levels. These data are presented in Table 8.

The data indicated that the differences between the experimental and control group correlations were significant at the .05 level, after two months (that is, two months following training for the experimental groups). After four months (two months after training for the control group), there were no longer any significant differences. The control groups had changed, while the experimental groups had sustained their earlier change. Therefore, the null hypothesis was rejected. It was concluded that significant change in the wanted inclusion needs of individuals is produced by Laboratory Training.

Testing Hypothesis III

Hypothesis III stated that there will be no significant change in the expressed control needs of individual participants following Laboratory Training. To test this hypothesis, Pearson product-moment correlations comparing before training scores with two months and four months after scores for each group were determined. The differences in correlations between the experimental and control groups were tested at the .01 and .05 levels. These data are presented in Table 9.
Table 8. Comparison of Pearson r Correlations of Before Training Scores with Two Months and Four Months After Training Scores on the Wanted Inclusion Needs Scale of FIRO-B by Training Group Using a Two Tailed t-Test

<table>
<thead>
<tr>
<th>Training Group</th>
<th>Mean Before Score*</th>
<th>Pearson r After Two Months</th>
<th>Pearson r After Four Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (N=23)</td>
<td>3.74 Training</td>
<td>0.6194**</td>
<td>0.6646</td>
</tr>
<tr>
<td>II (N=25)</td>
<td>3.60 Training</td>
<td>0.7739**</td>
<td>0.6380</td>
</tr>
<tr>
<td>III (N=25)</td>
<td>3.56</td>
<td>0.8768 Training</td>
<td>0.6692</td>
</tr>
<tr>
<td>IV (N=27)</td>
<td>3.41</td>
<td>0.9017 Training</td>
<td>0.6984</td>
</tr>
</tbody>
</table>

*There were no significant differences between groups on the mean before training scores.

**Difference between correlations of experimental and control groups significant at the .05 level.
Table 9. Comparison of Pearson r Correlations of Before Training Scores with Two Months and Four Months After Training Scores on the Expressed Control Needs Scale of FIRO-B by Training Group Using a Two Tailed t-Test

<table>
<thead>
<tr>
<th>Training Group</th>
<th>Mean Before Score*</th>
<th>Pearson r After Two Months</th>
<th>Pearson r After Four Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (N=23)</td>
<td>4.17 Training</td>
<td>0.2455**</td>
<td>0.2268**</td>
</tr>
<tr>
<td>II (N=25)</td>
<td>4.92 Training</td>
<td>0.7610</td>
<td>0.6380</td>
</tr>
<tr>
<td>III (N=25)</td>
<td>3.80</td>
<td>0.7740 Training</td>
<td>0.7417</td>
</tr>
<tr>
<td>IV (N=27)</td>
<td>4.85</td>
<td>0.7700 Training</td>
<td>0.8574</td>
</tr>
</tbody>
</table>

*There were no significant differences between groups on the mean before training scores.

**Difference between correlations of Group I and both control groups significant at the .01 level.
The data in Table 9 indicate that one experimental group experienced significant change at the .01 level after training, while the other experimental group did not. Considering the experimental and control subjects collectively, the experimentals differed from the controls at the .05 level. However, since the control groups did not change following training, the null hypothesis was upheld. It was concluded that significant change in the expressed control needs of individuals is not produced by Laboratory Training.

Testing Hypothesis IV

Hypothesis IV stated that there will be no significant change in the wanted control needs of individual participants following Laboratory Training. To test this hypothesis, Pearson product-moment correlations comparing before training scores with two months and four months after scores for each group were determined. The differences in correlations between the experimental and control groups were tested at the .01 and .05 levels. These data are presented in Table 10.

The data indicate that one experimental group experienced significant change at the .05 level after training, while the other experimental group did not. Three of four groups experienced considerable change following training. However, the data did not warrant rejection of the null hypothesis, based upon our own definition of significant change. Therefore, the null hypothesis was upheld. It was concluded that significant change
Table 10. Comparison of Pearson r Correlations of Before Training Scores with Two Months and Four Months After Training Scores on the Wanted Control Needs Scale of FIRO-B by Training Group Using a Two Tailed t-Test

<table>
<thead>
<tr>
<th>Training Group</th>
<th>Mean Before Score</th>
<th>Pearson r After Two Months</th>
<th>Pearson r After Four Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (N=23)</td>
<td>4.30 Training*</td>
<td>0.4424**</td>
<td>0.3819</td>
</tr>
<tr>
<td>II (N=25)</td>
<td>3.12 Training</td>
<td>0.5764</td>
<td>0.4384</td>
</tr>
<tr>
<td>III (N=25)</td>
<td>3.12</td>
<td>0.7938 Training</td>
<td>0.7972</td>
</tr>
<tr>
<td>IV (N=27)</td>
<td>3.74</td>
<td>0.5131 Training</td>
<td>0.3683</td>
</tr>
</tbody>
</table>

*Group I was significantly different at the .05 level from Groups II and III.

** Difference between correlations of Group I and Group III significant at .05 level.
in the wanted control needs of individuals is not produced by Laboratory Training.

Testing Hypothesis V

Hypothesis V stated that there will be no significant change in the expressed affection needs of individual participants following Laboratory Training. To test this hypothesis, Pearson product-moment correlations comparing before training scores with two months and four months after scores for each group were determined. The differences in correlations between the experimental and control groups were tested at the .01 and .05 levels. These data are presented in Table 11.

The data indicate that both experimental groups experienced significant change at the .05 level two months following training. The change had increased to the .01 level after four months. Since two of the four experimental groups showed significant change following training, the null hypothesis was rejected. It was concluded that significant change in the expressed affection needs of individuals is produced by Laboratory Training.

Testing Hypothesis VI

Hypothesis VI stated that there will be no significant change in the wanted affection needs of individual participants following Laboratory Training. To test this hypothesis, Pearson product-moment correlations comparing before training scores with
Table 11. Comparison of Pearson r Correlations of Before Training Scores with Two Months and Four Months After Training Scores on the Expressed Affection Needs Scale of FIRO-B by Training Group Using a Two Tailed t-Test

<table>
<thead>
<tr>
<th>Training Group</th>
<th>Mean Before Score*</th>
<th>Pearson r After Two Months</th>
<th>Pearson r After Four Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (N=23)</td>
<td>3.10 Training</td>
<td>0.6532**</td>
<td>0.5762***</td>
</tr>
<tr>
<td>II (N=25)</td>
<td>2.44 Training</td>
<td>0.6679**</td>
<td>0.3231***</td>
</tr>
<tr>
<td>III (N=25)</td>
<td>2.64</td>
<td>0.9044 Training</td>
<td>0.8073</td>
</tr>
<tr>
<td>IV (N=27)</td>
<td>2.33</td>
<td>0.8278 Training</td>
<td>0.7897</td>
</tr>
</tbody>
</table>

*There were no significant differences between groups on the mean before training scores.

**Differences between correlations of experimental and control groups significant at the .05 level.

***Differences between correlations of experimental and control groups significant at the .05 level.
two months and four months after scores for each group were determined. The differences in correlations between the experimental and control groups were tested at the .01 and .05 levels. These data are presented in Table 12.

Table 12. Comparison of Pearson r Correlations of Before Training Scores with Two Months and Four Months After Training Scores on the Wanted Affection Needs Scale of FIRO-B by Training Group Using a Two Tailed t-Test

<table>
<thead>
<tr>
<th>Training Group</th>
<th>Mean Before Score*</th>
<th>Pearson r After Two Months</th>
<th>Pearson r After Four Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (N=23)</td>
<td>5.17 Training</td>
<td>0.6917</td>
<td>0.8115</td>
</tr>
<tr>
<td>II (N=25)</td>
<td>5.08 Training</td>
<td>0.6824</td>
<td>0.5442</td>
</tr>
<tr>
<td>III (N=25)</td>
<td>4.56</td>
<td>0.5851 Training</td>
<td>0.4546</td>
</tr>
<tr>
<td>IV (N=27)</td>
<td>4.11</td>
<td>0.8011 Training</td>
<td>0.7633</td>
</tr>
</tbody>
</table>

*There were no significant differences between groups on the mean before training scores.
The data indicated that there were no significant differences between the experimental and control groups. It should be noted that three of the four groups were moving in the direction of change; however, none of the changes came close to statistical significance. Therefore, the null hypothesis was upheld. It was concluded that significant change in the wanted affection needs of individuals is not produced by Laboratory Training.

Testing Hypothesis VII

Hypothesis VII stated that observers in the work setting will observe no noticeable change in the behavior of individual participants following Laboratory Training. To test this hypothesis, an observer report was mailed to three observers for each subject, two months following training. Three hundred reports were mailed and 218 were returned. This represented a 70% return. These reports were then coded in relation to the goals of the training program, as follows: 1 = no change, 2 = some change, and 3 = much change. The mean observer rating (N=218) two months after training was 1.61. A one tailed t-test at the .05 level was employed to compare the mean observer scores before training with the mean observer scores after training. The difference in mean scores was not significant. This was accepted as evidence that there was not a noticeable change in the behavior of individual participants following Laboratory Training. Although the amount of change was not statistically significant, it was in the direction and of the type to be expected
following Laboratory Training. It was interesting to note that the peers (Observer 2) of the participants noticed the most change. Subordinates (Observer 1) noticed the second most changes, while superiors (Observer 3) noticed the least changes. These data are presented in Table 13. Typical observer reports appear later in this chapter.

Observer reports to three observers for each subject in Groups I and II were again mailed four months following training. One hundred forty-four reports were mailed and ninety-three were returned. This represented a 65% return. The reports were then coded in the same manner as above. The mean observer rating (N=93) four months after training was 1.47. Another one tailed t-test at the .05 level was employed to compare the mean observer scores before training with the mean observer scores after training. The difference in mean scores was not significant. This was accepted as evidence that there was still not a noticeable change in the behavior of individual participants four months following training. Peers, subordinates, and superiors noticed approximately the same amount of change. These data are presented in Table 14.

The null hypothesis was therefore upheld. It was concluded that observers in the work setting do not observe noticeable change in the behavior of individuals following Laboratory Training. They observed the type of change to be expected, but the amount of observed change was not statistically significant.
Table 13. Comparison by Training Group of Mean Observer Scores at the Conclusion of the Two Month Period Following Training*

<table>
<thead>
<tr>
<th>Group</th>
<th>Reports Returned</th>
<th>Observer Reports</th>
<th>All Observers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Observer 1</td>
<td>Observer 2</td>
</tr>
<tr>
<td>I</td>
<td>75% (N=23)</td>
<td>1.67 (N=18)</td>
<td>1.90 (N=19)</td>
</tr>
<tr>
<td>II</td>
<td>73% (N=25)</td>
<td>1.43 (N=16)</td>
<td>1.90 (N=20)</td>
</tr>
<tr>
<td>III</td>
<td>72% (N=25)</td>
<td>1.59 (N=17)</td>
<td>1.84 (N=19)</td>
</tr>
<tr>
<td>IV</td>
<td>59% (N=27)</td>
<td>2.25 (N=16)</td>
<td>1.90 (N=18)</td>
</tr>
<tr>
<td>Totals</td>
<td>70% (N=67)</td>
<td>1.69 (N=76)</td>
<td>1.89 (N=65)</td>
</tr>
</tbody>
</table>

*1 = no change, 2 = some change, 3 = much change.
Table 14. Comparison by Training Group of Mean Observer Scores at the Conclusion of the Two to Four Month Period Following Training*

<table>
<thead>
<tr>
<th>Group</th>
<th>Reports Returned</th>
<th>Observer Reports</th>
<th>Observer Reports</th>
<th>Observer Reports</th>
<th>Observer Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Observer 1</td>
<td>Observer 2</td>
<td>Observer 3</td>
<td>All Observers</td>
</tr>
<tr>
<td>I</td>
<td>64% (N=23)</td>
<td>1.38 (N=16)</td>
<td>1.33 (N=15)</td>
<td>1.69 (N=13)</td>
<td>1.45 (N=44)</td>
</tr>
<tr>
<td>II</td>
<td>65% (N=25)</td>
<td>1.67 (N=12)</td>
<td>1.70 (N=20)</td>
<td>1.18 (N=17)</td>
<td>1.51 (N=49)</td>
</tr>
<tr>
<td>Totals</td>
<td>65% (N=93)</td>
<td>1.50 (N=28)</td>
<td>1.54 (N=35)</td>
<td>1.40 (N=30)</td>
<td>1.47 (N=93)</td>
</tr>
</tbody>
</table>

*1 = no change, 2 = some change, 3 = much change.

In summary, three of the seven null hypotheses were rejected. It was concluded that Laboratory Training produces significant change in the expressed inclusion and affection needs of individuals. Similarly, Laboratory Training produces significant change in the wanted inclusion needs of individuals. These changes are not noticeable to a significant extent to observers (peers, subordinates, and superiors) in the back-home work setting following training.

Laboratory Training, however, does not produce significant change in the expressed control, wanted control, and wanted affection needs of individuals.
Changes by Degree Level

The most change was experienced by the Master's Degree Group. These supervisors showed considerable change on every one of the six FIRO-B scales. The other groups also changed. However, their changes were much more selective. The No Degree Group changed most on the Expressed Control, Expressed Affection, and Wanted Affection scores. The Doctor's Degree Group showed greater change in relation to independence and self-assertion. The Bachelor's Degree Group changed primarily in the direction of being more assertive and wanting closer, more personal relationships with others. All of these changes were greater at the conclusion of four months than they were at the conclusion of two months. These data are shown in Tables 15 and 16.

There was a close relationship between degree level and age grouping. The Master's Degree Group was the youngest, the Doctor's Degree Group the second youngest; the No Degree Group and Bachelor's Degree Groups were considerably older. Therefore, the differences between groups were more of a function of age than degree level as will be seen in the next section.
Table 15. Comparison of Pearson r Correlations of Before Training Scores with Two Months After Training Scores for All Scales of FIRO-B by Degree Level

<table>
<thead>
<tr>
<th>Degree Level</th>
<th>FIRO-B Scale</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expressed Inclusion</td>
<td>Wanted Inclusion</td>
<td>Expressed Control</td>
<td>Wanted Control</td>
<td>Expressed Affection</td>
<td>Wanted Affection</td>
</tr>
<tr>
<td>No Degree (N=13)</td>
<td>0.6643</td>
<td>0.7402</td>
<td>0.6896</td>
<td>0.8980</td>
<td>0.6165</td>
<td>0.5745</td>
</tr>
<tr>
<td>Bachelor's (N=15)</td>
<td>0.8293</td>
<td>0.8050</td>
<td>0.8951</td>
<td>0.4517</td>
<td>0.9552</td>
<td>0.5767</td>
</tr>
<tr>
<td>Master's (N=46)</td>
<td>0.5551</td>
<td>0.6880</td>
<td>0.5399</td>
<td>0.4084</td>
<td>0.6845</td>
<td>0.7788</td>
</tr>
<tr>
<td>Doctor's (N=26)</td>
<td>0.7029</td>
<td>0.7087</td>
<td>0.7691</td>
<td>0.3815</td>
<td>0.7976</td>
<td>0.6327</td>
</tr>
<tr>
<td>Mean (N=100)</td>
<td>0.6879</td>
<td>0.7355</td>
<td>0.7234</td>
<td>0.5349</td>
<td>0.7635</td>
<td>0.6407</td>
</tr>
</tbody>
</table>
Table 16. Comparison of Pearson r Correlations of Before Training Scores with Four Months After Training Scores for All Scales of FIRO-B by Degree Level

<table>
<thead>
<tr>
<th>Degree Level</th>
<th>FIRO-B Scale</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expressed Inclusion</td>
<td>Wanted Inclusion</td>
<td>Expressed Control</td>
<td>Wanted Control</td>
<td>Expressed Affection</td>
<td>Wanted Affection</td>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Degree (N=6)</td>
<td>0.9279</td>
<td>0.9806</td>
<td>0.3752</td>
<td>0.6072</td>
<td>0.0000</td>
<td>0.2928</td>
<td>0.5306</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor's (N=6)</td>
<td>0.8315</td>
<td>0.9763</td>
<td>0.2132</td>
<td>0.1876</td>
<td>0.9585</td>
<td>0.5066</td>
<td>0.6123</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master's (N=25)</td>
<td>0.3748</td>
<td>0.2644</td>
<td>0.2071</td>
<td>0.3410</td>
<td>0.4807</td>
<td>0.6226</td>
<td>0.3818</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctor's (N=11)</td>
<td>0.7801</td>
<td>0.8806</td>
<td>0.7012</td>
<td>0.2960</td>
<td>0.4729</td>
<td>0.8160</td>
<td>0.6578</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (N=48)</td>
<td>0.5286</td>
<td>0.7755</td>
<td>0.3742</td>
<td>0.3580</td>
<td>0.4780</td>
<td>0.5595</td>
<td>0.5456</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Changes by Age Group

Changes following training were in almost direct relationship to age. That is, members of the youngest age group (25-30) experienced the most change; members of the second youngest group (31-40) experienced the second most change, etc. Beyond age forty, the rate of change noticeably slowed down. However, members of all age groups experienced some change. (These data are shown in Tables 17 and 18.) Therefore, it can be said that Laboratory Training was most effective for the younger supervisors.

The types of changes varied by age, also. The Age 25-30 Group noticeably changed on four of the six FIRO-B scales: Expressed Inclusion, Expressed Control, Wanted Control, and Expressed Affection. That is, members of the Age 25-30 Group were becoming outwardly more expressive in all three behavior scales. They expressed more Inclusion, Control, and Affection Needs. In behavioral terms, they've become emotionally more expressive and assertive.

Members of the Age 31-40 Group changed in much the same ways, except to a lesser degree. Beyond age forty, changes assumed a different pattern. Members of the Age 41-50 Group changed most in the expression of Inclusion, Control, and Affection Needs. Behaviorally, their Wanted Needs were more stabilized, while they became more outwardly expressive.
Table 17. Comparison of Pearson r Correlations of Before Training Scores with Two Months After Training Scores for All Scale of FIRO-B by Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Expressed Inclusion</th>
<th>Wanted Inclusion</th>
<th>Expressed Control</th>
<th>Wanted Control</th>
<th>Expressed Affection</th>
<th>Wanted Affection</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-30 (N=30)</td>
<td>0.5423</td>
<td>0.7780</td>
<td>0.5789</td>
<td>0.3634</td>
<td>0.4821</td>
<td>0.7269</td>
<td>0.5786</td>
</tr>
<tr>
<td>31-40 (N=39)</td>
<td>0.6131</td>
<td>0.6161</td>
<td>0.5646</td>
<td>0.3586</td>
<td>0.8182</td>
<td>0.6192</td>
<td>0.5983</td>
</tr>
<tr>
<td>41-50 (N=17)</td>
<td>0.7301</td>
<td>0.8540</td>
<td>0.8874</td>
<td>0.6967</td>
<td>0.7775</td>
<td>0.8510</td>
<td>0.8328</td>
</tr>
<tr>
<td>51-60 (N=8)</td>
<td>0.9809</td>
<td>0.9714</td>
<td>0.9090</td>
<td>0.7236</td>
<td>0.9493</td>
<td>0.9576</td>
<td>0.9153</td>
</tr>
<tr>
<td>61-65 (N=6)</td>
<td>0.4136</td>
<td>0.6796</td>
<td>0.9498</td>
<td>0.9179</td>
<td>0.8504</td>
<td>0.5717</td>
<td>0.6437</td>
</tr>
<tr>
<td>Mean (N=100)</td>
<td>0.6560</td>
<td>0.7798</td>
<td>0.7297</td>
<td>0.6120</td>
<td>0.7755</td>
<td>0.7453</td>
<td>0.7164</td>
</tr>
</tbody>
</table>
### Table 18. Comparison of Pearson r Correlations of Before Training Scores with Four Months After Training Scores for All Scales of FIRO-B by Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>FIRO-B Scale</th>
<th>25-30 (N=14)</th>
<th>31-40 (N=21)</th>
<th>41-50 (N=8)</th>
<th>51-60 (N=2)</th>
<th>61-65 (N=3)</th>
<th>Mean (N=48)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expressed Inclusion</td>
<td>Wanted Inclusion</td>
<td>Expressed Control</td>
<td>Wanted Control</td>
<td>Expressed Affection</td>
<td>Wanted Affection</td>
<td>Mean</td>
</tr>
<tr>
<td>25-30</td>
<td>0.4439</td>
<td>0.6306</td>
<td>0.3720</td>
<td>0.0222</td>
<td>0.2439</td>
<td>0.7390</td>
<td>0.4086</td>
</tr>
<tr>
<td>31-40</td>
<td>0.5940</td>
<td>0.4981</td>
<td>0.1809</td>
<td>0.4000</td>
<td>0.5609</td>
<td>0.5797</td>
<td>0.4689</td>
</tr>
<tr>
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Members of the Age 51-60 Group experienced very little change.

Members of the Age 61-65 Group experienced the least change. This group changed mostly in the direction of expressing more warmth toward others. It is interesting to note that this was their lowest FIRO-B score before training.

In general, it might be said that one overall effect of Laboratory Training was to make the subjects more like each other. Groups with the largest deviations in their before training scores, changed the most. Most of these changes grew with the passage of time following training. The amount of change, however, was a function of age. The youngest age group changed the most; while the oldest age group changed the least. The individual changes tended to be in the direction of being more expressive and wanting more personal interaction with others.

Some typical comments on the observer reports are presented in the next three sections. Some of these comments indicate observed changes in participants following training, while others indicate the lack of participant changes. In general, the changes were quite consistent with the goals of the training.

Some Typical Observer Comments
Indicating Much Change

"He has shown a greater understanding in delegation, human behavior in getting things done. He has shown a change in
his behavior with other people in that he has an understanding in getting his ideas across as if he was on the receiving end."

"Yes. I find him easier to work with. He is more communicative and less provincial, and is less argumentative. He listens to the other fellow's viewpoint."

"Yes, he is more sensitive about establishing proper communications with others. He is seeking feedback and providing feedback when conversing with others more so than before. He has been trying harder to find the objectives of all the tasks which he is assigned. I think, he has also made a decision regarding what kind of a supervisor he wants to be.

Yes. J. has become much less belligerent and more open. Where, in conferences in the past, he would argue to the top of the heap, today he tries to avoid fights and reduce tensions when they build up. In private or small group discussions he is much more prone to listen and consider other opinions than he used to be. In my opinion, he is much easier to work with and has risen in my estimation of supervisors in my acquaintance from low to near top of the group. I can't say that this was due to your training program, but if it was, it was certainly worthwhile!

"Yes. He appears to be more assertive in his dealings with the people that report to him, as if he has a more definite philosophy about management and the confidence to put it into practice."

I note more interest in assessment of subordinates and a firmer approach to corrective action ... a greater interest and confidence in dealing with people. [He has outside after-hour interests which involve numerous contacts with complete strangers--says course has given him a tremendous new confidence in this area.]
This is a fine person to know, not just as a subordinate or associate, but as a person. I believe we have an even closer personal and working relationship since the course. Can't wait to send my other man.

I believe that I detect discernible changes in W's sensitivity to other's feelings, his openness with everyone, and his patience with people's limitations. In brief, he has mellowed a bit. He found the Human Relations Seminar rewarding and feels he is using what he learned, though not always consciously. Though we have discussed the subject only briefly, I believe that our shared experience at Ocean City accelerated the growth of a relationship of mutual respect and warmth which I treasure very highly.

"Yes, he seems more relaxed and at ease with others, especially those in his group. I notice he chats readily on general topics as well as job-related items. He seems to exhibit greater sympathy and understanding of other people's views."

"Somewhat noticeable . . . while this growth was clear before he went to Ocean City, the experience he had there may have helped him to realize that all supervisors face similar problems. At least, he now seems more willing to speak out and give his own opinions on supervisory problems."

D. has changed his behavior over the last two months in working with people. He has shown greater sensitivity to situations where emotions were a factor. Misunderstandings were cleared up by his initiation of a frank discussion with those involved.

Another area of change is that of group decision making. Since his participation in the seminar we have been involved in a job where the methods used were decided
using group decision making. This method of decision making had not been used previously although D. had consulted with individuals on some decisions previously. By the way, I asked another member of D's group his opinion and it coincided very closely to mine, as expressed above.

I am sure that he has changed his behavior in working with other people. This assurance is based more on my knowledge of B's character and on my own reactions to the seminar than on direct observation of some specific changes in his working habits. I believe that B. is now more aware of the needs of his co-workers for the sense of fulfillment which comes from being given the freedom and the motivation to make contributions to the job, make decisions, and accept completely their full share of responsibility.

Yes. He has given me increased responsibility and less technical guidance thus permitting me to function in a more autonomous fashion than previously. I prefer this work mode and believe it will increase my productivity since it has provided me with a greater feeling of contribution to the overall effort and a stronger impression that he has confidence in my ability.

I feel that I have observed a tendency on the part of Mr. G to be more tolerant of his fellow employees. In particular, he appears to have greater compassion and regard for those working for him. This is particularly impressive since he came to us with somewhat of a reputation as one who had some friction and difficulty in dealing with others.

"In some ways he seems to have become a better supervisor. He is more aware of the needs of individuals in his group. Seems to have more time to discuss work, etc., and is more aware of what each person is doing. Also seems to stand more by his subordinates when dealing with others."
"... if I were to single out one thing for comment, it has been a growth in the ability to focus group effort on a technical problem by structuring it and operating as a 'chairman' to elicit contributions by participants."

"M. has developed a firmer attitude in dealing with supervisors."

Yes: new perspective of supervisor's relationship with members of his group; i.e., he viewed the role of a supervisor as having much more influence on this people than he had realized. He is now letting the group help plan work projects, assume individual responsibilities for carrying out assignments and even lets them make mistakes as a valuable learning process. Also, communication has improved, probably because he now realizes that he needs to view himself as others see him, the total impact of Seminar was quite positive in my opinion.

"Yes, D. has become more concerned about the development of his people and the need for concrete objectives. D. and I have developed a rather formal and easy going department head to supervisor relationship."

"Yes . . . in contacts with his people this has resulted in his more often taking the part of a leader rather than equal team member."

"Yes. I think he is more careful to understand the other person's point of view when he is dealing with somebody. Also,
he seems to be more careful not to be offensive or get the other guy mad."

"I have noted an apparent increase in willingness to discuss details of my technical and management problems. A tendency toward abruptness has been reduced. He seems more relaxed."

"Yes. He appears more willing to make honest effort to understand new ideas before commenting. He also seems more relaxed and ready to carefully discuss problems."

"Yes - he seems 'happier' in his dealings with people. Everything is not as serious as it once was, but not at the expense of the job."

Some Typical Observer Comments
Indicating Some Change

Mr. B. was relatively open in his relationships with me in the past, but has become even more so since taking the course. This has encouraged me, another graduate of the Human Relations Seminar, to be more open with him, too. However, speaking from my own experience, I find that my most significant behavioral changes resulting from the course have been in two-person or group situations for which most outside observers would not be present.

There has been a marked change in L's attitude toward his job in the past several months. This was quite noticeable well before he attended the seminar. However, it is clear that he had a very accepting attitude at the seminar and that the effect of the seminar was to direct and channel an already occurring change. I believe the seminar was very helpful to L. in giving
him a more realistic and responsible view of the supervisory job he has.

"Mr. D's performance while working with other people during the past two months seems to reveal that he may now have greater patience and understanding than I have previously observed."

"Yes. He is more relaxed and comfortable with people these days."

"If I have one observation, it is that A. is perhaps more appreciative of 'my side of the story' recently. There is normally a healthy tension or conflict between ... at many points in a project, and this appreciation of your counterpart's point of view is quite important to a good working relationship."

"I'm not sure, but it appears to me that we seem to agree more on how to conduct work in our department and how to organize the people doing the work ... the reason I don't know how to answer, is that I'm not sure if J. has changed or I did, but I don't remember being so closely aligned with him several months back."

"I do not detect any specific changes. However, discussions over work indicate that an increased awareness of how he works with people may have resulted from the seminar."
"Yes. He seems to be more sensitive to people-needs than previously."

"Yes. S. is certainly more aware of the roles people play at conferences and committee meetings. His ability to run smooth meetings has improved."

"R. has gained increased confidence in the performance of his job. Increasingly, he has broadened his basis of operation and widened the circle of associates with whom he has common concerns."

"Yes. Seems to be increasing in confidence in dealing with people."

"Yes. He appears to be somewhat more relaxed."

Some Typical Observer Comments
Indicating Lack of Change

"I can see no noticeable change in the behavior of E. in the time period before and after the seminar."

"No."

"It would be hard to say that there has been any change in L. since he always seems to get along with everyone very well. He always seems very busy which serves as a good example to his staff but may inhibit communication somewhat."
"No noticeable change."

"B. has always been very congenial and cooperative. I have not noticed any change in this. I have taken the Human Relations course myself and, although it was interesting, I see no reason why it should change a person's behavior."

"I don't think so, particularly. T. has always been a good supervisor, particularly in personal relationships. He leads, but he also listens."

"I have not recently observed any specific changes in the way B. works with people. However, since B. is already a particularly good supervisor, I would expect any recent improvements in behavior to be subtle rather than dramatic."

"I can't say that I observed any change. This may be because I was slowly becoming acquainted with him during the whole period."

"In my opinion there has been no change in B's behavior in working with people. However, I have had limited contact with him during the past month to observe his behavior because of different vacation schedules and business trips."

"I've detected no basic change in D's skill in working with other people. He was good before his promotion to supervisor, and he remains so. I should note, however, that I have
not had contact with him lately, due to . . . and changes in the
nature of my work."

"I have had negligible contact with P. over the last two
months. My answer is no, but I would not know if he had changed."

I think that Mr. E's behavior has not changed sig­
nificantly. Knowing something about Mr. E's prior ex­
perience and his leadership ability before he went to
Ocean City, this is exactly what I would expect. In my
judgment, which may be somewhat uninformed since I have
never attended such a function as was conducted at
Ocean City, he had cultivated in himself, over past
years, the characteristics which such a program in in­tended to instill.

"Although I have not noticed a marked change in his be­
havior during the last two months, I personally see no need for
improvement in the human relations aspect of his management
function."

"T. has not had any obvious behavioral changes since his
'Ocean City experience.' I've discussed his impressions of the
seminar with him, and his comments were quite favorable. How­
ever, he did not need the seminar as much as I did, so changes
would be unexpected."

"Because of a recent reorganization, I no longer work
with M., so I am not in a position to meaningfully evaluate any
changes in behavior."
"No - and that's good. In my opinion, J's way of working with people is a very good example to follow."

"He seems the same to me."

**Summary**

In summary, the groups were quite comparable to each other before training. Only a few differences were noted: the youngest age group had a higher wanted control score (i.e., they were more submissive); the no degree group had fewer expressed control needs (i.e., they were less dominant); the bachelor's degree subjects had higher wanted inclusion needs; the age 25-30 group had the lowest expressed affection score, while the age 31-40 group had the highest wanted affection score. Observers, back on the job, noticed almost no change in the subjects before training.

Three of the seven null hypotheses were rejected. It was concluded that Laboratory Training produces significant change in the expressed inclusion, wanted inclusion, and expressed affection needs of individuals. These changes, however, are not significantly noticeable to observers (peers, subordinates, superiors) in the back-home work setting following training. Those groups with the most atypical scores before training tended to change the most.

Laboratory Training, however, does not produce significant change in the expressed control, wanted control, and wanted affection needs of individuals.
There were marked differences in the amount and types of changes experienced by different age groups. The changes were in almost direct relationship to age. That is, members of the youngest age group (25-30) changed the most; the members of the second youngest age group (31-40) experienced the second most change, etc. Beyond age forty, the rate of change noticeably slowed down. Therefore, it can be said that Laboratory Training was most effective for the younger supervisors.

The types of changes varied by age also. Members of the age 25-30 group significantly changed on four of the six FIRO-B scales: Expressed Inclusion, Expressed Control, Wanted Control, and Expressed Affection. They were becoming outwardly more expressive and assertive. Members of the age 31-40 group changed in much the same ways, except to a lesser degree. Beyond age forty, changes assumed a different pattern. Members of the age 41-50 group changed the most in the expression of Inclusion, Control, and Affection Needs. Behaviorally, their Wanted Needs were more stabilized, while they became outwardly more expressive. Members of the age 51-60 group experienced very little change. The members of the age 61-65 group changed the least.

In general, it might be said, that one overall effect of Laboratory Training was to make the subjects more like each other. Groups with the largest deviations in their before training scores tended to change the most. The amount of change was in almost direct relationship to age. The youngest age
group changed the most, while the oldest age group changed the least. The individual changes tended to be in the direction of being more expressive and wanting more personal interaction with others.
In this chapter, a summary of the reported research is presented, followed by discussion, conclusions, implications, and recommendations for further research in Laboratory Training.

Summary

This study was designed to determine if Laboratory Training produces significant changes in the interpersonal need orientations and behavior of individual participants.

Laboratory Training (also referred to as the T-group method of sensitivity training) has several common goals:

1. Increased self-awareness concerning one's own behavior.
2. Increased sensitivity to the behavior of others.
3. Increased ability to analyze continually one's own interpersonal behavior for the purpose of helping oneself and others to achieve more effective and satisfying interpersonal relationships.

Different training laboratories place differing emphases upon the above goals. This study focused on the use of Laboratory Training as a method for the development of managers within
an industrial setting. The basic premise underlying this use of Laboratory Training is that with increased interpersonal competence, the managers will be more effective on their jobs, thereby enhancing the effectiveness of their organization.

Seven null hypotheses were presented in this study:

1. There will be no significant change in the expressed inclusion needs of individual participants following Laboratory Training.

2. There will be no significant change in the wanted inclusion needs of individual participants following Laboratory Training.

3. There will be no significant change in the expressed control needs of individual participants following Laboratory Training.

4. There will be no significant change in the wanted control needs of individual participants following Laboratory Training.

5. There will be no significant change in the expressed affection needs of individual participants following Laboratory Training.

6. There will be no significant change in the wanted affection needs of individual participants following Laboratory Training.
7. Observers in the work setting will observe no noticeable change in the behavior of individual participants following Laboratory Training.

A review of the literature was presented which included the development of Laboratory Training, instruments used in the evaluation of Laboratory Training and the use of Laboratory Training for management development. The review showed that research on the effectiveness of Laboratory Training left something to be desired. Failure to specify training outcomes in advance, lack of comparable control groups, and the use of poorly researched measuring instruments were common shortcomings in the studies reviewed. The tendency among laboratory trainers to make each Training Laboratory a unique event made it quite difficult to compare the results of one training session with the results of another. There was also a concern about the "fade-out" of individual learnings following return to the work environment. Definitive research on the lasting effectiveness of Laboratory Training is scarce. Researchers rarely have had access to their subjects before and after the training session under study. The present study was an attempt to circumvent some of these traditional problems in the evaluation of Laboratory Training.

A time series pre-test post-test design with control groups was used for this study. The subjects were technical supervisors at Bell Laboratories, Inc. Four experimental and
two control groups were set up. There were forty-eight subjects used exclusively as experimental subjects, while fifty-two subjects served as both experimental and control subjects. The subjects were all males ranging from twenty-six to sixty-four years of age. Their educations varied from high school diplomas through Ph. D.'s. The typical subject was between the ages of twenty-six and forty with a Master's degree in Engineering.

The four experimental groups received six days of Laboratory Training in a resort hotel at a remote location away from the subjects' homes and work settings. The control subjects received no training. Following training the control subjects were used as experimental subjects. The experimental subjects and the trainers all lived together for the entire period of training. The trainers all had Master's degrees and experience in Laboratory Training. There were three male trainers and one female trainer.

Schutz's (1958) Fundamental Interpersonal Relations Orientation-Behavior Questionnaire (FIRO-B) was used as the basic measuring instrument. The experimental subjects were measured at the beginning of training, and again two months and four months following training. The control subjects were measured two months before training and at the beginning of training.

FIRO-B measures three areas of interpersonal need: inclusion, control, and affection. Each need is broken down into the need which the individual actively expresses toward other
people and the extent to which the individual desires that such behavior be directed toward him. FIRO-B is a questionnaire composed of six Guttman type scales of nine items intermingled. It yields a score from 0 to 9 on each scale.

Analyses of the data centered around the seven hypotheses. Individual and mean scores for the six scales of the FIRO-B Questionnaire were determined for each group before training. Since the variances were statistically homogeneous, the pooled variance t-test was used to compare before training scores. A two tailed test at the .05 level of significance was employed. There was only one significant difference among the four experimental and two control groups on the six scales before training. (Group I was more submissive).

Pearson product-moment correlations comparing before training scores with two months and four months after scores for each experimental group were determined. The differences in the correlations between the trained experimental groups and the untrained control groups were tested at the .01 and .05 levels.

Back-home observer reports were used to determine if observers in the work setting could observe any noticeable changes in individuals before and following training. These reports were mailed at the same times that the FIRO-B's were completed. The observers noticed almost no changes before training except those associated with a recent promotion, changes in work situations, etc. They noticed some change consistent with the goals of
training (i.e., increased effectiveness in interpersonal relations) after participation in Laboratory Training. However, this change was not statistically significant.

Analyses of data collected to test the seven hypotheses showed the following results:

1. Hypothesis I: There was significant change (at the .05 level) in the expressed inclusion needs of individual participants following Laboratory Training.

2. Hypothesis II: There was significant change (at the .05 level) in the wanted inclusion needs of individual participants following Laboratory Training.

3. Hypothesis III: There was no significant change in the expressed control needs of individual participants following Laboratory Training.

4. Hypothesis IV: There was no significant change in the wanted control needs of individual participants following Laboratory Training.

5. Hypothesis V: There was significant change (at the .01 level) in the expressed affection needs of individual participants following Laboratory Training.

6. Hypothesis VI: There was no significant change in the wanted affection needs of individual participants following Laboratory Training.
7. Hypothesis VII: Observers in the work setting did not notice significant change in the behavior of individual participants following Laboratory Training.

Results of the research indicate that Laboratory Training under certain conditions can make a change in the ways that people behave in interpersonal relationships, as measured by the FIRO-B. Those groups with the most atypical scores on expressed inclusion, control and affection needs, and wanted inclusion needs tended to change the most. Individuals tended to change in the direction of being more expressive and wanting more personal interaction with others. These changes, however, were not that noticeable to a significant extent to observers back on the job. Supplementary data indicated that these changes are most pronounced in the younger supervisors with Master's degrees. Older subjects were the most resistant to change.

Discussion

It has long been known that people in a specific vocation tend to become more like each other with the passage of time. Similarly, people who are more like each other in the first place tend to enter the same occupational field. Laboratory Training, in this case, seemed to speed up the process. This was especially true for the younger supervisors.

The largest changes in the younger supervisors were in the direction of being more assertive, outgoing, and experiencing
closer, more intimate relationships with other people. Since these subjects were promoted into supervision based primarily upon technical competence, many of them were interpersonally naive. Laboratory Training, in this case, may have caught them at a time when they felt a need for a shift in their role behaviors. The changes were functionally useful for individuals changing from laboratory researchers to managers of other people's research.

The time period between pre- and post-tests should be considered. Contrary to the common concern about changes fading with the passage of time, changes as observed in this study were growing with the passage of time.

**Conclusions**

The research findings presented here raise many methodological and theoretical issues, but on the basis of the present findings the following conclusions can be made. Generalization to other situations can legitimately be made only if the limitations of this study are kept in mind. (Appropriateness of criteria and instruments for measuring change, participant and observer attitudes about the study, the subjects (e.g., engineers) may not be typical.)

1. Laboratory Training is effective in changing participants' expressed and wanted inclusion needs.
2. Laboratory Training is not effective in changing participants' expressed or wanted control needs.

3. Laboratory Training is effective in changing participants' expressed affection needs. It is not effective in changing their wanted affection needs.

4. Observers in the work setting do not notice significant change in the behavior of individuals following Laboratory Training. However, noted changes are in the direction of increased effectiveness in interpersonal relations.

5. Younger subjects experience the most change as a result of Laboratory Training. Subjects over age forty show considerably less change.

6. Changes resulting from Laboratory Training do not "fade-out" with the passage of time. These changes increase, rather than diminish with the passage of time (at least up to four months).

Imlications

Laboratory Training seems to be a good investment for Bell Telephone Laboratories, Inc. It is most effective in achieving its goals with the younger supervisors under age forty. Although there is some change with individuals in all age groups, the amount of change markedly declines beyond age forty. The changes are considered to be improvements by the participants' superiors, peers, and subordinates. The result is to assist
technically trained people to become more effective in interpersonal relations. This is an area in which they generally express a need for improvement. It is to be expected that the changes evidenced in this study would occur with similar technical populations, if they experienced a similar training program. Unfortunately, there is a lack of comparability among many training programs emphasizing human relations.

Since the types of changes experienced by individuals depends upon their personalities at the outset of training, it is expected that other occupational groups would experience different types of changes. It has long been demonstrated that different occupational groups have different personality constellations. Therefore, considerable diversity is to be expected as a typical training outcome. It seems reasonable to expect that this might require differences in the content and conduct of training with different populations.

Recommendations

In light of the results of this research, the following recommendations are given as possible areas for future research:

1. This study should be replicated with members of other occupational, educational, and age groups. Perhaps engineers are not typical of participants in Laboratory Training.
2. This study should be replicated with individuals experiencing a transition in roles, compared to individuals in more stabilized role situations. For example, perhaps new supervisors, or teachers, or dentists are more amenable to change than those who have been in the field for a longer period of time.

3. A series of studies emphasizing different training regimens from the predominantly emotional to mostly cognitive and intellectual should be conducted. Perhaps, different types of Laboratory Training will prove effective or non-effective with different types of participants.

4. Studies should be conducted which examine the trainer's effectiveness as a model of role behavior compared to the more highly valued peers within the training group as models of role behavior. Perhaps peers are more effective as behavior models.

5. The suitability of different types of trainers for different types of training groups should be considered. Perhaps, rational/cognitive oriented students experience more change with trainers who are similar to them. On the other hand, a contrast in personality styles may prove more effective.

6. Longer range follow-up studies to continue to examine the lasting effectiveness of Laboratory Training should be conducted. These studies should include use of the
same measuring instruments. Since the changes noted in the present study were growing, rather than diminishing with the passage of time following training, it might be discovered that there is more of a delayed effect, for example, after a year or two.

7. Similar studies using different types of measuring instruments should be conducted. People have many more dimensions than the few examined in this study.

8. Studies should be conducted to closely examine the goals of Laboratory Training as compared to functional on-the-job behaviors. For example, Laboratory Training may be dysfunctional for certain types of occupational groups.

9. The effectiveness of training people in work teams should be studied.

10. Research should be conducted with various training methods to attempt to shorten the training period necessary to affect changes in participants. Many individuals and organizations may not be able to get away to a "cultural island" for a full week.
APPENDIX A

FIRO-B QUESTIONNAIRE
PLEASE NOTE:


UNIVERSITY MICROFILMS
APPENDIX B

PRE-TRAINING LETTER
I am currently conducting a research study on Management Development Training at Bell Laboratories. Since you have not participated to date in the training involved in the study, but other members of your Division have, you have been selected for membership in a control group.

I would very much appreciate it if you would complete the attached questionnaire (FIRO-B) and return it to me at Murray Hill 3A-105. You will find that the questionnaire requires about five minutes to complete and is innocuous.

The responses on your questionnaire will be lumped with the responses from 120 other supervisors and will be confidential. At the conclusion of the study, I will send you an abstract of the study and the complete text will be available for your review.

The purpose of my research is to improve the quality of the training afforded to technical supervisors by the Personnel Development and Training Department, of which I am a member.

I would very much appreciate your cooperation and contribution of five minutes of your time to the cause.

Thank you,

W. P. Smith, Jr.
APPENDIX C

TWO MONTHS AFTER TRAINING LETTER
Two months has come and gone since Ocean City! If you remember, I indicated that I would send you the FIRO-B questionnaire as a follow-up. Here it is.

Please complete the questionnaire as soon as possible and return it to me at Murray Hill 3A-105. Thank you.

When the data are complete, I will send you an abstract. The complete text will be available for those with a more detailed interest.

MH-8412-WPS-EG

Enc.
FIRO-B
subject: Management Development Training

Four months since Ocean City! Would you please complete the questionnaire one last time?

Please return it as soon as possible to me at Murray Hill 3A-105. Thank you.

When the data are complete, I will send you an abstract. The complete text will be available for those with a more detailed interest.

MH-8413-WPS-sj

Please return this form to W. P. Smith, Jr.
Murray Hill 3A-105
APPENDIX E

PRE-TRAINING OBSERVER REPORT

Human Relations Seminar--Personnel Development
and Training Department

I am currently conducting a research study on Management Development Training at Bell Laboratories. I would appreciate it if you would assist me by taking a minute to answer the following question and returning this form to me. __________ will participate in this study and has given me your name as a person who could serve as an observer of his on-the-job behavior. Please be assured that this information will be confidential. I will send you an abstract of the study, when it is completed.

Thank you,

W. P. Smith, Jr.

"Over a period of time people may change in the ways they work with other people. Do you believe that __________ has changed his behavior in working with people over the last two months as compared with the previous two months in any specific ways? If YES, please describe."

Please return this form to W. P. Smith, Jr.
Murray Hill 3A-105
APPENDIX G

TWO MONTHS AFTER TRAINING
OBSERVER REPORT

Human Relations Seminar--Personnel Development
and Training Department

During a recent Human Relations Seminar for supervisors at Ocean City, New Jersey, all participants provided us with the names of three people who could serve as observers of their on-the-job behavior. provided us with your name. I would appreciate it, if you would take a minute to answer the following question and return this form to me. Please do not discuss it until it is completed. I will send you an abstract of the study, when it is completed.

"Over a period of time people may change in the ways they work with other people. Do you believe that has changed his behavior in working with people over the last two months as compared with the previous two months in any specific ways? If YES, please describe."

Please return this form to W. P. Smith, Jr.
Murray Hill 3A-105
APPENDIX G

FOUR MONTHS AFTER TRAINING
OBSERVER REPORT

Human Relations Seminar--Personnel Development
and Training Department

I would appreciate it if you would take a minute to complete another observer's report on __________. Please do not discuss it until the form is completed. After that I would encourage the two of you to discuss it.

Please be assured that this information will be confidential. It will be coded and statistically treated with a great body of data. I will send you an abstract of the study, when it is completed.

Thank you,

W. P. Smith, Jr.

"Over a period of time people may change in the ways they work with other people. Do you believe that __________ has changed his behavior in working with people over the last two months as compared with the previous two months in any specific ways? If YES, please describe."

Please return this form to W. P. Smith, Jr.
Murray Hill 3A-105

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APPENDIX H

COMPARISON BY TRAINING GROUP OF BEFORE, TWO MONTHS, AND FOUR MONTHS FOLLOWING TRAINING MEAN SCORES FOR ALL FIRO-B SCALES
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<th>Expressed Control</th>
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*Group I was significantly different at the .05 level from Groups II and III before training.
APPENDIX I

COMPARISON BY DEGREE LEVEL OF BEFORE, TWO MONTHS, AND FOUR MONTHS FOLLOWING TRAINING MEAN SCORES FOR ALL FIRO-B SCALES
### Table

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*The No Degree Group of supervisors was significantly different at the .01 level from all other groups of supervisors before training.

**The Bachelor's Degree Group of supervisors was significantly different at the .05 level from the No Degree Group of supervisors before training.
APPENDIX J

COMPARISON BY AGE GROUPING OF BEFORE, TWO MONTHS, AND FOUR MONTHS FOLLOWING TRAINING MEAN SCORES FOR ALL FIRO-B SCALES
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*The Age 25-30 Group of supervisors was significantly different at the .05 level from the Age 31-40 and Age 51-60 Groups.

**The Age 31-40 Group was significantly different at the .01 level from the Age 41-50 Group. The Age 31-40 Group also was significantly different at the .05 level from the Age 25-30 Group.
LIST OF REFERENCES


Watson, J. "Members' Perceptions of the Functions of a Training Group." Ann Arbor: Research Center for Group Dynamics, The University of Michigan, 1950. (Mimeographed.)

