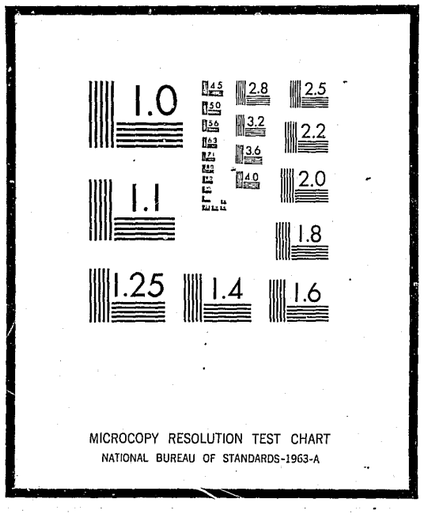

THE EFFECTS OF DRUG EDUCATION GROUPS: MEASURING CHANGES IN ATTITUDES

Prepared for
CHARLOTTE DRUG EDUCATION CENTER, INC.

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Preface

This report is the second of two prepared at the request of Dr. Jonnie H. McLeod, Director of the Charlotte Drug Education Center, Inc. The first report (The Effect of Drug Education Groups Upon Attachment to School) looked at the relationship between various types of drug education groups and behavioral measures for a single psychological/sociological state--lacks attachment to school. This report examines attitudinal measures for 13 psychological/sociological states. These states were based upon the model developed by the Community Drug Action Committee in 1971, relating societal and psychological factors to drug usage and the bad effects that sometimes result from drug usage.

Six members of the Drug Education Center staff formed and conducted the experimental groups described in this paper and administered the pretest and posttest. They are Tom Brown, Chris Jones, De Kirkpatrick, Sally Kirkpatrick, Betty Liggon, and Tilden Ward. The value of their comments in interpreting the data is attested to by the frequency with which they are referenced throughout the text. We also want to thank teachers in the junior high and senior high schools who administered the pretest and posttest to the control groups. Ronald Boykin of the Institute of Government helped in making the random assignment of volunteers to the experimental and control groups, wrote Appendix A, and checked statistical calculations. Linda McVey and Debby Pendergraft, also of the Institute, prepared statistical tables. Janet Faltz, UNC-CH Computation Center, did the computer programming. Douglas Gill, Institute of Government, and Jonnie McLeod critiqued the draft. Ted Clark designed the cover and prepared the figures contained in Appendix D.

Summary of Findings And Conclusions

The work for the rap and ombudsman groups conducted in the fall of 1973 and described in this report was designed to answer two questions.

1. Could the number of students engaged in the Drug Education Center program be increased by shortening the duration of the rap and control groups and still be effective in moving students out of high risk psychological/sociological states associated with drug usage?

Five experimental and five control groups were pretested using the McLeod High Risk Inventory and posttested after the experimental groups ran five to ten weeks. The improvement of the experimental groups relative to the control groups showed no particular pattern across 13 attitude scales and was not statistically significant. The attitude scales corresponded to these high risk states: incohesive family life, poor parent-child relationship, lacks commitment, poor teacher-student relationship, lacks attachment to school, lacks attachment to established institutions, hopelessness and cannot cope, illness, boredom, rebellion, loneliness, poor self-image, and peer pressure. We conclude that five to ten weeks is too short a time to obtain substantial change in deep-seated attitudes and that the groups need to run at least a semester and possibly a year.

For junior high school problem students, the dropout rate for students in the experimental group was 18% compared to 38% for control group students. This finding supports the hunch that an unexpected but important benefit may be that some students who would ordinarily drop out of school stay in school because of their experience with the DEC program.

2. Is the McLeod High Risk Inventory a useful instrument in measuring attitude change?

The reliability of the McLeod Inventory compares favorably with other mental tests; but, like the others, it contains too much measurement error to assess change in individuals. It seems to be an appropriate means of assessing average changes of groups of individuals, provided it is supplemented with behavioral measures that correlate with some of the attitudinal scales. Compared to the other inventories considered it has two advantages: it is short and it is specifically designed to measure the psychological/sociological states associated with drug usage.

Introduction

Our previous survey work and experience in working with small groups have led us to several conclusions:

1. Drug usage among junior and senior high school students in Charlotte-Mecklenburg is associated with (but not necessarily caused by) a number of psychological/sociological states. Among these states are lacks commitment, lacks attachment to school, has a poor parent/child relationship, is bored, is rebellious and has parents who abuse alcohol.[1]

2. Using behavioral measures, we were able to identify improvement in one of these states (lacks attachment to school) in Drug Education Center groups conducted in the spring of 1972 and during the academic year 1972-73.[2]

3. The groups most successful in improving attachment to school were those having a humanistic orientation and encouraging students to generate their own projects.[3]

The group work described in this paper builds upon these earlier findings and is designed to address two questions. First, is it possible to shorten the time that groups run from a semester to eight weeks and still achieve improvement in selected psychological/sociological states?

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[1] Gloria A. Grizzle, Prevention Policies Directed Toward the School Population (Chapel Hill, North Carolina: Institute of Government, March 26, 1973), pages 8 to 21.

[2] Gloria A. Grizzle, The Effect of Drug Education Groups Upon Attachment to School (Chapel Hill, North Carolina: Institute of Government, February 15, 1974).

[3] Ibid.

If this question were answered in the affirmative, it would be possible for a group facilitator to conduct two groups instead of one during each semester, thus doubling the number of students who could participate. To answer this question, five experimental and five control groups were organized and measured at the groups' inception and again five to ten weeks after the groups began functioning. Second, is it possible to assess impact by looking at attitude changes instead of behavioral changes? If this question were answered in the affirmative, it would be possible to measure changes in psychological/sociological states for which no behavioral measures were available. To answer this question, the McLeod High Risk Inventory[4] was designed to measure attitudes falling into 13 psychological/sociological states, and this questionnaire was administered as the pretest and posttest for each of the experimental and control groups. The findings pertinent to these two questions are discussed below.

The Groups Whose Attitudes Were Measured

During the fall of 1973, the Drug Education Center conducted six groups that were pre- and posttested using the McLeod inventory. Four of these groups were conducted on the campuses of junior high schools and two were conducted on senior high school campuses. These groups used the focus and technique that had proved most successful during the previous year. All of them had a humanistic orientation instead of focusing upon drugs; all but one of them permitted the students participating in the groups to generate their own projects, as well as engaging them in discussion and using various communication techniques.

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[4]This inventory was designed by Jonnie H. McLeod, M.D., Director for the Charlotte Drug Education Center, with the assistance of the Drug Education Center's staff and Dr. James Anderson.

Three of the four junior high school groups were conducted as rap groups. Students do not receive academic credit for participating in rap groups. Rap group 1 met twice a week for 45-minute sessions and was posttested at the end of eight weeks. Rap group 2 met for one hour each week and was posttested after eight weeks. Rap group 3 met three times each week for 45 minutes each session and was posttested after five weeks.

The other groups consisted of two ombudsman groups at senior high schools and an ombudsman group at a junior high school. Unlike the rap groups, participants in ombudsman groups receive academic credit for their work. Ombudsman groups are student-centered rather than subject-centered as are most of the courses the student takes. These groups meet daily for a 45- or 50-minute session. The junior high school ombudsman group was posttested at the end of eight weeks; senior ombudsman group 1 was posttested at the end of ten weeks; and senior ombudsman group 2 was posttested at the end of 16 weeks. Since the second senior ombudsman group had no control group, it must be excluded from those descriptions that compare the changes in psychological/sociological states of experimental groups relative to changes in their control groups.

The basic method used for assigning students to either a control group or to an experimental group was random assignment, using a table of random numbers. For rap group 1, 300 students volunteered. From this list of volunteers, enough students were randomly selected to fill the control group and the experimental group. The randomly selected group was then split and its members again assigned on a random basis to the experimental group or the control group. For rap group 2, all volunteers were randomly assigned either to the control or the experimental group. For the rap group 3 experimental and control groups, half the

students were selected from a list of disruptive students provided by teachers and the other half were selected randomly from the Student Guidance Task Force, a group of student leaders in human relations. The junior high school ombudsman class consisted wholly of problem students, so defined by teachers. The problem students were randomly split between the experimental and control groups. Again, for the senior high school ombudsman 1 class, volunteers were randomly split between the experimental and control groups. For the second senior high school ombudsman group, all volunteers were admitted to the experimental group and no control group was established.

Table 1 summarizes several additional characteristics of these groups, including their objectives, their methods and techniques, and the topics they discussed. Appendix A contains a narrative form of description of each of these groups.

How Attitudes Were Used to Measure Changes in States

The McLeod High Risk Inventory has been designed to measure the extent to which a teenager falls into 13 selected psychological/sociological states. These states are incohesive family life, poor parent/child relationship, lacks commitment, poor teacher/student relationship, lacks attachment to school, lacks attachment to established institutions, hopelessness and cannot cope, illness, boredom, rebellion, loneliness, poor self-image, and peer pressure. This questionnaire is reproduced as Appendix B.

Scales were constructed in order to score each respondent on each of these 13 states. It was assumed that a student's responses to several questions relating to each of these states would reflect his attitude and that attitude could be used to score the extent to which a student

Table 1
DRUG EDUCATION GROUPS PRE - AND POSTTESTED USING THE McLEOD HIGH RISK INVENTORY
Fall, 1973

Group	Participant Characteristics	Intensity [hours/weeks]*	Techniques	Topics Discussed	Objectives
Rap 1	All volunteers	12/8	Created atmosphere where students could talk freely about frustrations and problems; used role-playing; group-oriented games (Electricity); planned a dance for school.	Frustrations of school (especially rules); listening (interpersonal).	To reduce hopelessness, loneliness, and boredom
Rap 2	All volunteers	8/8	Discussion; trust exercises; Share self exercises	Self and others	To get people to talk to each other; reduce loneliness and hopelessness improve parent-child relationship and cohesiveness of family life.
Rap 3	1/2 disruptive students (so designated by teachers and 1/2 student leaders	12/5	Communication techniques and exercises. Obtained goals and objectives from the group and followed through on working toward goals and objectives, using open discussion and value exercises.	Race issues, rules, faculty and principal, school in general, values, and anything that someone wanted to discuss	To reduce loneliness, boredom, and hopelessness by building self-esteem, getting involved in other alternatives, dealing with peer pressures, etc.
Junior Ombudsman	All problem students (as designated by teachers)	35/8	Individualized activities; group and individual contract building; group activities (values exercises, movie making, field trips); role plays; outside speakers.	Food; race; sex; drugs; teachers; schools; psychodrama; role plays.	To reduce boredom, get them involved in helping others, improve student to student relations.
Senior Ombudsman 1	All volunteers	45/10	Open discussions; reading; slides; values clarification exercises; communications techniques and exercises; camp out; Maxwell's Coffee House; peer counseling, Human Relation Committee on campus.	Frustrations with school; teachers; racial conflicts values; listening to others; being myself.	To build self-esteem; reduce loneliness and hopelessness; improve parent-child relationship; get them involved in helping others in a meaningful way.
Senior Ombudsman 2	All volunteers solicited by group facilitator and guidance counselor	70/16	Open discussions, reading; films; values clarification techniques and exercises; yoga; several parties and outside activities; some craft work by a few.	Same as Sr. Ombudsman 1	To build self-esteem; reduce bordeom, loneliness, and peer pressure; get them involved in helping others in a meaningful way.

*At time of posttest.

was in each of the 13 states. The number of questions associated with a given state varied from 3 to 10. The test required that each student answer each question as being either true or false. Each response positively associated with a given state was given a score of from 1 to 3 points, depending upon how important a descriptor that question was of a particular state relative to the other questions used to measure that same state.[5] A student's total score for a given state would be derived, then, by multiplying each positive response times its weight and summing the results of individual question scores.

Appendix C defines the scoring method for each of the psychological/sociological states. For example, boredom is to be measured by a student's response to three questions, numbers 18, 30, and 42. Question number 18 states, "My daily life is full of things that keep me interested." If a student answers false to that question, he will receive a score of three points. The other two questions state, "I feel bored because I don't have enough to do," and "School is boring most of the time." These two questions are considered less important indicators of boredom than question number 18. Hence, they are scored two points each instead of three points. Seven is the highest score that a student could receive for the boredom state.

The higher a respondent's score on a particular scale, the greater is the extent to which he is believed to be in a particular high-risk state. The optimum situation, in terms of the theory upon which the questionnaire was developed, would be for a respondent to score 0 on all the scales. In addition to the 13 state scores, one total score was constructed utilizing all the questions that reflected attitudes. For

[5]The weights assigned to each of the questions was developed by Dr. Jonnie H. McLeod, Director of the Charlotte Drug Education Center.

this measure, each of the 63 questions was assigned a weight of one point, making the total possible score 63.

In order to summarize the amount of change that took place between the pretest and the posttest for each group, mean changes were calculated as follows. For each state and for the total score, the individual scores of all the students in that group were summed and the sum was divided by the total number of students in that group. This procedure was applied to the pretest responses and again to the posttest responses, yielding two mean scores for each group for each state. The posttest mean score was then subtracted from the pretest mean score to obtain the mean change for the group. A positive mean change therefore implies an improvement in the group's position in a given state and a negative mean change indicates a deterioration in the group's position.

Do the Scores Reflect a Change in Attitude?

Tables 1 through 6 in Appendix D list for each of the six groups and for their controls the pretest and posttest scores for each of the 13 states plus the total score. Figures 1 through 6 in Appendix D array the scores of individual numbers for each of these groups. Looking at these tables and figures, one can see that there is some difference between the pretest and posttest scores. For the most part, however, the changes do not appear to follow any pattern. Relative to their controls, none of the experimental groups appears on an overall basis to have improved substantially more than its control. None of the groups shows a consistent improvement across all the 13 states relative to its control group. Also, none of the 13 states either consistently improved or deteriorated across all six groups.

Table 2 on the next page shows that the position of the experimental group relative to the control group improved in about half of the instances and worsened in the other half. This balancing out of the changes raises the possibility that the changes that occurred were merely chance variations. In considering this possibility, we looked at the percentage of all 13 states in which the position of the experimental group improved relative to the control group compared to the percentage of targeted states in which the position of the experimental group relative to the control group improved. Targeted states were those which each group facilitator determined, at the group's inception, to be most important for his group to show improvement in. Table 2 shows that a higher percentage of targeted states improved for senior ombudsman group 1, rap group 2, but a lower percentage of targeted states improved for the junior ombudsman group, and the percentage of targeted states showing improvement for rap groups 1 and 3 was about the same as the percentage for all 13 states.

Whether the changes are statistically significant can also be considered in deciding whether the changes in the states from the pretest to the posttest are merely chance variations. At the 95 percent confidence level, only one state for one group is statistically significant.[6] The junior ombudsman class worsened its position relative to its control group by a statistically significant amount for the state, lacks attachment to school. Statistically significant in this instance means that if we had 20 change figures of the same magnitude as is that for lacks attachment to school for the junior ombudsman group, 19 of those statistics (95 percent) would reflect a real change and one (five per cent) would reflect a chance variation.

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[6] Appendix E defines the equations used to determine statistical significance.

Table 2

Change in Test Scores for Experimental Groups Compared with Control Groups

Group	% of States in Which Position of Experimental Group Improved Relative to Control Group		Difference of Mean Change* in Total Score
	% of All 13 States	% of Targeted States	
Rap 1	.46	.33	- .4
Rap 2	.46	.75	- .9
Rap 3	.46	.50	- .1
Junior Ombudsman	.38	.00	-2.7
Senior Ombudsman 1	.38	.60	- .8

*Mean change of control group subtracted from mean change of experimental group.

Table 2 also shows the difference between the experimental and control groups in the mean change of a total score. Recall that the total possible score is 63 points. A positive figure indicates an improvement in the position of the experimental group relative to the control group. Again, the junior ombudsman group shows the greatest deterioration in its position of all the experimental groups. More importantly, all of these mean changes are small and none of them, including that for the junior ombudsman group, is statistically significant. We cannot, with 95 per cent confidence, discount the possibility that the mean changes in total scores reflect chance variations in the data.

How Can the Lack of Change Be Explained?

Based upon the data summarized in the previous section, one must conclude that the pretest and posttest scores do not reflect a substantial or statistically significant change in attitudes. What might account for this lack of change? Several possibilities come to mind: not allowing enough time to elapse between the pretest and posttest, putting forth insufficient or inappropriate effort in order to obtain change in attitudes, using a test that is either not reliable or not valid or both, measuring states that did not change and not measuring states that did change, working with students who were never in high risk states, and having control groups that were not really similar to the experimental groups. The next several pages explore these possibilities.

Time Frame

Before the data were examined, the questionnaire was discussed with each of the six group facilitators who had administered it to their

experimental groups. One question asked them was whether they thought the spacing of the pretest and the posttest was adequate. Five of the six facilitators replied that eight weeks was too short a period; and the sixth facilitator, who gave his posttest ten weeks after the pretest, felt that the ten week spacing was adequate. All four of the facilitators who tested their students less than ten weeks apart believe that the students did not change within the first eight weeks but that they had begun to change by the beginning of the second semester. Both the facilitators for the two senior ombudsman groups thought that they had obtained change in some psychological/sociological states and that this change would be reflected in the posttest scores for their groups. The senior ombudsman group that had the longest spacing between the pretest and the posttest had no control group, so it is not possible to compare the changes of that group with a similar group of people who did not participate in the ombudsman course at that school. The second senior ombudsman group, whose pretest and posttest was scheduled ten weeks apart, did show an improvement in all five of the states targeted by the group's facilitator--poor parent/child relationship, hopelessness and cannot cope, loneliness, poor self-image, and peer pressure. In three of these states, this group improved not only absolutely but also relative to its control group, but in no case was the relative change large enough to be statistically significant at the 95 per cent confidence level.

Having worked with students in the rap and ombudsman groups for the better part of the fall semester, the group facilitators seemed to agree upon this conclusion: Attitude associated with the psychological/ sociological states targeted are deep seated, and one should not expect

a change in less than a semester and possibly not in less than a year. It is interesting to examine the results of the previous report[7] that looked at change in attachment to school in light of this conclusion. Absenteeism data for these groups were collected on an academic year basis. Of the three groups which showed the greatest improvement in absenteeism, none of them had a data collection period of less than a full semester after the group's inception. Of the five groups whose absenteeism rate did not improve as much, four of them had data collection periods that ran less than one semester after the group's inception.

Based upon the behavioral measures for absenteeism and academic performance, several of the 1972-73 experimental groups did show significant improvement relative to the control group. Based upon attitudinal measures for a number of psychological/sociological states, the 1973-74 experimental groups did not show significant improvement relative to their control groups. These results can be interpreted in several ways. In terms of a single state, lacks attachment to school, one might argue that the 1972-73 groups were effective in bringing about improvement and that the 1973-74 groups were not effective. Again, one might argue that it is possible to obtain behavioral change without obtaining attitudinal change and that, if behavioral instead of attitudinal measures had been used for the 1973-74 groups, they might also have shown improvement. Finally, one might argue that not enough time was allowed between the pretest and the posttest and that positive changes would have occurred if the post test had been given 16 weeks after the pretest instead of

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[7]Gloria A. Grizzle, The Effect of Drug Education Groups Upon Attachment to School (Chapel Hill, North Carolina: Institute of Government, February 15, 1974).

eight weeks after the pretest. The third argument is consistent with the feelings of the group facilitators and with the period over which positive changes and absenteeism were achieved in the 1972-73 groups. Although these data lend support to the third argument, they do not prove that this interpretation is correct and that the other two interpretations are incorrect.

Similarity of Experimental and Control Groups

Students who volunteered to participate in groups were randomly assigned to experimental or control groups. Random assignment was made so that the change in group scores for the experimental group compared to the control group could be accounted for in terms of the Drug Education Center program instead of other factors that might also affect the scores. In spite of the method of assignment, two of the group facilitators reported that their experimental groups were not like their control groups. The facilitator for rap group 1 believes that the "good" students (i.e., high academic performers and school leaders) were in the experimental group instead of being split evenly between the experimental and control groups. Table 3 indicates that the rap 1 experimental group does have a lower test score than its control group. (Recall that the best possible score would be 0 and the worse possible score would be 63). The rap group 2 facilitator believes that the opposite situation prevailed for his groups; the "problem" students (i.e., high absenteeism, behavior problems, drug users) were concentrated in the experimental group and the good students were in the control group. Again, Table 3 shows that the rap 2 experimental group does have a higher score than its control group.

These groups contained about a dozen students each. The smaller the group, the more likely it is that the characteristics will not

Table 3

A COMPARISON OF THE CHARACTERISTICS OF EXPERIMENTAL AND CONTROL GROUPS

Fall, 1973

Characteristic*	Group											
	Rap 1		Rap 2		Rap 3		Jr. Ombuds.		Sr. Ombuds. 1		Sr. Ombuds. 2	1972 Schoolwide Survey (N=32,995)
	Exper.	Cont.	Exper.	Cont.	Exper.	Cont.	Exper.	Cont.	Exper.	Cont.	Exper.	
% 15 or under	100	100	100	100	94	100	93	90	32	15	0	65
% Live with parents	96	100	86	100	94	100	86	88	100	98	90	94
% Parents' income below average	7	15	25	9	25	12	22	16	0	2	15	4
% Black	43	58	71	36	50	25	43	56	4	15	30	26
% Protestant	50	44	21	44	12	0	11	29	50	57	50	43
% Male	21	62	36	18	12	57	54	56	36	35	60	49
Mean total score on pretest	19	24	22	18	26	18	25	26	23	21	19	
Mean total score on posttest	18	23	22	17	26	18	27	25	21	18	21	

*These characteristics are those supplied by the students on the pretest and posttest. The income and religion data should be interpreted with special care. The 1972 survey showed only 4% of the students responding that their parents' income was below average, suggesting that many students perceive their parents' income to be higher relative to other families than it is. Also, many students who are members of Protestant denominations (e.g., Baptist, Methodist) do not know that their denomination is Protestant and check off the "other" response to the religious affiliation question instead of the "Protestant" response.

balance out between experimental and control groups when students are randomly selected and assigned to those groups. Thus, we would expect that differences between individual experimental and control groups would smooth out if all the experimental groups were pooled with each other and if all the control groups were pooled with each other. In looking at the five pairs of experimental and control groups, we see that the experimental group has a lower test score than the control group in two of the five instances. If the test scores had been lower for all the experimental groups, we would have some cause for concern that looking at the change in experimental scores relative to change in control scores might not be an appropriate method of determining the program's impact.

Table 3 shows that the percentages for none of the characteristics are consistently higher or lower for the experimental group compared to the control group across all five group pairs. Further, the change in the score between pretest and posttest for the two "good" groups is similar to the change for the group paired with them. Only the junior ombudsman group shows a change in scores amounting to more than one point relative to the control group between the pretest and the posttest. For three of the six characteristics -- age, whether the student lives with his parents, and sex -- the differences between the experimental and control group for junior ombudsman are quite small. For income, the difference for the junior ombudsman pair is smaller than for three of the other four pairs; for race, the difference is smaller than for three of the other four pairs; and for religion, the difference is larger than for three of the other four pairs.

We conclude that it is unlikely that group differences in the characteristics discussed could account for the lack of significant change in the total scores and individual state scores for the experimental groups relative to the control groups. This conclusion does not rule out the possibility that the experimental groups could have differed from the control groups substantially in terms of some other unmeasured but important characteristic. Since the assignment was random, we see no reason to believe that such a difference does in fact exist.

Score Size and the Likelihood of Obtaining Change

Raw scores for each of the thirteen psychological/sociological states were converted to percentages by equating the highest possible raw score for each state to 100 per cent and equating a score of zero for that state to zero percent. Thus, the higher one's percentage score on a particular state, the worse is that person's condition in terms of his attitudes relating to that state. It is sometimes the case that when conditions are very bad it is easier to bring about substantial improvement but that, as conditions move closer and closer toward the ideal, it becomes increasingly difficult to obtain an equivalent amount of change for the same amount of effort. One possible explanation for the lack of significant change might be that the students who volunteered to participate in the groups were not high risk students in the first place. If they had low scores to begin with, it might take a great amount of effort to reduce those scores by any significant amount.

To examine this possibility, we examined the percentage scores for each of the thirteen states for each of the six experimental groups.

Table 4 lists these scores and also gives the median[8] for each of the thirteen states in the last column to the right. One can see that the medians are spread across a band that ranges from 22 percent to 43 per cent. Only seven of the 78 percentage scores fall as high the 50 per cent mark.

To look more closely at the behavior of the scores in relation to their size, the highest and the lowest percentages for each of the thirteen states were put into separate groups. The median percentages for the high and low groups were 46 and 26, respectively. If it is more difficult to obtain a change in the low percentage scores than in the high percentage scores, then we would expect the average percentage shift from the pretest to the posttest to be greater for the category of high percentages than for the category of low percentages. The opposite condition prevails. For the low percentages, the total average shift (ignoring the direction of the change) amounts to 8 percentage points. For the category of high percentages, the total average shift amounts to 6 percentage points.

One other characteristic of the shifts for the high and low percentage categories is interesting. If the direction of the change is taken into consideration, then the scores in the category of low percentages increased from the pretest to the posttest by an average of six percentage points and the scores in the high percentage category decreased by an average of three percentage points. One might infer from this result that groups which were on the average relatively well off in terms of a

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[8]The median is found by arraying the six scores for a given state from high to low and taking the scores that fall at the mid-point of this array. In the case of an even number of figures, such as the six being used here, the median will consist of the average of the two middle figures.

Table 4

AVERAGE PRETEST PERCENTAGE SCORES BY GROUP
AND PSYCHOLOGICAL/SOCIOLOGICAL STATE

Fall, 1973

Psychological/ Sociological State	GROUP						
	Rap 1	Rap 2	Rap 3	Junior Ombudsman	Senior Ombudsman	Senior Ombudsman	Median
Incohesive family life	17%	29%	23%	19%	26%	20%	22%
Poor parent-child relationship	27	35	31	43	42	26	33
Lacks commitment	13	14	31	35	26	18	22
Poor teacher-student relationship	26	37	38	49	40	38	38
Lacks attachment to school	24	24	42	42	33	10	29
Lacks attachment to other institutions	29	33	27	55	43	41	37
Hopelessness and inability to cope	29	41	44	35	27	29	32
Illness	31	26	48	54	35	43	39
Boredom	32	31	68	43	30	27	32
Rebellion	36	50	38	50	27	15	37
Loneliness	48	41	63	39	44	36	43
Poor self-image	30	36	39	31	40	32	34
Peer pressure	41	43	46	33	23	37	39

particular state got worse and groups which were relatively bad off at the time of the pretest got better. It is likely that this interpretation is incorrect and that the shifts are an artifact of the statistics known as statistical regression. Statistical regression is the term used when extremes on a pretest drift toward the center on a posttest. Statistical regression comes into play when students would not give exactly the same answers if they were given the inventory twice. If the answers may vary, then those with extreme scores on the first inventory would be expected on the second inventory to move somewhat toward the middle of the distribution and those in the middle of the distribution might shift somewhat toward the extremes.

The percentage scores for the individual states are spread over a fairly wide range, from ten per cent to 68 per cent. Although we do not know what the results would have been if there had been some experimental groups with average scores higher than 68 per cent, we do not find within this range an inverse relationship between the size of the percentage score on the pretest and the size of the change. We cannot conclude from these data that the experimental students were not high risk students to start with and that change would therefore have been very difficult to obtain because the attitudes at the time of pretest were already close to those desired.

Measured Conditions and Changed Conditions

Another possibility often offered when the data do not reflect a change in a target group is that the factors that were measured were not the factors that changed. After running the experimental groups approximately eight weeks past the time at which the posttest was given, five of the six group facilitators felt that the students in the experimental groups

had changed. Three of these facilitators described the changes in terms of the states that they had originally targeted: a reduction in feelings of hopelessness and inability to cope, a reduction in loneliness, an improvement in self image, an increase in commitment, a reduction in boredom, a decrease in peer pressure, a decrease in incohesive family life, and improvement in parent-child relationship. Two of the facilitators described the changes in terms of communication skills and group dynamics: greater awareness of attitudes toward each other and the level of cruelty exhibited toward each other, greater awareness of the games people play, acceptance of responsibility for discipline with the group, being closer to each other, and being more open, sensitive, willing to listen to each other. The changes in group dynamics and communication skills were felt to be intermediate objectives of the groups that would lead to changes in boredom, loneliness, hopelessness and inability to cope, and lacking commitment. The facilitators did not challenge the utility of the McLeod Inventory as an instrument to measure the changes that they hoped would develop in the group, but rather believed that the posttest had been administered too soon in the group's existence to pick up the changes that had occurred.

One factor that the McLeod Inventory does not measure but that may be important to the student's future attitudes and behavior is whether the student dropped out of school. It has been observed that,

> . . . A psychoeducational approach combined with special opportunities to develop useful skills could be decisive in helping a particular group which is at high risk for drug use: the potential school dropout. . . . A large number of potential school dropouts might be prevented from giving up on mastery and turning to drugs in a destructive way if their educational program really engaged their interest and

if they were actively involved towards self-development in socially viable directions.[9]

One of the possibilities raised in the previous report concerning the effect of drug education groups upon attachment to school was that the groups might be having the effect of reducing the dropout rate among marginal students participating in the groups. The results from the junior ombudsman group lends support to this speculation. The junior ombudsman group is the only one of the fall, 1973, experimental groups made up exclusively of "problem" students. By the time of the posttest, three out of seventeen, or 18% of the experimental students could not be posttested because they were either chronically absent or they had been expelled. Of the control students, ten out of twenty-six, or 38%, could not be posttested because they were either chronically absent or had been expelled from school. The dropout measure is one that should not be overlooked in examining the results of drug education groups.

A Drop in the Bucket

Another possibility that might account for the lack of significant change is that the stimulus to change experienced in the two to five hours a week that students spend in a rap or ombudsman group is simply swamped out by the negative reinforcement that he receives from his home life and his school life the rest of the week. It is possible that the attitude associated with the psychological/sociological states that were targeted are so deep seated that these attitudes will not change unless the student experiences a different environment for a much larger portion of his week. This report cannot address the relative importance of the

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[9]"Youth Who Use Drugs: Psychodynamic Diagnosis and Treatment Planning," The Journal of the American Academy of Child Psychiatry, 12:1 (January, 1973), pp. 42-3.

student's experience while in rap or ombudsmen groups compared to his experience outside those groups. The next report does seek to compare the impact of two environmental factors in the school with the impact of a Drug Education Center program.

Test Validity

Two possibilities that might account for the lack of change shown between the pretest and posttest scores remain to be explored. Both these factors concern the quality of a test itself, and the first of these is validity. Validity is the extent to which differences in scores on the McLeod questionnaire reflect true differences in attitudes among the individuals and groups tested. Two types of validity--predictive validity and concept validity--are important. Predictive validity means the extent to which the attitude scores can successfully predict the probability that these students will engage in drug using behavior. The psychological/sociological states included in this study were selected because of the belief that students in these states were more likely to use drugs than students not in these states. Nothing in the McLeod Inventory taken by itself permits us to say anything about its predictive validity. However, we do know that more abbreviated measures of eleven of these same states were included in a 1972 school-wide survey and that these measures were positively associated with drug using behavior. As an additional check on predictive validity, measures in the McLeod Inventory for three sets of states--rebellion, boredom, and lacks attachment to school--were included in the 1974 school-wide survey. It will be possible to crosstabulate the scores for these three states with reported drug usage in order to determine the extent to which these scores can be used to distinguish drug users from non-drug users.

Concept validity is the extent to which the questions used to measure the given attitude adequately cover that attitude. Concept validity is assessed by the extent to which inventory results correspond with other relevant evidence. It is good to have the scores correspond with several different types of evidence in order to be confident of concept validity. In the judgment of the inventory developer, the questions are appropriate measures of the states in which they were used. It was also the consensus of the group facilitators that the test was generally valid, provided students took the inventory seriously. One other factor supporting the concept validity of the inventory has already been discussed. It has been previously mentioned that two of the group facilitators remarked that the bulk of the high-risk students were concentrated in either the control or experimental group and that the mean total scores for these groups correspond to the facilitators' conclusions. Further, the junior ombudsman experimental and control groups (consisting entirely of high-risk students) and the rap 3 experimental group (consisting of 50% high-risk students) had higher mean total scores than the other groups consisting of volunteers.

Another step could be taken to test external evidence against the inventory results. The second senior ombudsman group was pre- and posttested using the Personal Orientation Inventory as well as the McLeod High Risk Inventory. Two sets of questions on the Personal Orientation Inventory might be considered measures of three of the states on the McLeod Inventory: peer pressure, self-image, and boredom. The pretest and posttest scores for these states in the POI could be compared with the pretest and posttest scores from the McLeod Inventory for the ten students who took all four tests.

Although much more work needs to be done to establish content validity, what evidence has been gathered does not lead us to conclude that invalidity accounts for the lack of significant change between group average scores on the posttest compared to the pretest.

Test Reliability

Reliability is the second factor that concerns the quality of the test itself. Stability, or reliability across time, is the most important reliability concept to explore in attempting to account for the lack of change shown between the pretest and posttest scores. Of the several factors that might affect stability, variation in test content, administration, and scoring methods are of least concern for this study. Identical questions and identical format were used for both tests, the test was administered by the same person and in the same environment, and the same scoring methods were used. Of greater concern are response variations that could be due to changes in the students' physiological efficiency or in psychological factors, such as the students' motivation, effort, or mood.

The group facilitators' opinions of the stability of the McLeod High Risk Inventory are mixed. Three facilitators felt that students' responses stemmed from fairly deep-seated attitudes and would be stable, provided the students took the test seriously. But two of the facilitators felt that responses to a number of the questions might well stem from transient factors, especially mood.

The customary method of estimating reliability across time is to give the same inventory to the same group of people at two points in time and then to correlate each individual's pretest score with his

posttest score for each of the scales included in the inventory. Table 5 compares correlation coefficients computed for the McLeod Inventory with those of two other inventories that the Drug Education Center has used. The correlation coefficents for the McLeod Inventory were based on responses of individuals in the control groups for rap groups 1 and 3 and the junior ombudsman group. The experimental groups could not be used to test the stability because they had participated in a program whose purpose was to change the ways students would respond on the posttest. Two of the control groups could not be used because there was no way to match up each individual's pretest with his posttest. Correlation coefficients for the majority of the McLeod Inventory scales compare favorably with correlations for the Personal Orientation Inventory and California Personality Inventory scales. Correlations for three of the scales -- poor self-image, incohesive family life, and illness -- are lower than correlation coefficients for the other two inventories. Correlations are only moderate for several other states: peer pressure, loneliness, hopelessness and cannot cope. Correlations are stronger for poor parent-child relationship, lacks commitment, poor teacher-student relationship, lacks attachment to other institutions, boredom, and rebellion. Lacks attachment to school has the highest correlation coefficient for a scale on any of the three inventories. Because there are fewer questions for each scale on the McLeod Inventory, a change in a student's response to a single question on a scale will lower that correlation coefficient to a greater extent on the McLeod Inventory than on the other two inventories.

Table 5

TEST - RETEST RELIABILITY OF SELECTED INVENTORIES

Inventory	Number of Scales	Number of Questions	People Tested		Test Interval	Individual Correlation Coefficients[a] of Scales		
			Description	Members		Median	High	Low
McLeod High Risk	13	63	Junior High school students	33	8 weeks	.56	.83	.23
Personal Orientation	12	150	College Students[b] in intro. psych.	48	1 week	.71	.82	.52
			Student nurses[c]	46	1 year	.58	.71	.32
California Personality	18	480	High School Females[d]	125	1 year	.68	.77	.44
			High School males[d]	101	1 year	.64	.75	.38

[a] 0 would indicate no association between an individual's pretest and posttest scores and 1.00 would indicate perfect association.

[b] Klavetter, Robert E.; and Mogar, Robert E: "Stability and Internal Consistency of a Measure of Self-Actualization." Psychological Reports, 21 (1967), 422-424.

[c] Ilardi, Robert L.; and May, W. Theodore. "A Reliability Study of Shostrom's Personal Orientation Inventory." Journal of Humanistic Psychology, 1968, 68-72. Reports that the coefficients are well within the ranges of those for the Edwards Personal Preference Schedule and the Minnesota Multiphasic Personality Inventory (p. 71).

[d] Gough, Harrison G. Manual for the California Psychological Inventory. Pala Alto, Calif.: Consulting Psychologists Press, Inc., 1957, Revised 1969. p. 19.

While the test-retest measure of stability does not place the McLeod Inventory in an unfavorable light compared with other inventories, it is unlikely that it contains the precision necessary to rank individuals in terms of the extent to which they have changed on a particular scale. As others have pointed out, "the majority of personality tests now employed in psychological and educational research are seriously lacking in the precision with which they are able to order persons."[10] The fact that the McLeod Inventory may not be precise enough when applied to individuals does not mean that the inventory is a useless tool for purposes of evaluating program impact.

Correlation coefficients based upon the stability of individual responses may be a more severe test of reliability than is necessary when one is interested in average group changes instead of individual changes. One might expect measurement error for a group average to be smaller than for an individual because the error in one direction for some individuals in a groups would at least partially cancel out error in the opposite direction by other individuals in that group. Another way of looking at stability would be to calculate for each question used to measure each of the 13 states the percentage of the responses that were the same on the pretest and on the posttest. If all the paired test-retest responses for a given question had been either true-true, false-false, or no response-no response, then the stability for that question would be 100 per cent. If all the responses had been in the nature of true-false, false-true, response-no response, or no response-response, then the stability for that question would be zero per cent.

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[10]Harold Webster and Carl Bereiter, "The Reliability of Changes Measured by Mental Test Scores" in Chester W. Harris, Problems in Measuring Change (Madison, Wisconsin: University of Wisconsin Press, 1963), p. 59.

Table 6 compares the correlation coefficents based upon individual responses with a measure of group stability. The group stability measure was obtained by calculating a stability percentage for each question used to measure each of the 13 states, arraying the percentages for each state, and selecting the percentage that fell at the midpoint of that array. For example, five questions were used to measure the state, peer pressure. The stability percentages for these five were 58%, 61%, 70%, 73%, and 73%. The median percentage is 70. As can be seen in Table 6, the group stability percentage is substantially higher than individual correlation coefficents for most of the states.

In order to determine whether lack of stability obscured changes that occurred among the experimental groups between the pretest and posttest, the states were separated into two groups. The seven states having the highest individual correlation coefficients were placed in a high reliability category and the six states with the lowest individual correlation coefficients were placed in a low reliability category. If the lack of change were caused by unreliability, we would expect that the experimental groups would have improved relative to the control groups on a higher percentage of targeted states in the high reliability category than in the low reliability category. For the high reliability category, the experimental group improved relative to the control group in two out of six instances. For the low reliability category, the experimental group improved relative to the control group in seven out of twelve instances. We conclude that unreliability probably does not account for the lack of significant changes between the pretest and the posttest.

Table 6

TWO RELIABILITY MEASURES FOR THE McLEOD INVENTORY

State	Individual Correlation Coefficient	Group Stability Percentage
Incohesive Family Life	.223	81%
Poor Parent-Child Relationship	.568	79
Lacks Commitment	.600	74
Poor Teacher-Student Relationship	.636	78
Lacks Attachment to School	.828	84
Lacks Attachment to other Institutions	.557	85
Hopelessness and Cannot Cope	.426	67
Illness	.297	71
Boredom	.638	85
Rebellion	.603	72
Loneliness	.442	70
Poor Self-Image	.312	70
Peer Pressure	.528	70

Conclusion

When compared with control group scores, the differences between pretest and posttest scores on the McLeod Inventory for experimental rap and ombudsman groups conducted in the fall of 1973 suggest that there was no substantial or statistically significant change in participants' attitudes. Several possibilities have been explored to find out why the scores do not show a change. It seems reasonable to discount several of these possibilities. It seems unlikely that a real change brought about in the states measured was camouflaged by measurement error due to unreliability or invalidity of the test itself. It is unlikely that the control groups were sufficiently dissimilar to the experimental groups to render the relative change measure inappropriate. Neither does it appear that students' scores for the high risk states were so close to the ideal scores that it would be unrealistic to expect the students to move much closer toward the ideal score. Finally, it does not appear that the states measured were not the states for which changes were sought.

Two possibilities have not been discounted. One is that the program is ineffective, either because the effort expended is insufficient to obtain a substantial change in attitudes or because it is inappropriate to obtain that change. An alternative possibility is that the program is effective but that the posttest was given too soon. The experience with behavioral measures previously used to assess change in attachment to school and the opinions of the groups' facilitators lend support to the assumption that the time frame was too short rather than to the assumption that the program was ineffective. The uncertainty surrounding

the cause for the lack of change in scores could be further reduced by looking at behavioral measures for attachment to school and giving a second posttest at the end of the spring semester for those groups that continued into the second semester.

Based upon behavioral measures, the 1972-73 groups that had a humanistic orientation and encouraged students to generate their own problems did show, relative to the control groups, a statistically significant improvement in attachment to school. The work described in this paper was designed to address this question: Is it possible to shorten the time that groups run from a semester to eight weeks and still achieve improvement in selected psychological/sociological states? Since significant improvement was not obtained within the eight week period and since the possibilities were discounted that a lack of change could be attributed to the way the groups were formed and the states were measured, we conclude that the answer to this question is no.

This conclusion has implications that go beyond the question specifically addressed. Changing deep-seated attitudes and behavior in people is not easy. New programs set up to accomplish this task will require a year or two for organizational development and program design.[11] The expectation that program results can be evaluated within a year of such a program's inception is unrealistic. Yet one year is the time frame allowed by most federal grants. If impact evaluations, in contrast to project monitoring, are really desired, then funding periods need to be extended

[11] Jacqueline Kosecoff and Carol Fitz-Gibbon, "Many a Slip," Evaluation Comment, 4:3 (December, 1973), 6-8; Carol H. Weiss, "Between the Cup and the Lip...," Evaluation, 1:2 (1973), 49-55.

to insure program continuity over the multi-year period required to obtain significant changes in attitudes and behavior.

Comparing Attitudinal Measures with Behavioral Measures

The second question to be addressed is whether it is possible to assess impact by looking at attitude changes instead of behavioral changes. To consider this question, let us limit the discussion to the single state for which both attitudinal and behavior measures have been used -- lacks attachment to school. The behavioral measure included the number of days that a student was absent, the number of subjects he failed, and his academic grade-point average. The attitudinal measure included responses to four questions about how the student felt about his school -- whether he felt proud of it, whether the school was so big that he felt lost there, whether he felt good about his school, and whether he felt school was boring most of the time. In the 1972 school survey, two questions were used to measure whether a student lacked attachment to school. One of these questions asked how the student felt about his school and the other question asked about the student's academic grade-point average. The total measure and each of the individual questions were positively associated with a tendency to have used drugs. That is, a student was more likely to have used drugs if the measures used for lacks attachment to school placed him in that state than if these measures did not place him in that state. Again, we cannot be sure that lacking attachment to school caused the student to have a higher probability of drug usage. We can say, however, that both the attitudinal and behavioral dimensions of lacking attachment to school are associated with a higher probability of drug usage.

Provided that the conclusions previously reached in this paper concerning the validity and the reliability of the McLeod Inventory are correct, we can conclude that it is possible to use attitudinal measures to assess a program's impact upon students' attachment to school. And if we have the option of using either an attitudinal or a behavior measure for attachment to school, the more important question becomes: "Which type of measure is better?" Table 7 summarizes our experience with these two measures.

Inventories are obtrusive measures. They use some of the student's time, they require his cooperation, and their intrusion into his life may affect the states that are being measured. School records, on the other hand, are nonobtrusive measures. In the group work reported in this paper, the groups' facilitators administered both the pretest and posttest to their groups. A matter of particular concern in this instance was whether or not administering the inventories interfered with the rapport between the facilitators and the group participants. None of the facilitators felt that the testing interfered with rapport, but two of them felt that the identical nature of the pretest and the posttest and the close spacing of these tests created a repetitiousness that the group participants found irritating.

Using the school records instead of the inventory trades off some costs for other costs. The inventory requires that the Drug Education Center staff and the group participants spend time to collect data; school records permit somebody else to spend the time needed to collect the data. But it takes longer to obtain permission to use school records and it takes longer to track down the school records when they are moved from one school to another if the student transfers to another school in

Table 7

COMPARING TWO METHODS OF MEASURING ATTACHMENT TO SCHOOL

Factor	McLeod High Risk Inventory	School Records
Type of measure	Attitudinal	Behavioral
Data collection costs	Requires time of staff and participants	Requires time of evaluator
Interference with staff-participant rapport	A minor problem	No interference
Effect on phenomenon being measured	Some	None
Content validity of measure	Better	More problematical
Susceptibility to transient psychological factors	Fairly stable over an eight-week period (r=.84)	Probably more stable; transient influence would probably wash out
Variation in administration and scoring error	Low	Low
Time required to obtain access to data	Low	High
Ease with which data collection period can be varied	Easy to choose pretest and posttest dates	Using finer breakdowns than semester or academic year increases data collection costs.

the system or when the records are transferred to the central files when a student either drops out of school or moves out of the school's district. In terms of the utility of the measures, other tradeoffs must be made. Concept validity is probably better for the attitudinal measure than it is for the behavioral measure. The interpretation of absenteeism and academic performance is less straightforward than the attitude questions because they may be more easily influenced by other factors. As one example, students may be absent from class because they are physically ill and not because they lack attachment to school. The inventory has one other advantage over school records in that the Drug Education Center can decide when to give the pretest and the posttest. The period of time covered by the school records will be either a semester or an entire academic year. It is possible to use a finer breakdown than it is for school records, but doing so would require obtaining records from individual teachers and would, therefore, increase the data collection costs. Yet on any given day a student might respond to some of the inventory questions as a result of transient factors that would probably not materially affect group averages based on the school's records. This susceptibility might be a minor problem for lacking attachment to school, which had the highest individual correlation coefficient of all the thirteen states, but it would be a more serious problem for some of the other states.

The McLeod Inventory has a couple of other advantages that make continuing working with it desirable. First, it is shorter by at least 30 per cent than the other inventories considered. Second, it is the only one of the three inventories specifically designed to measure changes in the psychological/sociological states believed to lead to

drug abuse. It should not require a large expenditure of effort to refine the McLeod Inventory in order to increase the test-retest reliability of several of the states. But nonobtrusive measures should not be ignored. They can generate valuable information in their own right and they are needed to provide external evidence of the validity of the measures in the McLeod Inventory. The utility of both types of measures can be improved if attitudinal measures and behavioral measures are used in conjunction with each other.

APPENDICES

APPENDIX A

A DESCRIPTION OF DRUG EDUCATION CENTER EXPERIMENTAL GROUPS

by

Ronald A. Boykin

Rap Group 1

This rap group was organized and began meeting on October 24, 1973. Sixteen students and a Drug Education Center staff member met twice weekly for about 45 minutes in an atmosphere in which the students could talk freely about their frustrations, particularly concerning school. The group continued to meet throughout January, 1974.

The group was formed to move the students out of certain psychological states (hopelessness, loneliness, and boredom); methods for accomplishing this objective included role-playing and group-oriented games. Because the listening skills of most of the students were generally not well developed, some attention was directed toward improving listening skills.

The group was primarily an activity-oriented group; in fact, the group expressed an immediate desire to plan and hold a dance for the entire school, at the end of the year. The students assumed full responsibility for the planning of this activity, and carried it through.

Rap Group 2

A rap group was organized at a junior high school in October, 1973. One hour a week for the next eight weeks, the students and a Drug Education Center staff member met to discuss personal problems and feelings. The discussion format was basically unstructured and spontaneous, designed

simply to encourage students to share their feelings with each other in a relaxed atmosphere.

The Drug Education Center staff member acted primarily as a facilitator for the discussion; the direction of the discussion was primarily a function of the particular interests expressed by the students at the beginning of the meeting. The anticipated result of this discussion format is that students would develop trust for and would talk to each other. It was expected that participants would become less lonely and hopeless and that their relationship with their parents would improve and their family life become more cohesive.

Rap Group 3

A rap group was established at a junior high school on November 16, 1973 and ended on March 11, 1974. For 45 minutes a day, three days a week, 12 students and a Drug Education Center staff member met to talk about various topics of interest to the students; including frustrations with school, racial issues, personal values, and anything else that anyone wanted to discuss.

In addition to the open discussion format, students participated in value exercises and communication techniques, designed to help students better understand and convey their feelings. The objectives of this approach are to reduce loneliness, boredom, and hopelessness, by raising self-esteem and getting students involved in constructive activities.

Junior Ombudsman Class

The Junior High School Ombudsman class, composed primarily of 20 students, a Drug Education Center staff member, and a school faculty member was organized in October, 1973, and began meeting each day for

fifty minutes. Objectives of the course were to reduce students' boredom, increase commitment, build better student to student relationships, and to get students involved in helping others.

The class was generally unstructured; topics for discussion included food, race, sex, drugs, school, and teachers. A variety of activities supplemented the "rap" sessions. Value exercises and role-playing were used to encourage students to express themselves. In addition, the group went on field trips and invited speakers from various organizations in Charlotte to lead some sessions, and began making a movie.

Senior Ombudsman Class 1

Ombudsman, a course designed to help students straighten out the red tape in their lives by learning how to help others in a meaningful way, was again offered for credit at a senior high school during the 1973-74 school year. Twelve students met with a Drug Education Center staff member each day for fifty-five minutes to discuss a variety of subjects, including personal values, frustration with school, and racial conflicts. Discussion was generally spontaneous, and directed by students' interests. Slides and a suggested reading list also provided stimulation for students.

The group developed or maintained several projects, among them: Maxwell's Coffee House, a meeting place for young people in the basement of a local church; a camp-out; a system of peer counseling (student to student); and the establishing of a Human Relations Committee on the school campus.

According to the Drug Education Center staff, a course such as Ombudsman should raise the level of self-esteem among students, decrease loneliness, decrease hopelessness and inability to cope, and reduce incohesive family life.

Senior Ombudsman Class 2

The Drug Education Center and the high school administration worked out plans to establish an Ombudsman course, to be offered for credit to students. In August, 1973, the class of 28 students and a Drug Education Center staff member began meeting. Each day for 55 minutes the group met to discuss various topics, including frustrations with school and teachers, racial conflicts, and values. The anticipated results of this open discussion format were a reduction in boredom and loneliness, an elevation of self-esteem among students, an effective way of dealing with peer group pressure, and involving students in helping others in a meaningful way.

Although the group was loosely run, a variety of constructive activities was provided the students, including crafts, yoga, and several parties. Students received a suggested reading list, which was supplemented by values clarification exercises, communication exercises, and films.

The class was scheduled to continue throughout the 1973-74 school year.

Appendix B
THE McLEOD HIGH RISK INVENTORY

For each of the following questions or statements, write on the line to the left the ONE NUMBER that best gives your answer.

_____ 1. Are you male or female?
1. male 2. female

_____ 2. How old were you on your last birthday?
1. 13 or under 2. 14 or 15 3. 16 or 17 4. 18 or older

_____ 3. I live with my parents.
1. true 2. false

_____ 4. I live with my guardian(s).
1. true 2. false

_____ 5. I rate may parents' or guardians' income as average or above average.
1. true 2. false

_____ 6. I have older sister(s) or brother(s).
1. true 2. false

_____ 7. I have younger sister(s) or brother(s).
1. true 2. false

_____ 8. Which best describes you?
1. Latin American 2. Oriental 3. Black, Negro, or Afro-American 4. American Indian 5. White

_____ 9. My religion can best be described as:
1. Jewish 2. Protestant 3. Catholic 4. Muslem 5. Other

_____10. My family gets together for rap sessions sometimes.
1. true 2. false

_____11. I often feel like getting back at my parents.
1. true 2. false

_____12. I often feel the world is going to pieces, so why should I bother.
1. true 2. false

_____13. Most teachers know their subject.
1. true 2. false

_____14. I'm really proud of my school.
1. true 2. false

_____15. My own church really cares about young people.
1. true 2. false

_____16. I often feel helpless in this big world.
1. true 2. false

_____17. I often worry about my health.
1. true 2. false

_____18. My daily life is full of things that keep me interested.
1. true 2. false

_____19. Even in a group of friends I feel left out.
1. true 2. false

_____20. I cannot do anything well.
1. true 2. false

_____21. Friends sometimes talk me into doing things I know are not right.
1. true 2. false

_____22. Deep down I know my parents' discipline is because they care about me.
1. true 2. false

_____23. Many times my parents don't understand me.
1. true 2. false

_____24. It often seems that my life has no meaning.
1. true 2. false

_____25. Most teachers care more about what they teach than whom they teach.
1. true 2. false

_____26. My school is so big I feel lost there.
1. true 2. false

_____27. I go to a religious meeting at least once a week.
1. true 2. false

_____28. I usually feel that life is worth while.
1. true 2. false

_____29. Most of the time I feel healthy.
1. true 2. false

_____30. I feel bored because I don't have enough to do.
1. true 2. false

_____31. The thought of breaking laws and rules bothers me.
1. true 2. false

_____32. I don't kiss my parents goodnight anymore, but sometimes I'd really like to.
1. true 2. false

_____33. I'm usually cool-headed and speak out when things are not going right.
1. true 2. false

_____34. I am not comfortable if I am not dressed like my friends.
1. true 2. false

_____35. My parents let me do anything I want.
1. true 2. false

_____36. Most of the time my parents are pleased with me.
1. true 2. false

_____37. I worry about the needs of other people.
1. true 2. false

_____38. I can go to some teachers or counselors to discuss problems.
1. true 2. false

_____39. I feel good about my school.
1. true 2. false

_____40. I feel I can talk to my priest, minister, rabbi, or doctor about myself or about problems.
1. true 2. false

_____41. I often lie awake at night.
1. true 2. false

_____42. School is boring most of the time.
1. true 2. false

_____43. I'm going to do what I want regardless of who cares.
1. true 2. false

_____44. Many times people listen but don't hear me.
1. true 2. false

_____45. I have learned to trust my feelings.
1. true 2. false

_____46. I often follow the crowd just to please them.
1. true 2. false

_____47. I wish my parents cared more about what I do.
1. true 2. false

_____48. My parents love me.
1. true 2. false

_____49. I want to make something out of myself.
1. true 2. false

_____50. There is, at least, one teacher, whom I admire.
1. true 2. false

_____51. School is boring most of the time.
1. true 2. false

_____52. I feel like giving up quickly when things go wrong.
1. true 2. false

_____53. I usually feel good when I get up in the morning.
1. true 2. false

_____54. I'd like to change the whole system, even if it meant burning it down in order to make a new start.
1. true 2. false

_____55. I often follow the crowd because I'm lonely.
1. true 2. false

_____56. I am often reminded that something is wrong with my looks (such as skin, weight, ears, nose, teeth, feet, height, and legs).
1. true 2. false

_____57. Being with my parents in public embarrasses me.
1. true 2. false

_____58. I really care for my grandparents.
1. true 2. false

_____59. I feel comfortable talking to my parents (or guardians) about things that matter.
1. true 2. false

_____60. If people in our country work hard they have a chance to get ahead.
1. true 2. false

_____61. No matter what I do it doesn't seem to make a change in things around me.
1. true 2. false

_____62. I often feel left out and passed over by the kids I'd like to be going with.
1. true 2. false

_____63. I seem to be about as capable and smart as others around me.
1. true 2. false

_____64. I'd rather please my friends than my parents in the way I dress and act.
1. true 2. false

_____65. I am proud to be a member of my family.
1. true 2. false

_____66. It makes me feel good for my parents to tell me they are proud of me.
1. true 2. false

_____67. The future seems hopeless to me.
1. true 2. false

_____68. I am certainly lacking in self-confidence.
1. true 2. false

_____69. I am good at getting my way.
1. true 2. false

_____70. At times I think I'm no good at all.
1. true 2. false

_____71. Policemen, in general, do a good job.
1. true 2. false

_____72. Things are all mixed up in my life.
1. true 2. false

_____73. On the whole I am pretty satisfied with myself.
1. true 2. false

_____74. I am the oldest of my brothers and sisters.
1. true 2. false

_____75. I am the youngest of my brothers and sisters.
1. true 2. false

Appendix C
METHOD OF COMPUTING SCORES FOR EACH PSYCHOLOGICAL/SOCIOLOGICAL STATE

State	Column (Question)	If Response Is,	Then Record Score of,
Incohesive family life	10	2 (false)	1
	22	2 (false)	1
	35	1 (true)	1
	47	1 (true)	1
	58	2	1
	65	2	1
	Total possible score = 6		
Poor parent-child relationship	11	1	1
	23	1	2
	36	2	2
	48	2	2
	59	2	1
	35	1	1
	47	1	1
	32	1	1
	66	2	1
	Total possible score = 12		
Lacks commitment	12	1	1
	24	1	1
	37	2	2
	49	2	2
	Total possible score = 6		
Poor teacher-student relationship	13	2	1
	25	1	1
	38	2	2
	50	2	1
	Total possible score = 5		
Lacks attachment to school	14	2	2
	26	1	1
	39	2	2
	42	1	1
	Total possible score = 6		

State	Column (Question)	If Response Is,	Then Record Score of,
Lacks attachment to established institution	15	2	1
	27	2	1
	40	2	1
	60	2	1
	71	2	1
	33	2	1
	54	1	1
	Total possible score = 7		
Hopelessness and cannot cope	16	1	1
	28	2	1
	52	1	1
	61	1	1
	20	1	1
	67	1	1
	69	2	1
	62	1	1
	63	2	1
	Total possible score = 9		
Illness	17	1	1
	29	2	3
	41	1	1
	53	2	1
	Total possible score = 6		
Boredom	18	2	3
	30	1	2
	42	1	2
	Total possible score = 7		
Rebellion	11	1	1
	31	2	1
	43	1	1
	54	1	1
	Total possible score = 4		
Loneliness	19	1	2
	32	1	1
	44	1	1
	55	1	1
	62	1	2
	Total possible score = 7		

State	Column (Question)	If Response Is,	Then Record Score of,
Poor self-image	20	1	2
	33	2	1
	45	2	1
	56	1	1
	63	2	1
	68	1	1
	70	1	2
	72	1	1
	73	2	2
	62	1	1
	Total possible score = 13		
Peer pressure	21	1	2
	34	1	1
	46	1	2
	57	1	1
	64	1	1
	Total possible score = 7		

Appendix D

Table 1

PRETEST AND POSTTEST SCORES BY STATE FOR RAP 1
EXPERIMENTAL AND CONTROL GROUPS

STATES	TOTAL POSSIBLE SCORE	MEAN GROUP SCORE PRETEST SCORE	MEAN GROUP SCORE POSTTEST SCORE	CHANGE*	% OF TOTAL POSSIBLE SCORE PRETEST	% OF TOTAL POSSIBLE SCORE POSTTEST
Incohesive Family Life						
Experimental	6	1.000	1.286	-.285	17	21
Control	6	1.385	1.846	-.461	23	31
Poor Parent-Child Relationship						
Experimental	12	3.214	3.429	-.214	27	29
Control	12	4.000	3.846	-.153	33	32
Lacks Commitment						
Experimental	6	.786	.714	.071	13	12
Control	6	1.769	1.615	.153	29	27
Poor Teacher-Student Relationship						
Experimental	5	1.286	1.143	.142	26	23
Control	5	2.231	2.231	.000	45	45
Lacks Attachment to School						
Experimental	6	1.429	1.857	-.428	24	31
Control	6	2.769	2.308	.461	46	38
Lacks Attachment to Other Institutions						
Experimental	7	2.000	1.857	.142	29	26
Control	7	2.923	2.769	.153	42	40
Hopelessness and Cannot Cope						
Experimental	9	2.643	2.857	-.214	29	32
Control	9	3.462	3.077	.384	38	34
Illness						
Experimental	6	1.857	1.929	-.071	31	32
Control	6	2.231	1.769	.461	37	29
Boredom						
Experimental	7	2.214	2.214	.000	32	32
Control	7	3.769	2.769	1.000	54	40
Rebellion						
Experimental	4	1.429	1.214	.214	36	30
Control	4	1.769	1.846	-.076	44	46
Loneliness						
Experimental	7	3.357	3.286	.071	48	47
Control	7	3.000	3.154	-.153	43	45
Poor Self-Image						
Experimental	13	3.857	3.643	.214	30	28
Control	13	4.462	4.231	.230	34	33
Peer Pressure						
Experimental	7	2.857	2.071	.785	41	30
Control	7	3.000	3.615	-.615	43	52
Total Score						
Control	63	18.7	18.1	+.6	30	29
Experimental	63	24.2	23.2	1.0	38	37

* A positive number indicates an improvement.

Table 2

PRETEST AND POSTTEST SCORES BY STATE FOR RAP 2
EXPERIMENTAL AND CONTROL GROUPS

STATES	TOTAL POSSIBLE SCORE	MEAN GROUP SCORE PRETEST SCORE	MEAN GROUP SCORE POSTTEST SCORE	CHANGE	% OF TOTAL POSSIBLE SCORE PRETEST	% OF TOTAL POSSIBLE SCORE POSTTEST
Incohesive Family Life						
Experimental	6	1.714	1.000	.714	29	17
Control	6	1.273	1.091	.181	21	18
Poor Parent-Child Relationship						
Experimental	12	4.143	4.143	.000	35	35
Control	12	3.727	2.636	1.090	31	22
Lacks Commitment						
Experimental	6	.857	1.429	-.571	14	24
Control	6	.818	.818	.000	14	14
Poor Teacher-Student Relationship						
Experimental	5	1.857	1.571	.285	37	31
Control	5	1.455	1.636	-.181	29	33
Lacks Attachment to School						
Experimental	6	1.429	1.286	.142	24	21
Control	6	2.000	1.909	.091	33	32
Lacks Attachment to Other Inst.						
Experimental	7	2.286	3.000	-.714	33	43
Control	7	1.455	2.000	-.545	21	29
Hopelessness and Cannot Cope						
Experimental	9	3.714	3.143	.571	41	35
Control	9	2.636	2.273	.363	29	25
Illness						
Experimental	6	1.571	1.714	-.142	26	29
Control	6	1.818	1.273	.545	30	21
Boredom						
Experimental	7	2.143	2.714	-.571	31	39
Control	7	2.273	2.727	-.454	32	39
Rebellion						
Experimental	4	2.000	2.000	.000	50	50
Control	4	1.091	1.455	-.366	27	36
Loneliness						
Experimental	7	2.857	3.286	-.428	41	47
Control	7	2.182	2.182	.000	31	31
Poor Self-Image						
Experimental	13	4.714	3.286	1.428	36	25
Control	13	3.636	3.455	.181	28	27
Peer Pressure						
Experimental	7	3.000	3.000	.000	43	43
Control	7	2.091	1.818	.272	30	26
Total Score						
Experimental	63	21.6	21.7	-.1	34	34
Control	63	18.2	17.4	+.8	29	28

Table 3

PRETEST AND POSTTEST SCORES BY STATE FOR RAP 3
EXPERIMENTAL AND CONTROL GROUPS

STATES	TOTAL POSSIBLE SCORE	MEAN GROUP SCORE PRETEST SCORE	MEAN GROUP SCORE POSTTEST SCORE	CHANGE	% OF TOTAL POSSIBLE SCORE PRETEST	% OF TOTAL POSSIBLE SCORE POSTTEST
Incohesive Family Life						
Experimental	6	1.375	1.375	.000	23	23
Control	6	1.500	1.250	.250	25	21
Poor Parent-Child Relationship						
Experimental	12	3.750	4.750	-1.000	31	40
Control	12	2.750	3.750	-1.000	23	31
Lacks Commitment						
Experimental	6	1.875	2.375	-.500	31	40
Control	6	.750	.250	.500	13	4
Poor Teacher-Student Relat.						
Experimental	5	1.875	1.750	.125	38	35
Control	5	1.250	1.750	-.500	25	35
Lacks Attachment to School						
Experimental	6	2.500	2.875	-.375	42	48
Control	6	.500	1.000	-.500	8	17
Lacks Attach. to Other Inst.						
Experimental	7	1.875	2.375	-.500	27	34
Control	7	2.500	2.250	.250	36	32
Hopelessness and Cannot Cope						
Experimental	9	4.000	4.000	.000	44	44
Control	9	3.000	2.750	.250	33	31
Illness						
Experimental	6	2.875	1.750	1.125	48	29
Control	6	2.000	1.250	.750	33	21
Boredom						
Experimental	7	4.750	3.875	.875	68	55
Control	7	.500	1.500	-1.000	7	21
Rebellion						
Experimental	4	1.500	1.150	-.750	38	56
Control	4	1.250	1.500	-.250	31	21
Loneliness						
Experimental	7	4.375	3.000	1.375	63	43
Control	7	1.750	3.500	-.750	39	50
Poor Self-Image						
Experimental	13	5.125	4.375	.750	39	34
Control	13	5.250	2.750	2.500	40	38
Peer Pressure						
Experimental	7	3.250	3.500	-.250	46	50
Control	7	2.000	3.250	-1.250	29	46
Total Score						
Experimental	63	25.5	25.6	-.1	40	41
Control	63	17.5	17.5	0	28	28

Table 4

PRETEST AND POSTTEST SCORES BY STATE FOR JUNIOR OMBUDSMAN
EXPERIMENTAL AND CONTROL GROUPS

STATES	TOTAL POSSIBLE SCORE	MEAN GROUP SCORE PRETEST SCORE	MEAN GROUP SCORE POSTTEST SCORE	CHANGE	% OF TOTAL POSSIBLE SCORE PRETEST	% OF TOTAL POSSIBLE SCORE POSTTEST
Incohesive Family Life						
Experimental	6	1.143	1.714	-.571	19	29
Control	6	1.563	1.500	.062	26	25
Poor Parent-Child Relationship						
Experimental	12	5.214	4.786	.428	43	40
Control	12	4.688	4.875	-.187	39	41
Lacks Commitment						
Experimental	6	2.071	1.714	.357	35	29
Control	6	1.875	1.125	.750	31	19
Poor Teacher-Student Relationship						
Experimental	5	2.429	2.429	.000	49	49
Control	5	2.000	1.938	.062	40	39
Lacks Attachment to School						
Experimental	6	2.500	3.571	-1.071	42	60
Control	6	3.063	2.438	.625	51	41
Lacks Attach. to Other Inst.						
Experimental	7	3.857	4.071	-0.214	55	58
Control	7	3.313	3.688	-0.375	47	53
Hopelessness and Cannot Cope						
Experimental	9	3.143	2.786	.357	35	31
Control	9	3.250	3.250	.000	36	36
Illness						
Experimental	6	3.214	2.643	.571	54	44
Control	6	1.875	1.688	.187	31	28
Boredom						
Experimental	7	3.000	3.857	-.857	43	55
Control	7	4.063	3.188	.875	58	46
Rebellion						
Experimental	4	2.000	2.143	-.142	50	54
Control	4	2.125	2.250	-.125	53	56
Loneliness						
Experimental	7	2.714	2.429	.285	39	35
Control	7	3.125	3.000	.125	45	43
Poor Self-Image						
Experimental	13	4.000	4.571	-.571	31	35
Control	13	4.438	4.500	-.062	34	35
Peer Pressure						
Experimental	7	2.286	2.357	-.071	33	34
Control	7	3.813	3.188	.625	54	46
Total Score						
Experimental	63	25.2	26.6	-1.4	40	42
Control	63	26.3	25.0	+1.3	42	40

Table 5

PRETEST AND POSTTEST SCORES BY STATE FOR SENIOR OMBUDSMAN 1
EXPERIMENTAL AND CONTROL GROUPS

STATES	TOTAL POSSIBLE SCORE	MEAN GROUP SCORE PRETEST SCORE	MEAN GROUP SCORE POSTTEST SCORE	CHANGE	% OF TOTAL POSSIBLE SCORE PRETEST	% OF TOTAL POSSIBLE SCORE POSTTEST
Incohesive Family LIfe						
Experimental	6	1.545	1.455	.090	26	24
Control	6	1.435	1.043	.391	24	17
Poor Parent-Child Relationship						
Experimental	12	5.091	4.000	0.090	42	33
Control	12	3.652	3.304	.347	30	28
Lacks Commitment						
Experimental	6	1.545	1.273	.272	26	21
Control	6	.696	1.130	-.434	12	19
Poor Teacher-Student Relationship						
Experimental	5	2.000	1.636	.363	40	33
Control	5	1.783	.739	1.043	36	15
Lacks Attachment to School						
Experimental	6	2.000	3.455	-1.454	33	58
Control	6	2.739	2.130	.608	46	36
Lacks Attach. to Other Inst.						
Experimental	7	3.000	3.273	-.272	43	47
Control	7	2.957	2.739	.217	42	39
Hopelessness and Cannot Cope						
Experimental	9	2.455	2.182	.272	27	24
Control	9	2.348	1.870	.478	26	21
Illness						
Experimental	6	2.091	1.455	.636	35	24
Control	6	1.522	1.652	-.130	25	28
Boredom						
Experimental	7	2.091	1.909	.181	30	27
Control	7	2.696	1.826	.869	39	26
Rebellion						
Experimental	4	1.091	1.455	-.363	27	36
Control	4	1.826	1.348	.478	46	34
Loneliness						
Experimental	7	3.091	2.545	.545	44	36
Control	7	2.739	2.739	.000	39	39
Poor Self-Image						
Experimental	13	5.182	4.909	.272	40	38
Control	13	4.522	3.913	.608	35	30
Peer Pressure						
Experimental	7	1.636	1.091	.545	23	16
Control	7	2.261	2.087	.173	32	30
Total Score						
Experimental	63	22.9	21.3	+1.6	36	34
Control	63	20.6	18.2	+2.4	33	29

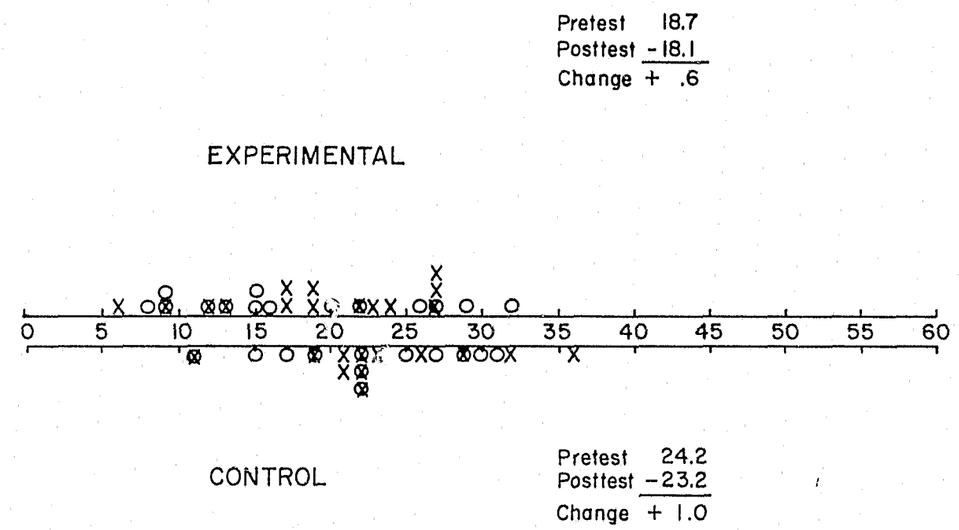
Table 6

PRETEST AND POSTTEST SCORES BY STATE FOR SENIOR OMBUDSMAN 2
EXPERIMENTAL GROUP

STATES	TOTAL POSSIBLE SCORE	MEAN GROUP SCORE PRETEST SCORE	MEAN GROUP SCORE POSTTEST SCORE	CHANGE	% OF TOTAL POSSIBLE SCORE PRETEST	% OF TOTAL POSSIBLE SCORE POSTTEST
Incohesive Family Life	6	1.200	1.100	.100	20	18
Poor Parent-Child Relationship	12	3.100	4.800	-1.700	26	40
Lacks Commitment	6	1.100	.900	.200	18	15
Poor Teacher-Student Relat.	5	1.900	1.500	.399	38	30
Lacks Attachment to School	6	.600	1.900	-1.300	10	32
Lacks Attachment to Other Inst.	7	2.900	3.400	-.500	41	49
Hopelessness and Cannot Cope	9	2.600	2.000	.599	29	22
Illness	6	2.600	1.800	.800	43	30
Boredom	7	1.900	2.200	-.300	27	31
Rebellion	4	.600	2.000	-1.400	15	50
Loneliness	7	2.500	2.600	- .099	36	37
Poor Self-Image	13	4.100	4.700	-.600	32	36
Peer Pressure	7	2.600	1.700	.900	37	24
Total Score	63	19.2	20.8	-1.6	30	33

FIGURE 1

CHANGE BETWEEN PRETEST AND POSTTEST TOTAL SCORES
RAP 1 EXPERIMENTAL AND CONTROL GROUPS



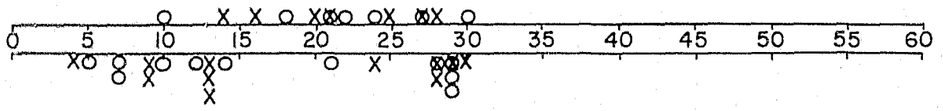
KEY: X - an individual's pretest score
O - an individual's posttest score

FIGURE 2

CHANGE BETWEEN PRETEST AND POSTTEST TOTAL SCORES
RAP 2 EXPERIMENTAL AND CONTROL GROUPS

Pretest 21.6
Posttest -21.7
Change - .1

EXPERIMENTAL



CONTROL

Pretest 18.2
Posttest -17.4
Change + .8

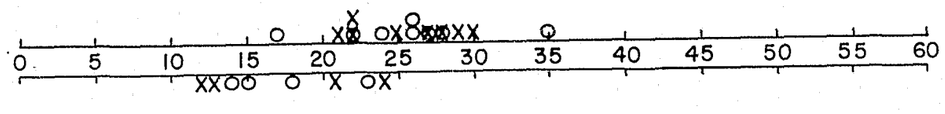
KEY: X = an individual's pretest score
O = an individual's posttest score

FIGURE 3

CHANGE BETWEEN PRESTEST AND POSTTEST TOTAL SCORES
RAP 3 EXPERIMENTAL AND CONTROL GROUPS

Pretest 25.5
Posttest -25.6
Change - .1

EXPERIMENTAL



CONTROL

Pretest 17.5
Posttest -17.5
Change 0

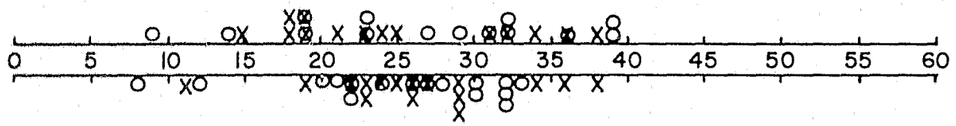
KEY: X - an individual's pretest scores
O - an individual's posttest scores

FIGURE 4

CHANGE BETWEEN PRETEST AND POSTTEST TOTAL SCORES
JUNIOR OMBUDSMAN EXPERIMENTAL AND CONTROL GROUPS

Pretest 25.2
Posttest -26.6
Change - 1.4

EXPERIMENTAL



Pretest 26.3
Posttest 25.0
Change + 1.3

CONTROL

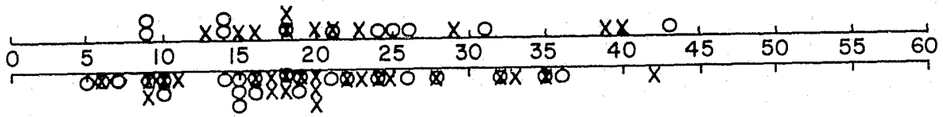
KEY: X - an individual's pretest score
O - an individual's posttest score

FIGURE 5

CHANGE BETWEEN PRETEST AND POSTTEST TOTAL SCORES
SENIOR OMBUDSMAN 1 EXPERIMENTAL AND CONTROL GROUPS

Pretest 22.9
Posttest -21.3
Change + 1.6

EXPERIMENTAL



Pretest 20.6
Posttest 18.2
Change + 2.4

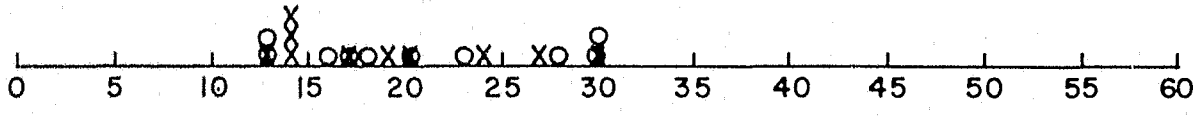
CONTROL

KEY: X - an individual's pretest score
O - an individual's posttest score

FIGURE 6

CHANGE BETWEEN PRETEST AND POSTTEST TOTAL SCORES
SENIOR OMBUDSMAN 2 GROUP

Pretest 19.2
Posttest -20.8
Change -1.6



KEY: X - an individual's pretest score

O - an individual's posttest score

FIGURE 7
CHANGES IN STATE SCORES FOR PSYCHOLOGICAL/SOCIOLOGICAL STATES,
RAP 1 EXPERIMENTAL AND CONTROL GROUPS

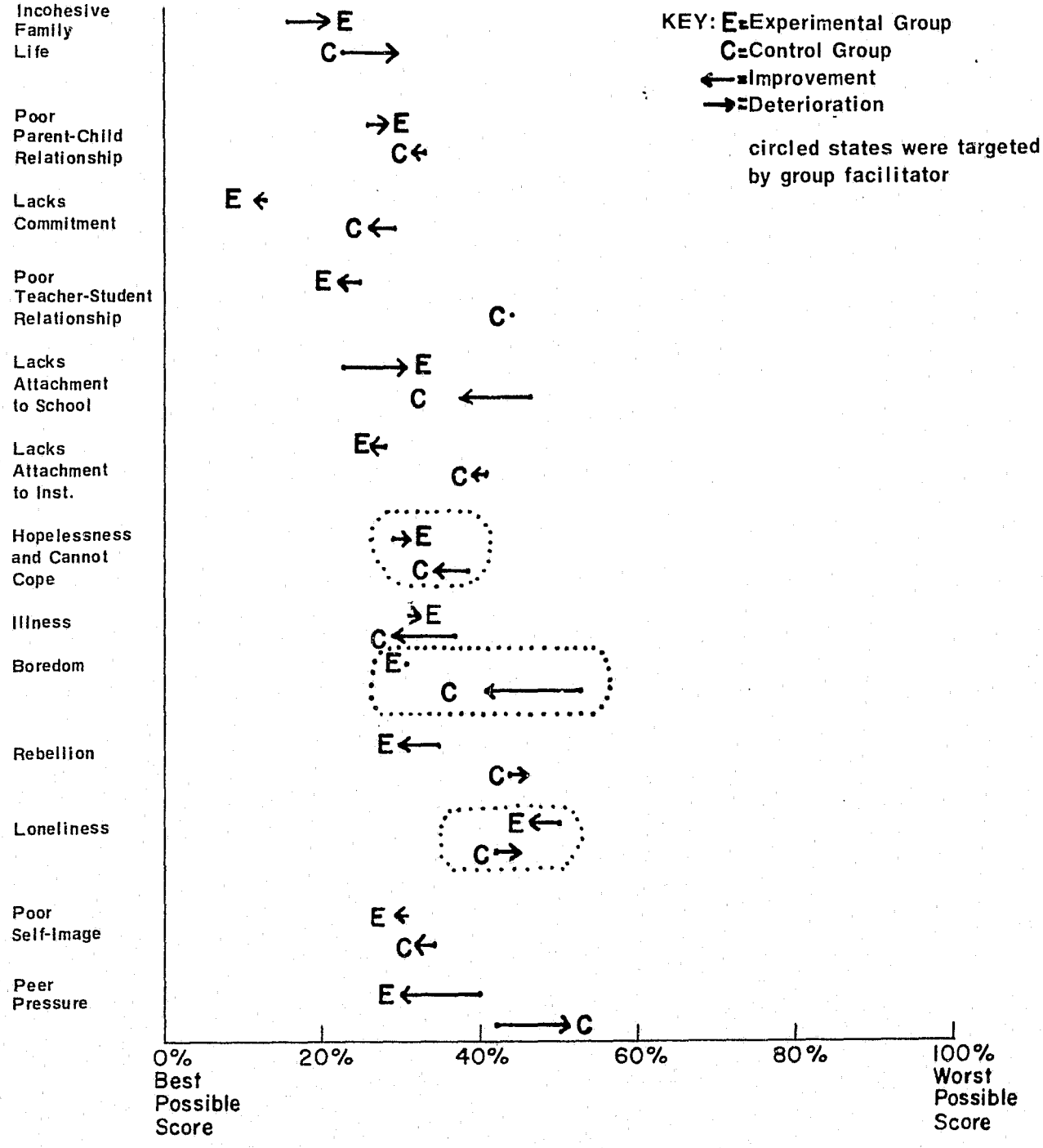


FIGURE 8

CHANGES IN STATE SCORES FOR PSYCHOLOGICAL/SOCIOLOGICAL STATES
RAP 2 EXPERIMENTAL AND CONTROL GROUPS

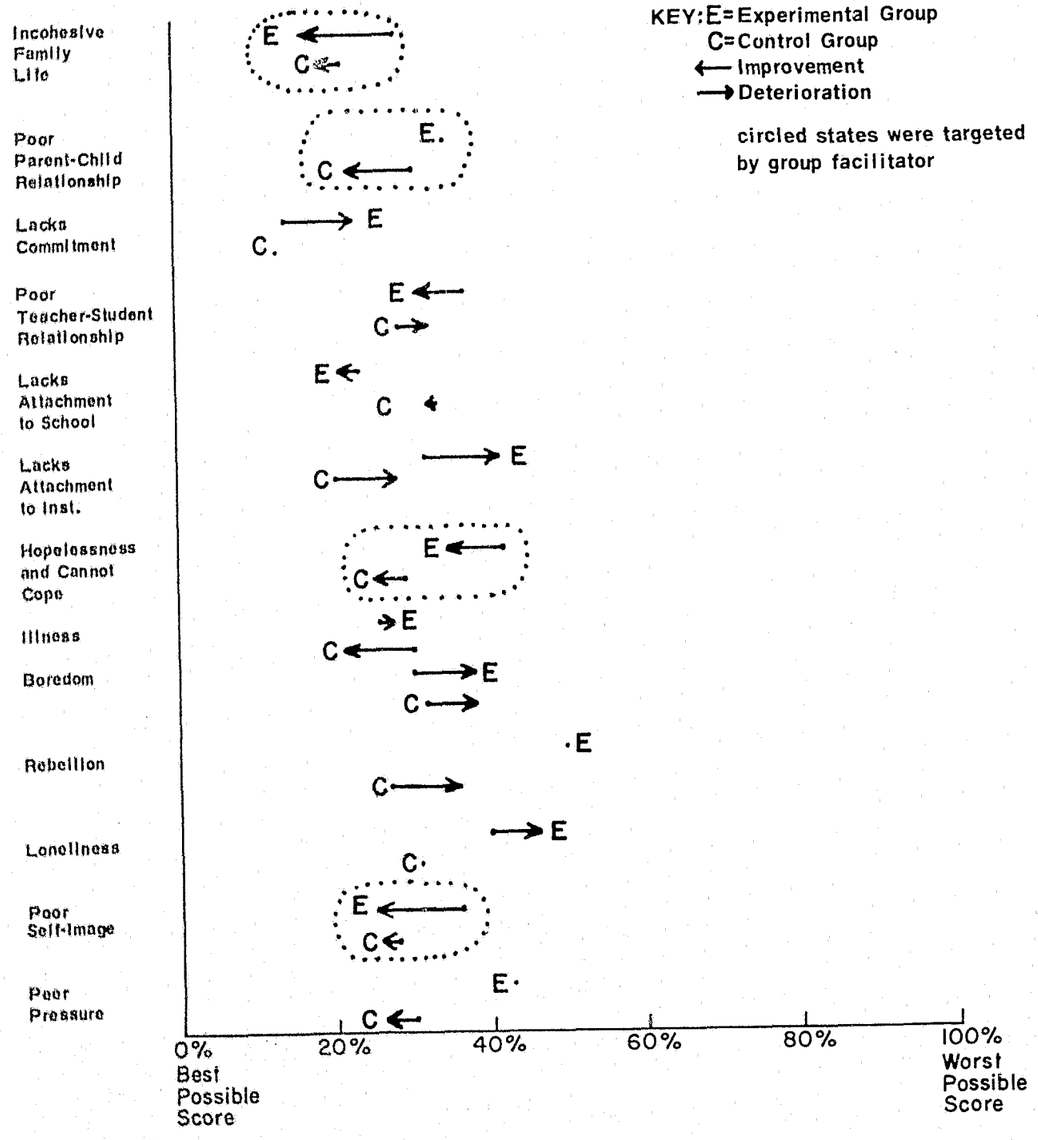


FIGURE 9

CHANGES IN STATE SCORES FOR PSYCHOLOGICAL/SOCIOLOGICAL STATES
RAP 3 EXPERIMENTAL AND CONTROL GROUPS

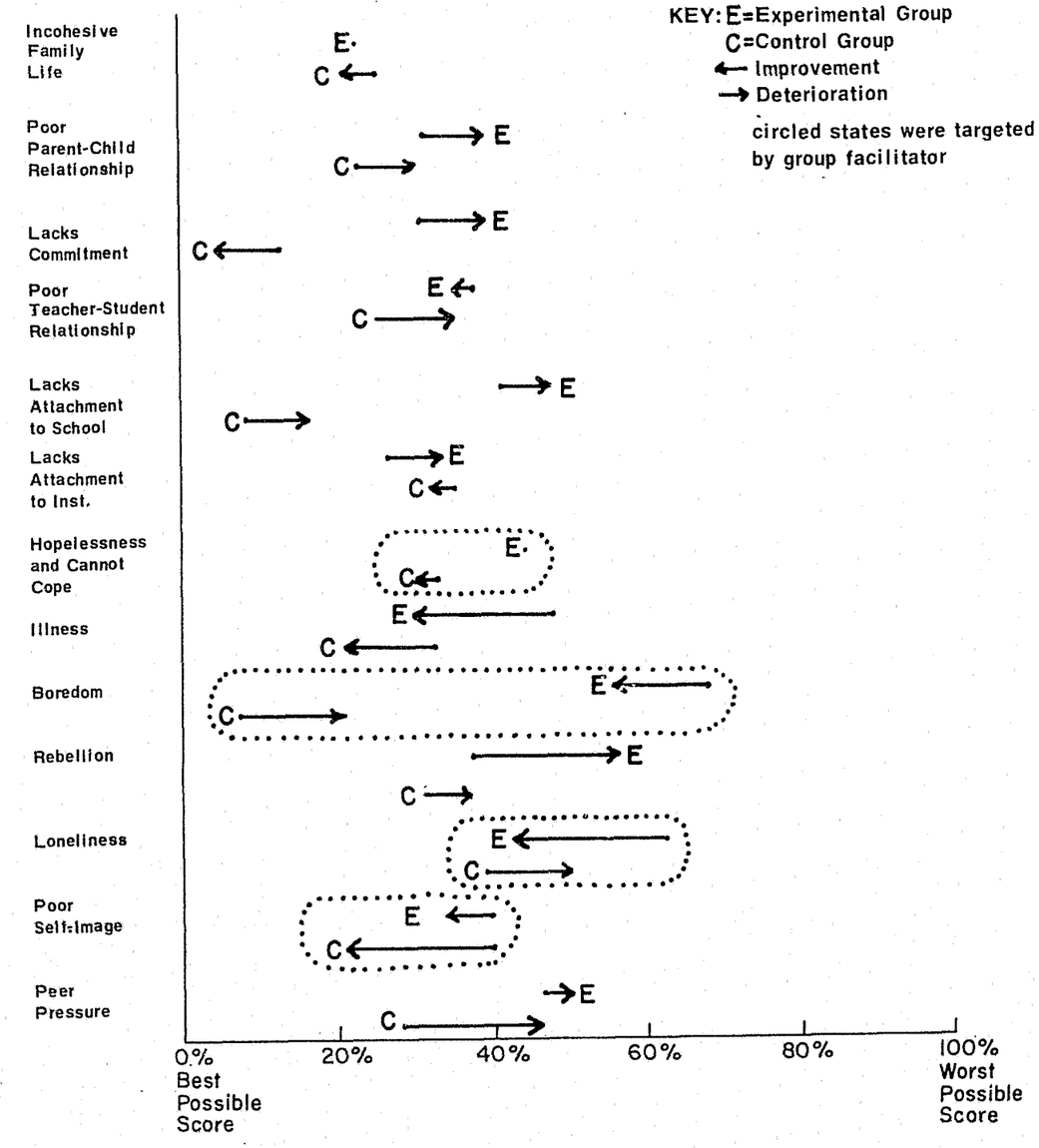


FIGURE 10

CHANGES IN STATE SCORES FOR PSYCHOLOGICAL/SOCIOLOGICAL STATES
JUNIOR OMBUDSMAN EXPERIMENTAL AND CONTROL GROUPS

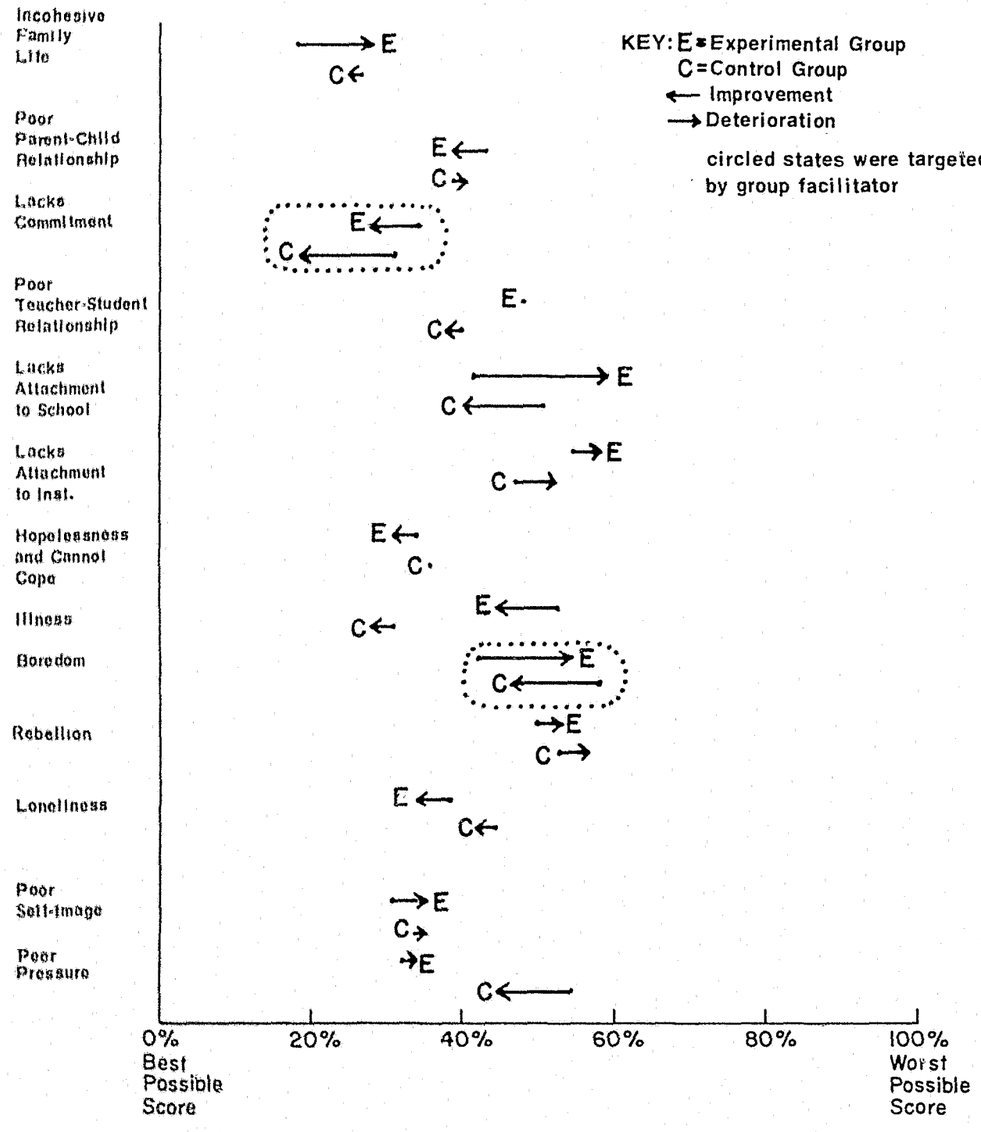


FIGURE 11

CHANGES IN STATE SCORES FOR PSYCHOLOGICAL/SOCIOLOGICAL STATES
SENIOR OMBUDSMAN 1 EXPERIMENTAL AND CONTROL GROUPS

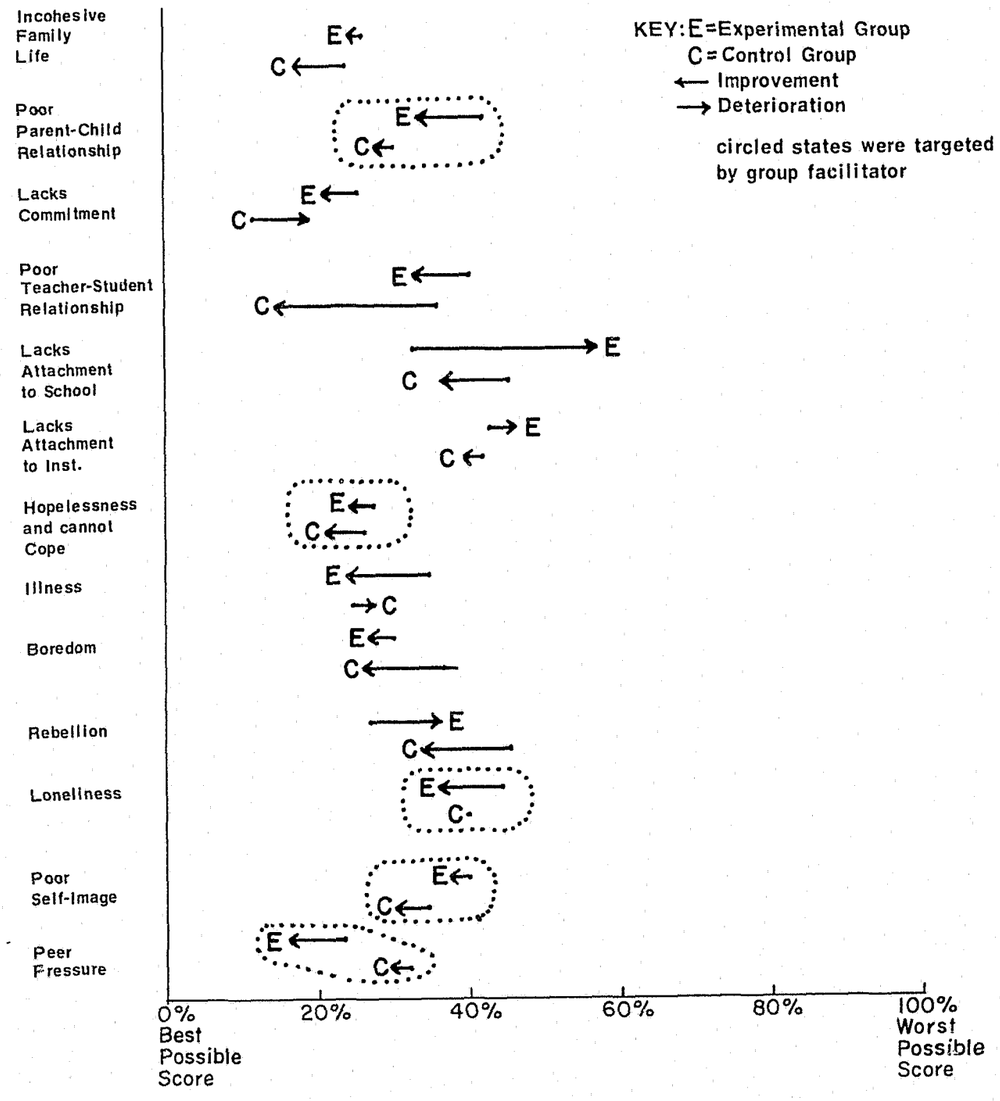
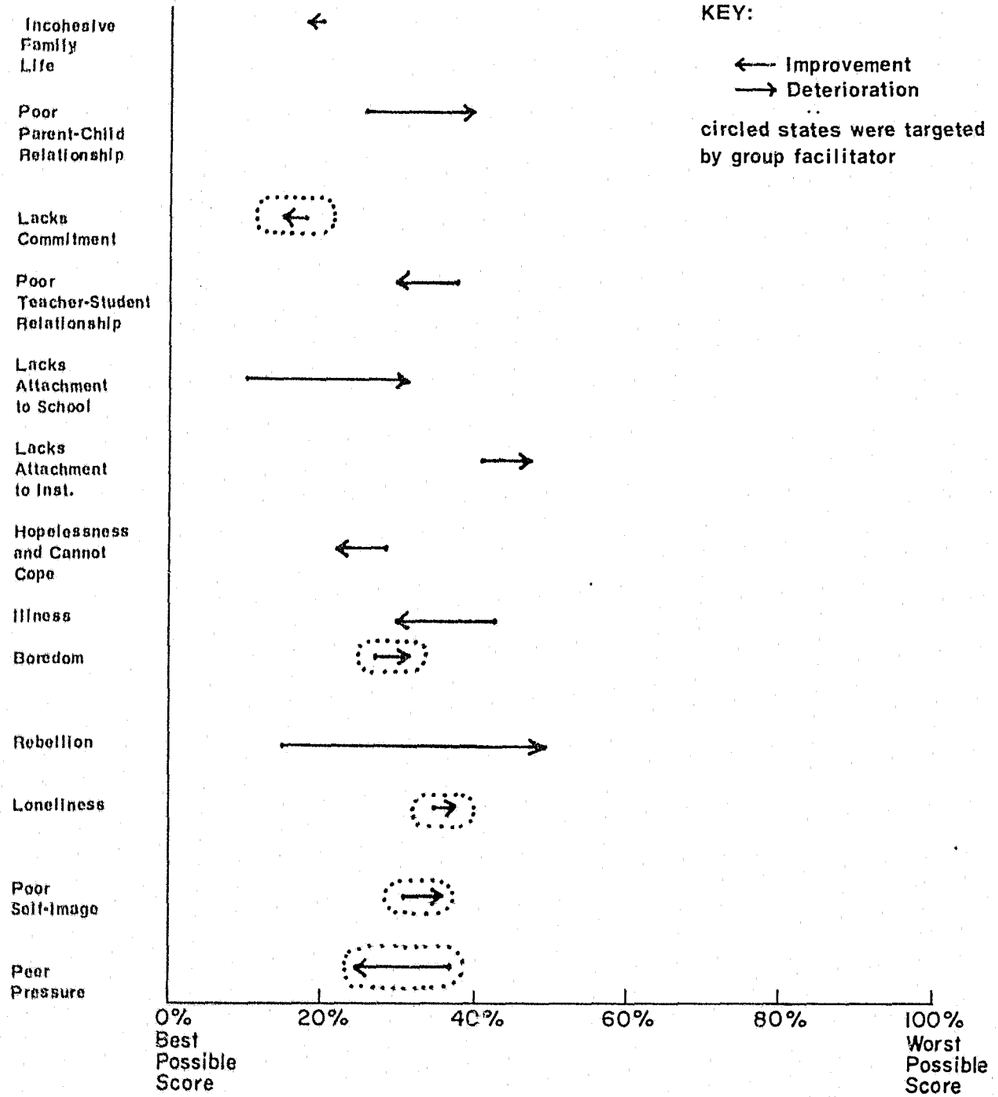


FIGURE 12

CHANGES IN STATE SCORES FOR PSYCHOLOGICAL/SOCIOLOGICAL STATES
SENIOR OMBUDSMAN GROUP 2



Appendix E

COMPUTING STATISTICAL SIGNIFICANCE

The equations listed below were used to determine whether the difference between changes in scores from pretest to posttest for the experimental groups were statistically significant from changes in control group scores. The alpha (Type I error) level was set at .05.

(1) to compute the test statistic

$$t = \frac{M_{D1}-M_{D2}}{\hat{\sigma}_{M_{D1}-M_{D2}}}$$, where M_{D1} is the mean change in the experimental group score and M_{D2} is the mean change in the control group score.

(2) to estimate the standard error for the difference between means of experimental and control groups

$$\hat{\sigma}_{M_{D1}-M_{D2}} = \sqrt{\frac{S_1^2}{N_1-1} + \frac{S_2^2}{N_2-1}}$$, where N_1 = number of cases in the experimental group and N_2 = the number in the control group.

(3) to compute the variance for the paired differences

$$S_1^2 = \frac{\sum (X_{1j}-X_{2j})^2}{N_1} - M^2_{D1}$$, where $M_{D1} = \frac{\sum(X_{1j} - X_{2j})}{N_1}$ and X_{1j} is the pretest score and X_{2j} is the posttest score for the experimental group.

$$S_2^2 = \frac{\sum (X_{1j} - X_{2j})^2}{N_2} - M^2_{D2}$$, where $M_{D2} = \frac{\sum(X_{1j} - X_{2j})}{N_2}$ and X_{1j} is the pretest score and X_{2j} is the posttest score for the control group.

Appendix F

NUMBER OF STUDENTS COMPLETING PRETEST AND POSTTEST
COMPARED TO NUMBER OF STUDENTS ASSIGNED TO GROUPS

GROUP	STUDENTS ASSIGNED	TOOK PRETEST AND POSTTEST	TOOK PRETEST BUT NOT POSTTEST	TOOK POSTTEST BUT NOT PRETEST	TOOK NEITHER TEST
Rap 1 Experimental	16	14	2		
Rap 1 Control	18	13	3	2	
Rap 2 Experimental	9	7	2		
Rap 2 Control	11	11			
Rap 3 Experimental	12	8	1	2	1
Rap 3 Control	9	4	3	2	
Junior Ombudsman Exp.	17	14	3		
Junior Ombudsman Control	26	16	10		
Senior Ombudsman 1 Exp.	12	11	1		
Senior Ombudsman 1 Control	30	23	5	2	
Senior Ombudsman 2 Exp.	28	10	16*	2	
Total	188	131	46	10	1

* The posttest for this group was given after the end of the semester and these students were not available for posttest; two of them are dropouts from the Ombudsman course.

END