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The significance of treater competence in either behavior modification or transactional analysis treatment of juvenile offenders : a thesis ...

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THE SIGNIFICANCE OF TREATER COMPETENCE IN EITHER
BEHAVIOR MODIFICATION OR TRANSACTIONAL ANALYSIS
TREATMENT OF JUVENILE OFFENDERS

A Thesis
Presented to
the Graduate Faculty
University of the Pacific

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

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by

Paul McCormick

May, 1973

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CHAPTER I

THE PROBLEM

I. INTRODUCTION

In 1965 there were 1,282,386 Americans in prisons, in reformatories, on parole, or on probation for having violated the law. In 1975 there will be 1,841,000 (Task Force on Corrections, 1967a). American correctional systems' workers on an average day see 1,300,000 "clients." The systems' annual admission rate is 2,500,000. Their operating budgets exceed a billion dollars. More than one quarter of the offenders are juveniles.

President Lyndon Johnson's commission on law enforcement and administration of justice in 1967 presented him with a 222-page volume on corrections citing the above figures. The report's 97-page data summary failed to include how many of this mass of offenders were in fact being "corrected."

The same commission submitted to Johnson a 428-page Task Force Report: Juvenile Delinquency and Youth Crime, which included vast amounts of data on the processing of youthful offenders, but less than five pages on rehabilitative treatment as such. The gist of those five pages (1967b:124): "If limitless funds were available. . .we would still have limited success because of our present state of knowledge about deviant human behavior."

Numerous reports cite how many offenders are not corrected.

The California Youth Authority in 1964 and 1965 released 16,499 court wards from confinement in institutions to parole in the community. By December 31, 1970, 62.8 percent of them had been arrested for new violations (Department of the Youth Authority, 1971:36). A five-year Youth Authority research project compared results of treatment in a 20-bed unit with results in a 50-bed unit, each unit having the same number of treatment staff. Three years after the wards' releases on parole, 80 percent of both groups, the intensively treated and the moderately treated, had had their parole revoked for committing new offenses (Jesness, 1965:90). State prison systems commonly report prisoner return rates higher than 40 percent (Glaser, 1964:13).

Corrections is a relatively new science, if it yet can be called a science. Only gradually has it shifted from an emphasis on punitive custody to a kind of begrudging concern for rehabilitation (Vinter and Janowitz, 1959:119). Two prominent criminologists in a 1966 revision of their popular text, Principles of Criminology, decided they had no authority to change their earlier written, blanket statement: ". . .there is no available proof that the change toward treatment methods has either increased or decreased crime rates" (Sutherland and Cressey, 1966:369). The National Council on Crime and Delinquency (1967:5) in a survey for the president's commission on law enforcement, wrote: "Correction seems to have been less dependent on organized fact than any other American enterprise interested in continued growth and support."

This lack of attention to professional competence has kept the various systems staggering under huge caseloads, but has not deterred

individual experimenters. They have been at work all over the country (McCorkle, Elias and Bixby, 1958; Empey and Rabow, 1961; Craft, Stephenson, and Granger, 1964; Beuhler, Patterson, and Furniss, 1966; Grant and Warren, 1963; Jesness, 1965 and 1969). Almost without exception the studies point to better ways, although none of their conclusions is final; and all the reports end with a call for more research. None of the studies presents data that are sufficiently convincing to suggest that any one treatment method holds the most promise.

There is no dearth of methodologies to try. The studies cited above used (1) guided-group interaction, (2) authoritarianism vs. self-government, (3) behavior modification, (4) community vs. institutional treatment, (5) small group vs. large group, and (6) differential treatment for wards of various personality-integration levels. This investigator has been in corrections since 1958 and has known colleagues to "discover", and convert to: the client-centered counseling of Carl Rogers, the psychodrama of J. L. Moreno, Fritz Perls's gestalt therapy, Maxwell Jones's therapeutic community, Albert Ellis's rational-emotive therapy, the reality therapy of William Glasser, Eric Berne's transactional analysis, B. F. Skinner's behavior modification, psychoanalytic therapy, various forms of sensitivity, T and encounter groups, and grab bags of bits and pieces of several of these at once. Among corrections people who take treatment seriously, eclecticism runs rampant. Not having an academic discipline of its own, corrections attracts graduates from schools of sociology, psychology, social work, education, criminology, law,

anthropology and public administration, the relatively allied fields. This researcher also knows business administration, English, chemistry, drama, and physical education majors who are in the field of correctional work. It is a profession in need of both theoretical and practical disciplines.

What is a worker to do, exactly, if he is to turn delinquents into non-delinquents? That is the field's major problem. Researchers have yet to come close to answering this question, but a body of fact appears to be growing.

II. THE PROBLEM

Carl F. Jesness, Ph.D., (1965) a research psychologist with the California Youth Authority, had been working on the problem of converting delinquents to non-delinquents since 1959, the year he began the Fricot Ranch Study. His hypothesis then was that the rehabilitation of institutionalized delinquents could be better accomplished in small living units where higher staff-to-boy ratios would allow for more intensive treatment. The hypothesis held up. The wards in the smaller units were much better behaved than the wards in the larger; and they did better on parole, too, for quite awhile. As the months passed, the experimental wards were eventually being returned to corrections institutions at the same rate as the controls, but probably because the institutional treatment had worn off, and parole treatment was not intensive enough. The study's findings suggested ". . . that only when a total commitment is made to treatment and when sub programs are evaluated using more sophisticated research designs that take account of

many possible variations in subject, milieu, and treater, will measurable treatment outcomes be demonstrated" (Jesness, DeRisi, McCormick, and Wedge, 1972:2).

Jesness's next project, the Preston Typology Study, tested the hypothesis that segregating adolescent offenders according to their "interpersonal maturity level" (known as I-level) would lead to the development of unique treatment strategies for each level (Jesness and Wedge, 1970; Jesness, 1971a). Results showed that corrections personnel could classify wards by I-level, could develop what appeared to be appropriate methods for each level, and could have better results in institutional-behavior management. And again, the experimental subjects did better on parole, for awhile.

Jesness concluded that one weakness in the I-level approach was the absence of clearly defined strategies for behavior change. The system helped to explain how various classifications of subjects reacted to the world around them, but it did not include an explicit theory of how to change their behavior. Behavior changes seemed to be the results of the individual counselors' capacities to influence individual clients positively or negatively, but the treatment and change processes were not clear. The obvious need for systematic treatment methodologies led to the adoption, during the Preston study, of two approaches, behavior modification and transactional analysis, both of which showed promise. Perhaps an ambitious and vigorous testing of these two would clearly expose the processes of change, and perhaps demonstrate that some wards do better with a psychodynamic model, while other wards do better with a contingency-contracting model.

Jesness's Youth Center Research Project (YCRP) examined these possibilities (Jesness, et al., 1972). The study compared the results of the two apparently disparate but accepted treatment methodologies, transactional analysis (TA) and behavior modification (B Mod). This researcher was the consultant and principal trainer in the Youth Authority school, O. H. Close, selected for the psychodynamic model (TA). An adjacent but physically separate school, Karl Holton, used B Mod.

The major hypotheses of the study were: 1) TA would be more suitable for the so-called "higher-maturity" wards; 2) behavior modification would be better for the "lower-maturity"; and 3) wards who said they wanted to change would do better with the insight-oriented TA. There were no hypotheses regarding treater characteristics, but enough data emerged to analyze, ex post facto, whether treater competence was a significant variable. That was the problem this study attempted to resolve. Should the field of corrections, when recruiting, training, and assigning correctional counselors, pay closer attention to the candidates' potential for becoming effective treaters, rather than mere custodians, or confidants, or managers of wards?

Results of the Youth Center Research Project were almost equally favorable for each of the two schools.* The parole-violation rates of the wards released from both institutions dropped from 43 percent to 31 percent, a considerable improvement when compared with the two control California Youth Authority schools' (Paso Robles and Nelles) continuing failure rate of 46 percent. These figures were for twelve-month

*For a summary (McCormick, 1973) of that study, see Appendix A.

parole-exposure periods. But the study's major hypotheses were not verified. The more mature youths did not do better with TA than with B Mod, and the lower-maturity wards did no better with B Mod. In fact, one classification of higher-maturity wards did a little better with B Mod, and some lower-maturity wards did better with TA. But all levels did fairly well with either systems, regardless of whether or not the wards declared themselves to be in need of change.

Whether those results would endure for more than twelve months was still in question as of this writing. The data were to be evaluated for years to come. In the meantime, an important question not answered in the 1972 report was: were there any interaction effects between the three major variables: treatment method, maturity level of wards, and treater competence?

III. THE HYPOTHESIS

An answer to that question might help resolve some of the problems of recruiting, training, and assigning of correctional counselors, and of assigning wards to appropriate treatment programs. The Fricot Ranch Study, Preston Typology Study, and the Youth Center Research Project all helped to establish that institutional treatment programs were improvable, whether staff used behavior modification or transactional analysis. Clear-cut interaction effects between method, maturity level of subjects, and treater competence might help further to clarify whether or not both approaches, the psychodynamic and the behavioral, required the same amount of investment in staff training and supervision. If treater competence was not a particularly

significant variable with some kinds of wards, but was with others, training and supervision of staff need not be equally intensive for all treatment units. If good behavior modification treatment was possible with staff rated as average, while good transactional analysis was possible only with staff rated above-average, then it might profit corrections to invest in B Mod rather than in TA for some kinds of offender populations. Questions like these could perhaps be answered by studying the interaction effects.

This investigator's hypothesis was that treater competence would prove to be a significant variable regardless of the treatment method used, B Mod or TA, and regardless of the I-level classification of the ward. The Youth Center Research Project had already shown that both methods were superior to the control schools' traditional approaches with all I-levels. Some I-level classifications appeared to do somewhat better with one or the other of the two methods, but these differences were not so great as to suggest unquestionable superiority of either method with any one I-level classification. This investigator, after looking at the fairly good results among all levels in both systems, hypothesized that the treater-competence variable was probably the most crucial. If this hypothesis held up, the field of corrections might want to use the finding as a significant one when considering where to invest. Staff training and supervision might merit much more money and effort than have traditionally been spent.

The vast amount of data accumulated in the four-year YCRP made possible an analysis-of-variance study with large enough groups of experimental subjects for each of the twelve cells in the two-by-two-

by-three analysis (two treatment methods, TA and B Mod; two maturity levels, higher and lower; and three levels of treater competence, high, middle and low).

IV. LIMITATIONS

Major limitations in this study had to do with: (1) the question of validity of the treater ratings; (2) the absence of inter-rater reliability figures for one of the two schools; and (3) the necessity of using institutional-behavior ratings alone, rather than in conjunction with parole-performance data, as the criterion of treatment effectiveness.

This last limitation meant that for this researcher's study he could not use the YCRP's control subjects as his controls, because they were not rated on institutional behavior but only on their parole performance. He would be able to compare his experimental subjects only with one another, not with any controls, and only on institutional behavior, not parole performance.

The YCRP's fairly satisfactory inter-rater reliability figures (from the one school that did compute them) did not of course, guarantee the ratings' predictive validity. Whichever three supervisors or superiors were believed to be most familiar with a counselor's work confidentially rated that counselor's competence as a treater. The validity of these ratings was construct and face, rather than predictive. (Cf. Chapter 3). Should this study's hypothesis not be verified, the failure could be because the raters did not know a competent treater when they saw one, rather than because the hypothesis was false. This

limitation did not appear to make the study a futile one. On the contrary, should the hypothesis be verified, then the construct validity of the ratings could perhaps be proved also to be predictive; and should the hypothesis not be verified, then the constructs used as standards and norms by the raters might be open to question. There appeared to be enough favorable evidence from the YCRP results to hypothesize with confidence that the "better" treater would do a better job than the "poorer" treater. Should this prove not so, then perhaps corrections should take a better look at its standards of competence. Failure to verify this study's hypothesis could provide evidence for the need to study more carefully what the important variables of "treater competence" are. Perhaps the client who changes is responding to something in the treater's bag of skills that the supervisor does not yet know how to measure.

There remained at least one other possible explanation, should the hypothesis not be verified. Perhaps it failed to include a variable more significant than the individual treater's competence, such as "social climate", as might be caused by a kind of Hawthorne effect. If the study's results showed that treatment subjects responded equally well regardless of their individual counselor's degree of competence, perhaps they did so because in both schools the total milieu improved so much that all subjects profited. The YCRP director, Carl Jesness, was not much concerned with the Hawthorne effect because he had already gathered sufficient behavior-change scores in his Fricot and Preston Schools studies to compare with the YCRP scores. That earlier data, he judged, would serve almost as well as gathering new institutional-behavior-change

scores from the two control populations at the Paso Robles and Nelles Schools.

More as an oversight than anything else, the YCRP staff neglected to compute inter-rater reliability scores for the B Mod staff at the Karl Holton School. The assumption was made for purposes of this thesis that the figures for the B Mod school's staff would probably not have been significantly different from TA school's figures. This investigator recognizes this assumption as a limitation.

A third limitation was the impossibility of gathering a large enough population of experimental subjects to use parole performance as one of the criteria of treatment effectiveness. The difficulty was that in having to fill the twelve cells necessary for the analysis of variance, there were too few rated treaters who had treated a large enough number of wards who had been released for at least twelve months of possible parole exposure. Instead the student had to use, as his only criterion, institutional behavior as measured by a normed and validated instrument called the Behavior Checklist (BCL). This criterion was not unsuitable because the pre to post behavior-change scores were known to be favorably correlated with later parole performance (Jesness, 1971b:16). And an advantage of using institutional-behavior-change scores was that they were more immediate evidence of institutional treatment effectiveness than were parole-outcome data; but parole-outcome data have always been more convincing to legislators and taxpayers. The ideal corrections study uses both kinds of performance data. The YCRP eventually would, to a much greater extent than it already had.

The lack of control subjects would not have to be a serious defect in the study. TA and B Mod had already been shown to be superior to traditional treatment given to the YCRP's control subjects. The question now was, is treater competence a significant variable in TA and B Mod treatment programs?

The YCRP yielded sufficient data to test this student's hypothesis.

CHAPTER II

REVIEW OF LITERATURE RELATED TO THIS STUDY

I. THEORETICAL FRAMEWORK

The two treatment methods used in this study, transactional analysis and behavior modification, were based primarily on the works of Eric Berne (1961, 1964, 1966), the originator of TA; and on those of B. F. Skinner (1953, 1957, 1959), the prominent behavioral scientist. TA and B Mod developed from sources that appeared at first to be at opposite ends of the treatment pole. Berne's writings suggested that the individual man must, in the long run, be held responsible for his own behavior, which he performs for reasons that are largely subjective. Skinner's works emphasized that a person's behavior is determined by its consequences, which are primarily external. But both theorists ended up coming close to saying the same thing: people behave the way they have been taught to behave, although they do have some options. Berne said that although people do what their parents taught them to do, they at least can do it in their own way (1970:196); and Skinner said that people can operate on their own environment so that it will reinforce the behavior they want it to reinforce (1971:205).

TA and B Mod, as treatment systems, both rely on internal and external stroking (reinforcement) for motivational power; and both use treatment contracts that require specific goals, and specific criteria for having reached them. Berne was not strong for researching his own

effectiveness as a treater, because he and his patients were satisfied that they were reaching their stated goals, and he did not want to treat them as experimental subjects (1966:39). Behavior modifiers insist on research, without which they are not supposed to make claims regarding effectiveness (Eysenck, 1966:98). But Berne's system is testable, as the YCRP demonstrated.

The major differences between TA treatment and B Mod treatment are in the ways the treater works with his treated subject. The behavior modifier, using contingency contracting, concentrates on changing the subject's environment so that the subject will be reinforced for performing desirable behavior. The TA treater, primarily in small-group sessions, concentrates on reinforcing the client for changing his environment himself, for setting himself up, so to speak, for more desirable consequences. Under close scrutiny, the two methods may be seen not as incompatible with one another, but as more similar than dissimilar. Judging from his own experience and observation, this researcher believes that the expert transactional analyst is probably better trained to provide more potent and more direct social reinforcers, and to avoid reinforcing destructive behavior (because of the TA expert's knowledge of ego states, social transactions, social games, and individual life scripts), but the behavior modification expert could be similarly trained.

Although the YCRP final report did not go into detail on integrating the two systems, the authors suggested that that appeared to them to be a promising way to go (Jesness, et al., 1972:331). This investigator was convinced from his own experience that long-term

global goals as set in TA treatment were translatable into short-term contingency contracts similar to those negotiated in B Mod treatment. TA treatment, as practiced at the O. H. Close School, often lacked staying power for the lay treaters and their adolescent clients, perhaps because the contract goals were not specific enough. "Feeling good about myself", "no longer being depressed", or "living for me rather than my parents", may have been good goals but they would probably have been more observably reachable if they had been translated into overt forms of behavior, described specifically in short-term contracts. The apparently more competent TA treater did so, but even he could have profited from the training the B Mod treater got in behavior specification and measurement.

During this study there was no integration of the two systems. The B Mod treaters did not pay attention to the wards' "inner behaviors", but worked almost exclusively on the overt. Contingency contracting was the primary tool. Wards contracted to work directly on "behavior deficiencies", which were printed out by a computer that was fed data from observer-rated and self-rated behavior checklists. The TA-treated wards' files contained the same kind of printouts, but the TA counselors did not choose to use them in negotiating treatment contracts. In their group sessions they concentrated not only on the wards' observable conduct, but also on their "inner" behaviors, such as feelings of depression, anger, guilt, or dependency. The more experienced TA treaters learned how to confront the wards with the specific, overt behavior that resulted in whichever of these bad feelings the wards said they wanted to stop having. Consequently,

this investigator hypothesized that the effectiveness of the better treaters, whether using B Mod or TA, would be similar.

Before he made his hypothesis, this researcher had observed that the lower-rated TA treaters did not succeed in convincing the wards that they were promoting their own bad feelings by undesirable overt behavior; and that the "poorer" B Mod treaters typically negotiated contingency contracts that could have been labeled "irrelevant." Behavior-checklist-score changes, pre to post, he hypothesized, would probably be significantly lower for wards treated by these lower-rated counselors in both schools.

II. RELATED RESEARCH

The literature on treater competence as a significant variable in treatment offered no last word on the subject but it did point to some common findings. Auerbach and Luborsky (1968) identified four characteristics of successful treaters (those whose clients showed the most positive changes in behavior): 1) positive regard; 2) personal confidence; 3) empathy and accurate understanding; and 4) technical expertness. The authors derived their list from an investigation of the literature on therapist qualities as proved in treatment studies.

Truax and Mitchell (1969:235-241) wrote, "a considerable proportion of the research literature in psychotherapy and counseling has focused on therapist variables. ...The overwhelming finding...is that when the therapist is high in empathy, warmth, and genuineness, patients or clients tend to show greater improvement than when therapists or counselors are low in these qualities. Some research has even shown

that when therapists or counselors are low in these qualities, then there may be negative change or deterioration in the patient. ...The present study attempted to extend these findings to a juvenile delinquent population offered group psychotherapy.

"...The...findings...lend strong support for the therapeutic relevance of therapist accurate empathy, non-possessive warmth, and genuineness."

Truax and Mitchell did not include technical expertness as a necessary quality, as did Auerbach and Luborsky, but Yalom and Lieberman (1972) did. They recently completed a study of group treaters at Stanford University, and found that the most successful group leaders had these characteristics in common: 1) they were moderately "emotionally stimulating", but not highly stimulating; 2) they were "caring", but in a non-possessive way; 3) they provided "cognitive structure" in their treatment, not merely emotional experiences; 4) they exercised a moderate degree of "executive functioning" in their groups, not relinquishing their leadership to the group members. At least the last two of these qualities appear to this researcher to be related to technical expertness. According to Yalom and Lieberman, caring was not enough, but the caring leader who was also able to provide "meaning to the experience" (cognitive structure) had the best results. "Cognitive structure", in fact, was the characteristic most highly correlated with success (.67).

Both TA and B Mod appeared to this investigator to offer an especially relevant "cognitive structure" to treatment, provided that the therapist was adequately trained and otherwise competent.

Hans Eysenck (1960:12) wrote, "...learning theory is an exact science, which has elaborated quite definite rules. ...it is only when these rules are properly applied by psychologists with knowledge and experience in this field that the question of success or failure arises."

Another behaviorist, L. Krasner, (1962:604) said, "...The therapist can be described as a 'social reinforcement machine'.

"...the therapist is in a position to manipulate the patient's behavior. ...this may sound too simple. Behavior control is a two-way affair and counter-controls are being asserted by the patient. Yet, part of the training of the therapist is to be able to counter the counter-controls and, to the extent that he can do so, he will be a successful therapist."

Albert Bandura, (1969:201-202) in writing about the difficulties of treating institutionalized delinquents, said, "Under conditions where advocates of innovations [the delinquents' counselors] have no rewarding nor controlling power, they must first establish their value by demonstrating, in areas that engender little or no resistance, that the practices they advocate yield highly favorable outcomes. After they have thus enhanced their credibility and modeling potency they are in a more favorable position to attempt modifications that conflict with existing tradition and vested interests."

Treater competence, all these authors seem to have said in one way or another, was a significant variable in treatment outcomes. But nowhere in the literature was there a comparison study dealing specifically and directly with the treater-competence variable among

B Mod and TA treaters.

CHAPTER III

THE RESEARCH DESIGN

This chapter describes the two institutions that provided the setting for this study, the characteristics of the youths who were the treatment subjects, and the study's research design.

I. THE SETTING

The Youth Center Research Project was a four-year study (1968-1972) conducted at the California Youth Authority's Northern California Youth Center (NCYC) in Stockton (Jesness, et al., 1972). This setting was in many respects ideal for a comparison study. In 1968 NCYC consisted of two separate but adjacent schools that were physically almost identical, each housing about 400 adolescent wards. The staffing patterns and the types of personnel in the two schools were also almost identical. Throughout the four years 15, 16, and 17-year old boys were assigned randomly to the two schools, for either transactional analysis treatment at O. H. Close, or behavior modification treatment at Karl Holton. They came from either the Northern or Southern California Reception Center and Clinic in Sacramento or Ontario, and went to whichever school had the most available beds.

II. THE SUBJECTS

Client characteristics remained virtually identical in the

populations of the two schools. All of the subjects had been committed for law violations, and almost all had serious records of arrest. Most had failed as probationers in their home towns; and all admitted having serious emotional or behavior problems. More than 60 percent had used drugs. A third of them said they had been hooked on hard drugs like heroin or LSD. Their average reading level was seventh grade; their arithmetic level, sixth grade. More than half had been serious discipline problems in school.

A total of 904 of them (460 from O. H. Close, and 444 from Karl Holton) met the criteria set for experimental subjects in the Youth Center Research Project: random assignment to either school; at least a three-month stay; an Interpersonal Maturity Level rating by trained staff; and completion of pre and post tests. Of these 904, 725 (341 from O. H. Close, and 384 from Karl Holton) met the additional criterion for this researcher's project; at least 90 days in a rated counselor's caseload.

III. THE DESIGN

This investigator's plan was to test the hypothesis that treater competence was a more significant variable in treatment effectiveness than either the treatment method (TA or B Mod), or the maturity level of the treated subject. The dependent variable, indicating degree of treatment effectiveness, was to be the mean change, pre to post, in the Behavior Checklist observer ratings.

This researcher had arrived at his hypothesis after noting the

behavior-change scores in the YCRP report. They showed that wards in all the various I-level classifications improved their behavior on some or most of the fourteen Behavior Checklist factors (e.g., unobtrusiveness, friendliness, responsibility, etc.). The project's research team had not yet grouped the individual-factor scores into an over-all score with which to compare over-all change among the various I-levels. In other words, they had not yet calculated whether the I₄s, as a group, had done any better than the I₃s or the I₂s, on over-all behavior change. They had found (with a few relatively minor exceptions) that neither TA nor B Mod had been significantly more successful than the other in the over-all treatment of any I-level sub-classification. (There are nine: I₂'s are either Aa, asocial aggressive; or Ap, asocial passive. I₃'s are Cfm, immature conformist; Cfc, cultural conformists; or Mp, manipulators. I₄'s are Na, acting-out neurotics; Nx, anxious neurotics; Se, situational emotional reactors; or Ci, cultural identifiers).

This researcher had predicted that probably no one I-level (disregarding sub-classifications) would do significantly better than any other. He judged that the I₂s had so much more to change than the I₃s and I₄s, and the I₃s so much more to change than the I₄s, that the institutional shaping processes would probably bring the two lower classifications up far enough to keep them about even, in degree of change, with the more tractable I₄s. Even though the I₄s were probably more changeable, he reasoned, the I₃s and I₂s had much more room for change before meeting staff's expectations in the residence halls and classrooms.

The YCRP report scores showed that neither treatment method had led to significantly more behavior change in one school than in the other. The average ward in B Mod had improved his combined BCL T-Score 3.35 points; the average ward in TA had raised his score 3.70 points. But these were average changes. Many wards had not changed at all, and some had regressed. Based on these data, and on his own private prediction, this student's hypothesis was that the crucial variable, given two apparently equally useful treatment methods, was most probably treater competence. He chose an analysis of variance design that would test for interaction between the two maturity levels (higher [the I_4 s] and lower [the I_3 s and I_2 s]), the two methods (TA and B Mod), and the three levels of treater competence (top quartile, two middle quartiles combined, and the bottom quartile). The design, therefore, was a 2 x 2 x 3 analysis of variance. He would table the final analysis as indicated by Bruning and Kintz (1968:37), using the following table:

TABLE I
TABLE TO BE USED FOR THIS STUDY'S FINAL ANALYSIS

Source	Sum of squares	Degrees of freedom	Mean square	F ratio	Probability
Total					
Maturity					
Method					
Competence					
Maturity x Method					
Maturity x Competence					
Method x Competence					
Maturity x Method x Competence					
Error					

To use this formula, the investigator would need an equal number of subjects in each of the twelve cells. The least number available in any one cell, as TABLE II below indicates, was 24. Hence he would use 24 as the number of subjects for each cell. To give each potential subject in the remaining eleven cells an equal chance of being selected, he made eleven lists from the 701 remaining scores (725 minus the 24 available for cell #3) on a calculator tape, according to the cells in which they would belong. He then snipped the scores individually into eleven separate piles, and randomly pulled 24 scores from each pile.

The computer printout of scores this investigator had requested for his study had identified the 725 potential subjects by their California Youth Authority number, the treatment they had undergone (TA or B Mod), their Interpersonal Maturity level, the behavior-change scores they had made, pre to post, and the rated competence level of their respective counselors (lowest, middle, or highest). TABLE II follows:

TABLE II
 NUMBER OF AVAILABLE EXPERIMENTAL SUBJECTS
 FOR THE TWELVE CELLS OF A
 2 x 2 x 3 ANALYSIS OF
 VARIANCE

Maturity level	Treatment	Treater Competence		
		High	Medium	Low
Higher (I ₄)	TA	51	81	24
Lower (I ₃ & I ₂)		38	117	30
Higher (I ₄)	B Mod	44	70	49
Lower (I ₃ & I ₂)		34	144	43

IV. MEASUREMENT INSTRUMENTS

This section describes the instruments used to measure (1) treater competence, (2) the subjects' maturity level, and (3) the amount of their behavior change.

The Treater-Competence Ratings

YCRP staff had devised four treater-competence scales to "evaluate dimensions of behavior that various investigators have found to be related to change in treatment (Auerbach and Luborsky, 1968)" (Jesness, et al., 1972:135). The four scales were: (1) positive

regard (extent to which the caseworker conveys acceptance of the client); (2) personal confidence (extent to which the treater appears to be personally secure and self-confident in treating his clients); (3) empathy and accurate understanding (extent to which the caseworker works tolerantly but effectively with the client's significant feelings and/or behavior); (4) technical expertness (extent to which the caseworker displays knowledge of and skill in applying the treatment method).

The three supervisors thought to be most familiar with a counselor's work independently rated him on each scale along a nine-point continuum. The counselors at O. H. Close were rated twice, first when the operational phase of the YCRP began, and again almost three years later when the study was almost completed. At the time of the first rating, the project director decided to rate only the workers at O. H. Close, planning to get the Holton ratings later. As other requirements arose, the Holton ratings got postponed until 1971, the time of the second O. H. Close staff ratings. And then, in the rush of gathering the final data, the raw data from the Holton ratings were discarded (or lost) before any inter-rater reliability figures were run on them. The project director, however, had no reason to believe that the figures, had they been run, would have been significantly different from those run for the O. H. Close staff. The proportions of high-rated, medium-rated, and low-rated workers turned out to be about the same in both schools, as the figures in TABLE II, page 26 suggest.

Each counselor was rated on the four scales of positive regard,

confidence, empathy, and expertness. The correlations between ratings made by 23 supervisors on 63 counselors, on the individual scales, were: positive regard, .14; confidence, .40; empathy, .03; and technical expertness, .57. Obviously the raters did not agree on what they were rating, especially on the positive regard and empathy scales. The intercorrelations among the four scales on the 63 ratings, however, were much higher:

Positive regard and confidence	=	.70
Positive regard and empathy	=	.72
Positive regard and expertness	=	.65
Confidence and empathy	=	.68
Confidence and expertness	=	.80
Empathy and expertness	=	.80

The director then saw fit to combine the four scales' scores into a single competency score for each caseworker, and thus significantly improve his reliability figures. Even though the raters did not agree on what they were rating on the four scales, they agreed fairly closely on what might be called over-all competence.

For purposes of this thesis, this researcher ran his own inter-rater reliability check by randomly pulling 50 sets of ratings from the list of 63 O. H. Close caseworkers who had been rated by three supervisors (by snipping the sets of three scores into a box and pulling out the sets of 50 counselors). He then listed, by counselor, the sets of three over-all competency scores, one for each of the three supervisor ratings. He ran a Pearson r on the first two columns, using the raw-score method, and the following formula:

$$r = \frac{\frac{\sum XY}{n} - \bar{X} \bar{Y}}{s_x s_y} \quad (\text{Haber and Runyon, 1969:113})$$

The results:

$$\Sigma X = 775 \quad \Sigma X^2 = 14,305 \quad \Sigma Y = 796$$

$$\Sigma Y^2 = 14,454 \quad \Sigma XY = 13,824$$

$$\bar{X} = 15.50 \quad \bar{Y} = 15.92$$

For the standard deviations of X and Y, he used:

$$s = \sqrt{\frac{\Sigma X^2}{N} - \bar{X}^2} \quad (\text{Ibid.:89})$$

$$s_x = \sqrt{\frac{14,305}{50} - 15.50^2} = \sqrt{286.10 - 240.25} = \sqrt{45.85} = 6.77$$

$$s_y = \sqrt{\frac{14,454}{50} - 15.92^2} = \sqrt{289.08 - 253.45} = \sqrt{35.63} = 5.97$$

$$r = \frac{\frac{13,824}{50} - (15.50)(15.92)}{(6.77)(5.97)} = \frac{276.48 - 246.76}{40.42} = \frac{29.72}{40.42} = .735, \text{ or } .74$$

As a check, he then used the mean-deviation method

(ibid.:111).

$$\Sigma x^2 = 2,292.50 \quad \Sigma y^2 = 1,802.86 \quad \Sigma xy = 1,490.62, \text{ again with } \bar{X} = 15.50, \bar{Y} = 15.92$$

$$r = \frac{\Sigma xy}{\sqrt{\Sigma x^2 \cdot \Sigma y^2}} = \frac{1,490.62}{\sqrt{2,292.50 \cdot 1,802.86}}$$

$$\frac{1,490.62}{\sqrt{4,133,056.55}} = \frac{1,490.62}{2,032.99} = .733, \text{ or } .73$$

For an estimate of the reliability of the three ratings, he corrected the .73 correlation by using the Spearman-Brown formula

(Guilford, 1954:458):

$$r_c = \frac{n \times r}{1 + (n - 1)r} = \frac{3 \times .73}{1 + (2 \times .73)} = \frac{2.19}{2.46} = .89$$

This appeared to be a highly satisfactory estimate.

The project director had also run an inter-rater reliability check by using the results of both of the ratings at O. H. Close, those of 1968 and of 1971.

~~"Based on ratings of 45 staff who were employed during both~~ periods, a correlation of .67 was found between the composite measures of overall competency obtained almost three years apart. This figure is most satisfactory, especially since slightly more than one-third of the raters were different from one occasion to the next" (Jesness, et al., 1972:136).

The failure of the supervisors to agree on what empathy and positive regard meant, and their success in agreeing fairly well on the composite score, suggested that the scales were perhaps not good ones. Supervisors' ratings may have been better indicators of a halo effect than of sharp discriminating power. Other possibilities were that the scales were all right, but that the supervisors were not adequately trained to use them, or that the four traitor qualities were not well enough defined in behavioral terms. After all, other researchers had tended to agree that qualities like these four were characteristic of competent traitors (Auerbach and Luborsky, 1968; Truax and Mitchell, 1969; Yalom and Lieberman, 1972). But the validity of these ratings had to remain questionable.

The Subjects' Maturity-Level Classifications

Measures of maturity-level of the treatment subjects were done by Youth Authority staff trained in the use of the various instruments of the Interpersonal Maturity Level (I-level) classification system (Sullivan, Grant, and Grant, 1957). This system had been developed over the years by the California Youth Authority, to the point that its validity and reliability were becoming increasingly acceptable (Jesness and Wedge, 1970).

Three main instruments were used, in sequence, before arriving at a classification diagnosis: (1) the Jesness Inventory (a personality-attitude test) (Jesness, 1966); (2) a sentence completion test (Jesness, 1969); and, if necessary, (3) an interview. Every experimental subject in the YCRP was classified in this system either at one of the department's two reception centers, or at the Close or Holton schools. Trained clinical staff (social workers with MSW degrees, or psychologists with Ph.D. degrees, all especially trained in I-level diagnosis) did the classifying. According to the studies described in the Sequential I-Level Classification Manual, reliability intercorrelations ran consistently upwards of .70 (Jesness and Wedge, 1970:29-48). The validity figures were less consistent, ranging between the .50s and .60s (ibid).

"...For a thorough study of the validity of the interview and other instruments used in classification, each should have been analyzed against a completely independent and adequate criterion. ...Most of the validity data reported here are contaminated, each instrument having been used in the decision-making process to arrive

at the final diagnosis" (ibid.:29).

According to the theory (Sullivan, et al., 1957), humans "mature" on seven successive levels of social integration (hence, I-level), from I₁ to I₇. Infants would be I₁, and the most "mature" adults, I₇. Levels two, three, and four include virtually all the delinquent subjects. I₂s (a small minority) are especially "immature", I₃s a little less so, and I₄s, the least, among most juvenile offenders. A little more than half of the subjects at both Close and Holton schools were classified at the I₃ level, about 40 percent at the I₄, and only about five percent at the I₂. This distribution presented a problem in getting enough I₂s to fill the cells needed for a 2 x 3 x 3 analysis of variance, so the I₂s and I₃s were combined to constitute a "lower" maturity group, for a 2 x 2 x 3 analysis.

The Measure of Behavior Change

The Jesness Behavior Checklist, the instrument used in this study to measure the dependent variable, was well established by the time of the YCRP (Jesness, 1971b). Designed to record precise data about a treatment subject's observable social behaviors, it consisted of 80 items that described specific behavioral "episodes", such as, "interrupts or distracts others" (item #1). A rater familiar with the subject rated him on each of the 80 items by making a score of from one to five, depending on the rater's judgment of how frequently the subject performed the behavior described in the item.

Using factor analysis, Jesness had grouped the items into 14 behavioral scales, such as Unobtrusiveness vs. Obtrusiveness, Friendliness vs. Hostility, Responsibility vs. Irresponsibility, etc.

Norms for the scales were developed over more than ten years of use with several thousand institutionalized delinquents. A T-score of 50, then, represented the mean only for this kind of population, not for a normal distribution of adolescents. Changes in T-score from pre-treatment to post-treatment represented the degree of observable change made in the institution.

Although extensive data on the empirical validity of the 14 scales were not yet available, post-test scores on six of the scales had been shown to be related to parole outcome.

"...Thirty-six items significantly ($p < .05$) differentiated successful from unsuccessful subjects (those recommitted and returned to an institution) based on a 15-month period of possible exposure to parole" (ibid.:16).

Jesness also evaluated the validity by checking the correlations between different raters, and between observer ratings and self ratings, and met "the validity requirements suggested by Campbell and Fisk (1959)" (ibid.).

Inter-rater reliability figures, derived from mean scores of 122 sets of three raters for each of 122 subjects, showed correlations of from .63 to .80 on the 14 scales. There were 48 different raters involved in the 122 sets of scores. Other reliability tests showed similar results. Each of the 288 subjects in this researcher's study had been rated twice on the BCL by three staff members, the first time within four or five weeks of his arrival, and the second time shortly before his departure, but after at least three months of treatment. The mean-BCL-score change was derived by subtracting the

mean of the ward's 14-scales' pre scores from the mean of the 14-scales' post scores. On all scales a rise in scores indicated a rated improvement toward the more socially desirable end of the scale.

All the data then were available for the analysis of variance.

CHAPTER IV

ANALYSIS AND EVALUATION OF DATA

I. INTRODUCTION

This study was designed to test the hypothesis that treater competence was the most significant of three variables in the behavior modification or transactional analysis treatment of institutionalized juvenile offenders. The plan called for a 2 x 2 x 3 analysis of variance: higher maturity of subjects versus lower maturity of subjects, transactional analysis treatment versus behavior modification treatment, and high treater competence versus middle treater competence versus low treater competence.

Twelve distinct groups filled the twelve cells needed for the analysis. Subjects in group 1 were higher-maturity wards receiving TA from the highest-rated treaters; group 2 were higher-maturity subjects in TA from middle-rated treaters; group 3: higher-maturity in TA from lowest-rated treaters; group 4: higher-maturity in B Mod from highest-rated; group 5: higher-maturity in B Mod from middle-rated; group 6: higher-maturity in B Mod from lowest-rated; group 7: lower-maturity in TA from highest-rated; group 8: lower-maturity in TA from middle-rated; group 9: lower-maturity in TA from lowest-rated; group 10: lower-maturity in B Mod from highest-rated; group 11: lower-maturity in B Mod from middle-rated; and group 12: lower-maturity in B Mod from lowest-rated.

The Behavior Checklist score change, pre to post, was the measure recorded.

II. THE ANALYSIS OF VARIANCE

Bruning and Kintz (1968:30-37) describe 17 steps in a 2 x 2 x 3 analysis of variance. This investigator completed those steps, using the data provided by the Youth Center Research Project: (1) the Behavior Checklist score change of each of the 288 experimental subjects; (2) each subject's I-level classification rating; and (3) each subject's counselor's treater-competence rating.

Appendix B includes all the data, and all of the computations for each of the first 16 steps. Step 17, to complete the table of the final analysis, follows:

TABLE III

TABLE OF THE FINAL ANALYSIS

Source	SS	df	ms	F	p
Total	18,840.10	287	-	-	-
Maturity	154.30	1	154.30	2.29	<.2
Method	23.58	1	23.58	0.35	n.s
Competence	9.67	2	4.84	0.07	n.s
Maturity x Method	3.29	1	3.29	0.05	n.s
Maturity x Competence	14.06	2	7.03	0.10	n.s
Method x Competence	18.60	2	9.30	0.14	n.s
Maturity x Method x Competence	34.09	2	17.05	0.25	n.s
Error	18,582.51	276	67.33	-	-

III. EVALUATION

This study's hypothesis was not verified. Treater competence, as rated, proved not to be a significant variable in affecting the treated subjects' Behavior Checklist pre to post mean-score changes, regardless of whether the subjects had been in behavior modification or transactional analysis treatment, or whether they had been rated at the higher or lower maturity level.

The effects of maturity level, treatment method, and treater competence were not interactive.

The one factor that did appear on the F distribution table, maturity of treated subjects, showed a significance level of between ten and twenty percent ($p < .2$). This investigator had set the $p < .05$ level as the acceptable limit for his sample of 288 subjects; therefore, maturity level was also not a statistically significant variable.

Neither was the treatment method, TA or B Mod.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

I. INTRODUCTION

This chapter summarizes, and discusses evaluatively, the outcomes of the present study and their relationship to the previous research cited, and offers some recommendations for further research. The study was an attempt to test the hypothesis that treater competence was a significant variable in either transactional analysis or behavior modification treatment of institutionalized juvenile offenders.

II. SUMMARY

A major problem in the field of corrections had been the gross lack of data that might help to distinguish specific differences between the treatment of offenders who had succeeded on probation or parole, and the treatment of those who had failed (Task Force on Corrections, 1967; Sutherland and Cressey, 1966:369). Individual studies (cited in Chapter I) pointed to better ways of treating offenders (e.g., (1) guided-group interaction, (2) outside-the-walls versus institutional treatment, (3) small-group rather than large-group institutional treatment, (4) differential treatment for different kinds of offenders, (5) self-government in the institution, (6) reality therapy, etc.). The direction to go appeared to be fairly clear. Intensively applied, systematic treatment by trained counselors looked

as if it would do a better job than the traditional, unsystematic, often punitive methods that were producing obviously unsatisfactory results. But the individual studies had little effect on the field of corrections as a whole. Nationwide statistics on crime and delinquency rates were not declining.

Carl F. Jesness, Ph.D., a California Youth Authority research psychologist, after two intensive studies (The Fricot Ranch Study, 1965; and the Preston Typology Study, 1969) decided that a promising way to get at the crucial variables in correctional treatment would be to test the results of two specific but different treatment models applied in two separate but similarly staffed and virtually identically populated Youth Authority institutions. He was particularly interested in identifying the exact procedures used in correctional treatment by the counselors, and the specific behavior changes made by the treated subjects. He hoped to be able to report to the decision makers in corrections precisely what treaters must do to convert delinquents to non-delinquents, and precisely what behavioral changes the treated subjects must make to accomplish that conversion.

He chose the O. H. Close and Karl Holton Schools in Stockton to conduct the study, the Youth Center Research Project, and selected transactional analysis and behavior modification as the two treatment methodologies. He had decided that the two apparently disparate systems were sufficiently teachable to relatively unsophisticated staff that he could get reasonably good treatment-effectiveness data within four years. He hypothesized that the psychodynamic, insight-oriented TA would be more helpful for the more "mature" subjects, and

that the contingency contracting system, B Mod, would be more useful for the less "mature." He would judge treatment effectiveness by the subjects' behavior change as rated by staff, and later, by parole performance.

He was of the opinion that the techniques and procedures of these two systems were probably explicit enough to enable him to define precisely what the treatment and change processes were, if he measured them correctly (see Appendix A [McCormick, 1973] for a summary of the YCRP results to date).

Although Jesness's hypotheses were not verified, treatment effectiveness data were sufficiently encouraging, and virtually equal in both schools, to suggest to this investigator the possible usefulness of an analysis of variance that would test for interactions between maturity level of subjects (higher or lower), the treatment method used (TA or B Mod), and the rated competence level of the counselors (high, middle, or low). This study reports the results of that analysis.

As indicated in the Table of the Final Analysis (Chapter IV:36), the hypothesis that treater competence was the most significant of the three variables was not verified; and the three variables were not interactive. Only one of them, maturity level of treated subject, appeared that it might have proved to be significant had a larger sample been available.

III. CONCLUSIONS

This investigator's considered judgments based on his study's findings were:

(1) Although his hypothesis was not verified, it was not necessarily proved false. The big question, he believed, had to do with the validity of the treater-competence ratings.

(2) The supervisors who rated their counselors' competence, not having been especially trained to do so, were probably not qualified to make those ratings. Their failure to agree on what they were rating when judging the four treater characteristics (positive regard, confidence, empathy, and expertness) was a good clue that they were not uniformly capable of rating competence. Even though the interrater reliability figures looked good (as high as .89) when the four-characteristics ratings were combined into a composite score, this vast improvement in the interrater reliability figure may have been the result of a halo effect. A youth counselor's so-called treater-competence may largely have been the result of his reputation among fellow staff and administrators. He may have been able to manage and supervise wards in a confident, expert, apparently humane way, but that did not necessarily mean that he was able successfully to get them to convert from delinquency to non-delinquency, or that he was seen by the wards as a competent treater.

To conduct this study more rigorously than was possible in the YCRP, this investigator was of the opinion that the raters would have had to be much more carefully and systematically trained to do the ratings. They should have sat in on more of the TA groups, and in the contingency-contracting negotiation sessions, to become expert in observing, specifying, and measuring precisely what the treaters were doing. They were not trained to do that in the YCRP.

The institutional-behavior-change scores, on the average, were encouraging. They were, in the opinion of the YCRP research staff, not the result of a Hawthorne effect, because earlier studies, using the same measuring instrument, the Behavior Checklist, showed only about one-half the increase in BCL-score change that the YCRP subjects did, even though the experimental wards in those earlier studies received similarly intensive, although less uniformly methodical treatment (Jesness, 1965:112-113; Jesness, 1969:214-219).

The experimental cases in the Fricot and Preston studies received much more attention than the control subjects did, regardless of how relatively unsystematic the experimentals' treatment was.

The parole-performance data on the YCRP subjects were so superior to the control subjects' performance that, in this investigator's opinion, the YCRP treatment had to be superior.

Might that superiority have been the result of an improvement in over-all social climate rather than in an improvement of individual counselors' competence as treaters? Perhaps, but not to a high degree, this investigator believed. Both institutions were tested for "social climate" in 1968, and again in 1970, by use of the Correctional Institutions Environment Scale (Moos, 1970). Results showed that the climates in both institutions were almost identical in 1968, but had changed significantly, in accordance with the philosophy of the school's treatment method, by 1970 (Jesness et al., 1972:161-172). The changes were strikingly different in the two schools. The TA subjects liked the program and their counselors much more in 1970 than they had in 1968. The reverse was true in the B Mod school, where the wards, by

1970, thought the counselors were too demanding, and the social climate too cold. The changes in institutional behavior were about equal in both schools, but the changed social climates, in many respects, were measurably opposite.

Even so, could they have been responsible for the behavior changes? This researcher believed that that question could not be answered until the study was replicated, but next time using a well validated, treater-competence rating instrument. Then, should the low-rated treaters do as well as the high-rated, social climate might prove to be a more crucial, or at least as crucial, a variable.

The literature cited in Chapter II indicated that there was evidence that treater competence was a significant variable in treatment effectiveness. Why did it not prove so in the YCRP? Probably because of a lack of rater-competence, this investigator believed. One way, perhaps, to improve treater-competence measures would be to include the treated subjects' ratings in the scoring. Data were emerging, according to the YCRP director, that suggested that the wards themselves were better judges of who the better treaters were. It was too early to draw any firm conclusions from the emerging data, he said, but there were indications that the treater's "positive regard", as judged by the wards, was proving to be the most significant variable in treatment effectiveness. And that was a treater characteristic the counselors' supervisors failed almost completely to judge reliably. The interrater reliability correlation figure for that characteristic was only .14 (Jesness et al, 1972:136). The interrater reliability figure for the "empathy and accurate

understanding" characteristic was even lower--.03 (ibid.). The wards themselves, according to the unpublished data, were much more reliable in assessing those characteristics in a counselor.

IV. RECOMMENDATIONS

The question of treater competence in corrections was sufficiently serious a problem, this researcher believed, to test for its significance in a more rigorously systematic way. The field was continuing to hire untrained help and to provide them with inconsistent, often contradictory, supervision, and continuing not to isolate the variables in treatment successfully enough to measure its effectiveness scientifically. The YCRP proved that transactional analysis and behavior modification treatment in institutions were significantly superior to the traditional treatment in the two control schools. It might also prove (when all the data on the total experimental population were analyzed) that the maturity level of the treated subject was a significant variable in behavior change. It might also eventually prove that the treated subjects were superior judges of treater competence than the supervisors were. But there was no way to go back to the data to pull out unquestionably valid treater-competence ratings.

The continuing TA and B Mod treatment programs at the two CYA schools in Stockton, it seemed to this researcher, could provide a valuable opportunity to gather empirically valid treater-competence ratings. By combining behavior-rating-score changes with parole-performance data over a period of a few years, a research team could

identify the successful treaters. Those treaters' work could be systematically analyzed and measured so that the supervisors could learn to identify what in fact did constitute positive regard, empathy and accurate understanding, personal confidence, technical expertness, cognitive structure, and whatever other qualities emerged as typical of the more competent treaters. The wards' ratings could be continually checked for reliability correlations with the supervisors' ratings.

This direction appeared to this investigator the reasonable way to go. He was also of the opinion, judging from what he had observed in the successes and the failures of the two schools' programs, that a combination of TA and B Mod techniques would measurably improve both systems. But this view had to remain a hypothesis until such a study was in fact conducted. He recommended that it get underway at once. The YCRP results were too promising for the field of corrections to ignore.

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APPENDIXES

APPENDIX A

TA AND BEHAVIOR MODIFICATION: A COMPARISON STUDY*

California Youth Authority staff have just spent more than \$500,000 given them by the National Institute of Mental Health to test the effectiveness of two treatment methods, transactional analysis and behavior modification. The four-year study, known as the Youth Center Research Project, was conducted at two adjacent schools for adolescent offenders in Stockton. Most of the results are in.¹

Although the project director, research psychologist Carl F. Jesness, Ph.D., did not pit one school against the other in declared competition, he did not hurt his project by promising to publish the results as a comparison. Each school, O. H. Close with TA, and Karl Holton with B Mod, wanted to win. The competition paid off. Jesness considers his data from this project some of the most significant ever in correctional research.

Eric Berne, M.D., the founder of transactional analysis, was keenly interested in the project. He encouraged Robert L. Goulding, M.D., the major consultant to the TA side of the study, to give it his all because of the probable significance of the results nationally. It was the first big-money investment in TA research.

This researcher was the on-site TA trainer. Supervisor of treatment at O. H. Close throughout the project was Thomas L. Frazier,

* McCormick, Paul. 1973. Transactional Analysis Journal. 3:10-14.

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L.C.S.W., clinical member of I.T.A.A.; Leonard P. Campos, Ph.D., teaching member, was staff psychologist. Other I.T.A.A. members in the project were Arthur Braskamp, M.S.W., clinical member, and Terry Watters, M.S.W., clinical member candidate.

Dr. Jesness wanted to answer two main questions: (1) Do delinquents change their behavior in transactional analysis and ~~behavior modification programs?~~ (2) If they do, what precisely do the treaters and the treated do in making those changes? He had three major hypotheses: (1) TA would be better for the so-called higher maturity wards; (2) TA would be especially effective with wards who say they want to change; and (3) B Mod would be more effective with the lower-maturity wards. The short range criterion was observable behavior in the institution; the long range criterion was parole performance. None of the hypotheses has held up so far, but the answers to the two questions are fairly clear: (1) many delinquents do change their behavior for the better in both TA and behavior modification programs; and (2) treaters can describe what they and the clients do in the process of change so that other treaters can learn to apply the same techniques. The study's findings and conclusions appear to merit the attention of the whole field of corrections.

Clinical characteristics were virtually identical in the populations of the two schools. The experimental subjects were 15, 16, or 17 years old; almost all had serious records of arrest; most had failed as probationers in their home towns; and all admitted having serious emotional or behavior problems. More than sixty percent had

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used drugs. A third of them said they had been hooked on hard drugs like heroin and LSD. Their average reading level was seventh grade; their arithmetic level, sixth grade. More than half had been serious discipline problems in school. A total of 904 young men (460 from O. H. Close and 444 from Karl Holton) met the criteria set for experimental subjects: random assignment to either school; at least a three-month stay; completion of pre and post-tests.

Staffs in both schools accepted the treatment models without much objection. Many said they appreciated being given a disciplined method. About 18 months after training started, 85 percent of both staffs rated their respective methods from "fair" to "excellent" for working with delinquents. Other data pointed to a more enthusiastic response from the TA staff than from the B Mod staff. O. H. Close's counselors spent 30,586 man hours in TA training, while Karl Holton's counselors spent 12,672. Much of the TA training was in treatment marathons with Robert L. Goulding, M.D., and Mary Goulding, M.S.W., at the Western Institute for Group and Family Therapy; or in "minithons" in Stockton, sometimes in the institution, but more often in the home of a treatment-team member. Probably never before in the history of corrections had an institution's entire staff undergone personal treatment as part of their job training. Social workers and other supervisory personnel went to the W.I.G.F.T. (Mt. Madonna) for additional training, treatment, and consultation, an extra-curricular advantage not enjoyed by the staff at the Holton School. Their training in behavior modification was reportedly less intensive, less

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stimulating, and less fun.

Data from a social climate scale at both institutions indicated that the wards themselves judged the Holton staff far less favorably than the wards at Close judged their staff. Close wards evaluated their counselors as competent, practical, supportive, and personally involved with them. Holton wards did not see their program as practical, clear, or orderly; and they evaluated their counselors as not encouraging autonomy, and not being supportive or personally involved. The behavior modifiers' response was that they were not interested in building personal relationships, but in changing overt behavior. And at that they succeeded as well as the transactional analysts, the data attest.

Financially the transactional analysts won. They put a young man through their treatment program in 7.6 months. It took the behavior modifiers an average of 8.7 months to get a ward through. At \$7,000 per ward per year for institutional treatment, the Youth Authority spent one-quarter of a million dollars less to treat a full complement of 400 wards in the TA school than in the B Mod school. That savings may have been a result of the Close staff's spending more time doing TA treatment than the Holton staff spent doing B Mod. Close counselors were directed to conduct at least two one-and-a-half-hour TA sessions with their caseloads each week. Holton counselors were expected to negotiate at least one contingency contract each week with their wards. Close staff fulfilled two-thirds of their

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expected quota, Holton staff a little more than half of theirs. The average ward at Close stayed 30 weeks, and had an average of 40 TA group sessions. The average ward at Holton stayed 35 weeks, and made 19 treatment contracts.

Staff's use of punishment by locking up disruptive wards dropped more than 60 percent in both schools as a result of the treatment programs. Incident reports for misconduct at first increased when the new programs arrived, but then decreased significantly. The way staff responded to the incidents also changed. Instead of reacting angrily and punitively, counselors learned to turn the crisis into an opportunity for treatment, in both schools.

Residents' evaluations of the programs differed in the two schools. Close wards rated their small-group TA sessions as the most helpful of all the program components. Holton wards put schoolwork at the top of their list. Both groups almost unanimously rated restrictions and write-ups for misconduct the least helpful.

Psychological measures were all in favor of the TA-treated wards, who appeared to have made more gains in self-concept, ego development, self-confidence, and the like. The research team cautioned that these differences may have been more a consequence of wards in TA learning to say the socially acceptable thing, than it was evidence of their doing the acceptable thing.

In schoolwork, both populations improved more than was expected. Behavior Modification, seemingly more immediately applicable than TA in the classroom, was originally expected to show better results in the

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reading and arithmetic programs. The TA wards in fact gained more in arithmetic than the B Mod wards did. At O. H. Close the math grade-equivalent score rose .91 of a year in the 7.6-month average stay; at Karl Holton it rose .62 of a year in an 8.7-month stay. But in reading, the average ward improved 1.48 grades in 8.7 months at Holton; and 1.16 grades in 7.6 months at Close. In a regular school program the gains ordinarily are .87 in 8.7 months, and .76 in 7.6 months.

The two criteria for evidence of behavior change were an institutional-behavior-checklist score change, pre to post, and the rate of success on parole, after release. Wards in the TA program improved their institutional behavior scores (T-scores) an average of 3.64 points; and the B Mod wards increased theirs 3.35 points, a statistically insignificant difference. Among some classifications of wards,² however, there were a few differences that were statistically significant. But none of the three original hypotheses was verified. The so-called higher maturity wards, contrary to the first hypothesis, improved their institutional behavior to a slightly higher degree with B Mod than with TA; the so-called lower-maturity wards' improvements were about the same in both systems. Wards who had declared themselves on the Youth Opinion Poll to be in need of change did not change any more in treatment than those who had not so declared. So-called "cultural conformists" (meaning, roughly, followers who go along with the gang) made a little more change in TA than in B Mod.

The most significant gains resulting from the two treatment

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programs were made on parole. Prior to the project, wards from O. H. Close and Karl Holton were returning to an institution, their parole revoked within a year, at the rate of about 43 percent. After the project, the return rate had dropped to less than 33 percent. This decrease in parole revocations was not the case for the two Youth Authority schools that served as the control groups for the experiment. Treating the same age group (15, 16, and 17-year olds), these two other schools still had a revocation rate of close to one out of two, 46 percent.

According to the theory, TA treatment might be expected to lead to more enduring results than B Mod. Wards who redecide their life scripts might be better prepared to resist falling back into their old delinquencies than wards treated only to change overt, institutional behavior. But this bias of the transactional analysts has not yet been backed with data. In time it may be. Recidivist rates of the experimental subjects will be watched for years to come. Perhaps the TA-treated will win out. Perhaps they will not.

In the meantime, what can the field of corrections learn from the Youth Center Research Project?

(1) Two total institution staffs were trained, each in a single treatment method, and the social climate of both places changed in conformity with the philosophy of the method.

(2) A total institution staff accepted personal treatment as part of their in-service training.

(3) Wards in two single-system, institutional treatment programs

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did better on parole than those released from more traditionally run institutions.

(4) Correctional counselors without academic degrees learned to do good treatment, both in TA and B Mod.

(5) Both transactional analysis and behavior modification provided effective procedures and techniques for treating adolescent offender populations. On measures of enthusiasm and morale of staff and residents, TA had the edge. One major advantage for the TA staff was being able to go off to an institute for extracurricular treatment and training.

(6) In both TA and B Mod programs, the workers were able to describe what they did in negotiating and fulfilling treatment contracts so that others could learn the techniques.

The authors of the project study end their report with a suggestion that the obvious strengths of TA and B Mod be combined, because the methods are far more compatible than the researchers originally thought. Both methods are based on similar theories of learning (Berne says people learn to do as they're told very early in life; Skinner says they learn to do what is immediately reinforced by the environment); both systems are contractual; both encourage the use of social reinforcers (stroking); and, in the long run, both promote self-management. Transactional analysts can teach the behavior modifiers how to be better reinforcers of self-managing behavior, how to avoid reinforcing gamy behavior, and how to give permission for redecisions. Behavior modifiers can teach transactional analysts how

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to negotiate treatment contracts with more clearly specified behavioral goals and more specific criteria for improvement; and how to measure effectiveness of treatment more scientifically.

REFERENCES

- 1 The YCRP was supported by PHS grant No. MH14411 NIMH (Center of Studies of Crime and Delinquency) made to the American Justice Institute, Sacramento, California.
- 2 As rated by the Interpersonal-Maturity Level Classification System developed by the Youth Authority.

APPENDIX B

THE FIRST 16 STEPS IN THE 2 X 2 X 3 ANALYSIS
OF VARIANCE *

Step 1. List the scores by groups.

Step 2. Add the scores in each group.

Step 3. Square each score and sum all of the squared values.

Following are the lists of the 12 groups' subjects, their Behavior Checklist change scores, the sums of the scores, the squares of the scores, and the sums of the squares.

* The steps as described in this analysis are an almost verbatim, only slightly paraphrased, version of the steps described by Bruning and Kintz (1968:30-37).

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GROUP 1

BEHAVIOR CHANGE SCORES, THEIR SUM AND SQUARES, AND SUM
OF SQUARES, OF HIGH-MATURITY SUBJECTS IN TA WITH
HIGH-COMPETENCE TREATERS

<u>Subject</u>	<u>BCL Change (BCLC)</u>	<u>BCLC²</u>
S ₁	8.00	64.00
S ₂	6.40	40.96
S ₃	-5.80	33.64
S ₄	15.20	231.04
S ₅	2.40	5.76
S ₆	10.60	112.36
S ₇	1.10	1.21
S ₈	4.70	22.09
S ₉	6.50	42.25
S ₁₀	3.90	15.21
S ₁₁	6.20	38.44
S ₁₂	16.20	262.44
S ₁₃	-3.70	13.69
S ₁₄	10.90	118.81
S ₁₅	8.40	70.56
S ₁₆	-4.70	22.09
S ₁₇	3.50	12.25
S ₁₈	2.60	6.76
S ₁₉	-3.40	11.56
S ₂₀	0.10	0.01
S ₂₁	5.70	32.49
S ₂₂	13.80	190.44
S ₂₃	9.50	90.25
S ₂₄	-2.30	5.29
	$\Sigma = 115.80$	$\Sigma = 1,443.60$

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GROUP 2

BEHAVIOR-CHANGE SCORES, THEIR SUM AND SQUARES, AND SUM
OF SQUARES, OF HIGH-MATURITY SUBJECTS IN TA WITH
MIDDLE-COMPETENCE TREATERS

<u>Subject</u>	<u>BCL Change</u>	<u>BCLC²</u>
S ₂₅	13.00	169.00
S ₂₆	4.10	16.81
S ₂₇	21.00	441.00
S ₂₈	9.00	81.00
S ₂₉	2.70	7.29
S ₃₀	16.80	282.24
S ₃₁	9.80	96.04
S ₃₂	-1.10	1.21
S ₃₃	-5.60	31.36
S ₃₄	18.50	342.25
S ₃₅	7.50	56.25
S ₃₆	2.10	4.41
S ₃₇	8.90	79.21
S ₃₈	-1.70	2.89
S ₃₉	-1.30	1.69
S ₄₀	-1.90	3.61
S ₄₁	-6.10	37.21
S ₄₂	4.00	16.00
S ₄₃	-5.90	34.81
S ₄₄	8.00	64.00
S ₄₅	5.10	26.01
S ₄₆	-2.40	5.76
S ₄₇	6.10	37.21
S ₄₈	-10.00	100.00
	$\Sigma = 100.60$	$\Sigma = 1,937.26$

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GROUP 3

BEHAVIOR-CHANGE SCORES, THEIR SUM AND SQUARES, AND SUM
OF SQUARES, OF HIGH-MATURITY SUBJECTS IN TA WITH
LOW-COMPETENCE TREATERS

<u>Subject</u>	<u>BCL Change</u>	<u>BCLC²</u>
S ₄₉	1.40	1.96
S ₅₀	13.40	179.56
S ₅₁	1.40	1.96
S ₅₂	16.90	285.61
S ₅₃	10.20	104.04
S ₅₄	-2.60	6.76
S ₅₅	5.60	31.36
S ₅₆	2.30	5.29
S ₅₇	1.90	3.61
S ₅₈	10.30	106.09
S ₅₉	-2.00	4.00
S ₆₀	2.50	6.25
S ₆₁	24.70	610.09
S ₆₂	3.60	12.96
S ₆₃	-9.50	90.25
S ₆₄	-9.40	88.36
S ₆₅	8.40	70.56
S ₆₆	20.20	408.04
S ₆₇	4.30	18.49
S ₆₈	-2.20	4.84
S ₆₉	1.10	1.21
S ₇₀	0.00	0.00
S ₇₁	3.60	12.96
S ₇₂	-3.30	10.89
	$\Sigma = 102.80$	$\Sigma = 2,065.14$

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GROUP 4

BEHAVIOR-CHANGE SCORES, THEIR SUM AND SQUARES, AND SUM
OF SQUARES, OF HIGH-MATURITY SUBJECTS IN B MOD WITH
HIGH-COMPETENCE TREATERS

<u>Subject</u>	<u>BCL Change</u>	<u>BCLC²</u>
S ₇₃	16.80	282.24
S ₇₄	14.40	207.36
S ₇₅	-6.60	43.56
S ₇₆	2.60	6.76
S ₇₇	-19.70	388.09
S ₇₈	5.80	33.64
S ₇₉	-0.10	0.01
S ₈₀	9.10	82.81
S ₈₁	8.40	70.56
S ₈₂	9.40	88.36
S ₈₃	6.30	39.69
S ₈₄	8.10	65.61
S ₈₅	-10.70	114.49
S ₈₆	8.00	64.00
S ₈₇	-1.70	2.89
S ₈₈	-0.80	0.64
S ₈₉	3.30	10.89
S ₉₀	7.80	60.84
S ₉₁	-5.90	34.81
S ₉₂	4.80	23.04
S ₉₃	1.60	2.56
S ₉₄	13.70	187.69
S ₉₅	12.90	166.41
S ₉₆	2.90	8.41
	$\Sigma = 90.40$	$\Sigma = 1,985.36$

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GROUP 5

BEHAVIOR-CHANGE SCORES, THEIR SUM AND SQUARES, AND SUM
OF SQUARES, OF HIGH-MATURITY SUBJECTS IN B MOD WITH
MIDDLE-COMPETENCE TREATERS

<u>Subject</u>	<u>BCL Change</u>	<u>BCLC²</u>
S ₉₇	16.30	265.69
S ₉₈	11.70	136.89
S ₉₉	3.50	12.25
S ₁₀₀	-5.60	31.36
S ₁₀₁	9.30	86.49
S ₁₀₂	5.40	29.16
S ₁₀₃	9.70	94.09
S ₁₀₄	7.30	53.29
S ₁₀₅	-4.90	24.01
S ₁₀₆	11.80	139.24
S ₁₀₇	-9.10	82.81
S ₁₀₈	-5.10	26.01
S ₁₀₉	4.60	21.16
S ₁₁₀	14.00	196.00
S ₁₁₁	-1.00	1.00
S ₁₁₂	7.80	60.84
S ₁₁₃	5.00	25.00
S ₁₁₄	0.90	0.81
S ₁₁₅	1.60	2.56
S ₁₁₆	7.20	51.84
S ₁₁₇	4.40	19.36
S ₁₁₈	-4.50	20.25
S ₁₁₉	3.40	11.56
S ₁₂₀	5.60	31.36
	$\Sigma = 99.30$	$\Sigma = 1,423.03$

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GROUP 6

BEHAVIOR-CHANGE SCORES, THEIR SUM AND SQUARES, AND SUM
OF SQUARES, OF HIGH-MATURITY SUBJECTS IN B MOD WITH
LOW-COMPETENCE TREATERS

<u>Subject</u>	<u>BCL Change</u>	<u>BCLC²</u>
S ₁₂₁	-7.20	51.84
S ₁₂₂	6.30	39.69
S ₁₂₃	11.50	132.25
S ₁₂₄	-0.70	0.49
S ₁₂₅	7.20	51.84
S ₁₂₆	-3.70	13.69
S ₁₂₇	5.50	30.25
S ₁₂₈	0.00	0.00
S ₁₂₉	17.90	320.41
S ₁₃₀	10.40	108.16
S ₁₃₁	-2.00	4.00
S ₁₃₂	16.40	268.96
S ₁₃₃	8.70	75.69
S ₁₃₄	9.60	92.16
S ₁₃₅	14.50	210.25
S ₁₃₆	-5.60	31.36
S ₁₃₇	-10.00	100.00
S ₁₃₈	11.20	125.44
S ₁₃₉	13.80	190.44
S ₁₄₀	1.70	2.89
141	2.40	5.76
S ₁₄₂	-15.20	231.04
S ₁₄₃	12.90	166.41
S ₁₄₄	-1.90	3.61
	$\Sigma = 103.70$	$\Sigma = 2,256.63$

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GROUP 7

BEHAVIOR-CHANGE SCORES, THEIR SUM AND SQUARES, AND SUM
OF SQUARES, OF LOW-MATURITY SUBJECTS IN TA WITH
HIGH-COMPETENCE TREATERS

<u>Subject</u>	<u>BCL Change</u>	<u>BCLC²</u>
S ₁₄₅	11.30	127.69
S ₁₄₆	2.60	6.76
S ₁₄₇	26.50	702.25
S ₁₄₈	15.50	240.25
S ₁₄₉	-17.50	306.25
S ₁₅₀	-3.60	12.96
S ₁₅₁	-1.20	1.44
S ₁₅₂	14.50	210.25
S ₁₅₃	7.40	54.76
S ₁₅₄	-4.50	20.25
S ₁₅₅	1.10	1.21
S ₁₅₆	9.50	90.25
S ₁₅₇	6.60	43.56
S ₁₅₈	18.90	357.21
S ₁₅₉	0.20	0.04
S ₁₆₀	-0.10	0.01
S ₁₆₁	-6.60	43.56
S ₁₆₂	8.90	79.21
S ₁₆₃	10.60	112.36
S ₁₆₄	-9.20	84.64
S ₁₆₅	-24.00	576.00
S ₁₆₆	1.40	1.96
S ₁₆₇	-1.00	1.00
S ₁₆₈	8.90	79.21
	$\Sigma = 76.20$	$\Sigma = 3,153.08$

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GROUP 8

BEHAVIOR-CHANGE SCORES, THEIR SUM AND SQUARES, AND SUM
OF SQUARES OF LOW-MATURITY SUBJECTS IN TA WITH
MIDDLE-COMPETENCE TREATERS

<u>Subject</u>	<u>BCL Change</u>	<u>BCLC²</u>
S ₁₆₉	-6.00	36.00
S ₁₇₀	-2.20	4.84
S ₁₇₁	-7.10	50.41
S ₁₇₂	4.80	23.04
S ₁₇₃	-2.40	5.76
S ₁₇₄	1.60	2.56
175	-2.20	4.84
S ₁₇₆	4.40	19.36
S ₁₇₇	9.40	88.36
S ₁₇₈	-8.40	70.56
S ₁₇₉	10.00	100.00
S ₁₈₀	10.60	112.36
S ₁₈₁	7.50	56.25
S ₁₈₂	12.00	144.00
S ₁₈₃	-2.10	4.41
S ₁₈₄	6.30	39.69
S ₁₈₅	-2.40	5.76
S ₁₈₆	13.10	171.61
S ₁₈₇	8.80	77.44
S ₁₈₈	3.70	13.69
S ₁₈₉	12.90	166.41
S ₁₉₀	4.40	19.36
S ₁₉₁	-2.80	7.84
S ₁₉₂	-2.10	4.41
	$\Sigma = 71.80$	$\Sigma = 1,228.96$

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GROUP 9

BEHAVIOR-CHANGE SCORES, THEIR SUM AND SQUARES, AND SUM
OF SQUARES, OF LOW-MATURITY SUBJECTS IN TA WITH
LOW-COMPETENCE TREATERS

<u>Subject</u>	<u>BCL Change</u>	<u>BCLC²</u>
S ₁₉₃	3.60	12.96
S ₁₉₄	14.80	219.04
S ₁₉₅	9.50	90.25
S ₁₉₆	2.90	8.41
S ₁₉₇	-1.70	2.89
S ₁₉₈	12.60	158.76
S ₁₉₉	2.00	4.00
S ₂₀₀	0.90	0.81
S ₂₀₁	-5.70	32.49
S ₂₀₂	17.30	299.29
S ₂₀₃	-3.10	9.61
S ₂₀₄	16.50	272.25
S ₂₀₅	-6.10	37.21
S ₂₀₆	0.90	0.81
S ₂₀₇	-0.20	0.04
S ₂₀₈	8.40	70.56
S ₂₀₉	9.80	96.04
S ₂₁₀	-2.50	6.25
S ₂₁₁	17.10	292.41
S ₂₁₂	-2.40	5.76
S ₂₁₃	-4.80	23.04
S ₂₁₄	6.80	46.24
S ₂₁₅	-10.60	112.36
S ₂₁₆	-4.80	23.04
	$\Sigma = 81.20$	$\Sigma = 1,824.52$

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GROUP 10

BEHAVIOR-CHANGE SCORES, THEIR SUM AND SQUARES, AND SUM
OF SQUARES, OF LOW-MATURITY SUBJECTS IN B MOD WITH
HIGH-COMPETENCE TREATERS

<u>Subject</u>	<u>BCL Change</u>	<u>BCLC²</u>
S ₂₁₇	-10.40	108.16
S ₂₁₈	5.90	34.81
S ₂₁₉	11.20	125.44
S ₂₂₀	-5.80	33.64
S ₂₂₁	7.10	50.41
S ₂₂₂	-13.30	176.89
S ₂₂₃	1.50	2.25
S ₂₂₄	6.30	39.69
S ₂₂₅	-4.30	18.49
S ₂₂₆	17.40	302.76
S ₂₂₇	14.10	198.81
S ₂₂₈	2.90	8.41
S ₂₂₉	-5.30	28.09
S ₂₃₀	11.60	134.56
S ₂₃₁	5.90	34.81
S ₂₃₂	3.80	14.44
S ₂₃₃	-7.50	56.25
S ₂₃₄	3.70	13.69
S ₂₃₅	20.20	408.04
S ₂₃₆	5.50	30.25
S ₂₃₇	-2.30	5.29
S ₂₃₈	-9.20	84.64
S ₂₃₉	2.30	5.29
S ₂₄₀	8.10	65.61
	$\Sigma = 69.40$	$\Sigma = 1,980.72$

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GROUP 11

BEHAVIOR-CHANGE SCORES, THEIR SUM AND SQUARES, AND SUM
OF SQUARES, OF LOW-MATURITY SUBJECTS IN B MOD WITH
MIDDLE-COMPETENCE TREATERS

<u>Subject</u>	<u>BCL Change</u>	<u>BCLC²</u>
S ₂₄₁	7.20	51.84
S ₂₄₂	9.10	82.81
S ₂₄₃	-2.50	6.25
S ₂₄₄	3.20	10.24
S ₂₄₅	5.30	28.09
S ₂₄₆	-0.30	0.09
S ₂₄₇	0.90	0.81
S ₂₄₈	2.00	4.00
S ₂₄₉	1.20	1.44
S ₂₅₀	-1.50	2.25
S ₂₅₁	-9.90	98.01
S ₂₅₂	20.30	412.09
S ₂₅₃	-0.90	0.81
S ₂₅₄	5.30	28.09
S ₂₅₅	0.90	0.81
S ₂₅₆	-1.60	2.56
S ₂₅₇	9.90	98.01
S ₂₅₈	-8.10	65.61
S ₂₅₉	13.30	176.89
S ₂₆₀	11.10	123.21
S ₂₆₁	9.20	84.64
S ₂₆₂	9.80	96.04
S ₂₆₃	-8.60	73.96
S ₂₆₄	2.30	5.29
	$\Sigma = 77.60$	$\Sigma = 1,453.84$

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GROUP 12

BEHAVIOR-CHANGE SCORES, THEIR SUM AND SQUARES, AND SUM
OF SQUARES, OF LOW-MATURITY SUBJECTS IN B MOD WITH
LOW-COMPETENCE TREATERS

<u>Subject</u>	<u>BCL Change</u>	<u>BCLC²</u>
S ₂₆₅	7.40	54.76
S ₂₆₆	4.50	20.25
S ₂₆₇	-3.70	13.69
S ₂₆₈	-9.20	84.64
S ₂₆₉	7.90	62.41
S ₂₇₀	12.00	144.00
S ₂₇₁	-10.90	118.81
S ₂₇₂	-4.40	19.36
S ₂₇₃	4.90	24.01
S ₂₇₄	7.60	57.76
S ₂₇₅	-6.40	40.96
S ₂₇₆	-8.10	65.61
S ₂₇₇	14.70	216.09
S ₂₇₈	-4.30	18.49
S ₂₇₉	8.00	64.00
S ₂₈₀	5.60	31.36
S ₂₈₁	12.00	144.00
S ₂₈₂	5.00	25.00
S ₂₈₃	0.40	0.16
S ₂₈₄	-13.40	179.56
S ₂₈₅	-3.30	10.89
S ₂₈₆	8.40	70.56
S ₂₈₇	4.20	17.64
S ₂₈₈	-13.30	176.89
	$\Sigma = 25.60$	$\Sigma = 1,660.90$

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Conclusion of Step 3:

$$\Sigma \text{ squared scores} = 22,413.04$$

Step 4. Add all the group sums to get the grand sum of scores: $115.8 + 100.6 + 102.8 + 90.4 + 99.3 + 103.7 + 76.2 + 71.8$
 $+ 81.2 + 69.4 + 77.6 + 25.6 = 1,014.4$

Square the above and divide by the number of scores to get the correction term.

$$\frac{1,014.4^2}{288} = \frac{1,029,007.36}{288} = 3,572.94$$

Step 5. To get the total sum of squares (SS_{total}), subtract the correction term from the sum of squared scores.

$$22,413.04 - 3,572.94 = 18,840.10 = SS_{\text{total}}$$

Step 6. Computation of the effects of the first factor (the over-all effects of higher versus lower maturity): first add the scores of the two same-maturity-level groups, disregarding the method of treatment and the treater-competence level.

$$115.8 + 100.6 + 102.8 + 90.4 + 99.3 + 103.7 = 612.6 = \text{sum of higher-} \\ \text{maturity groups' scores.}$$

$$76.2 + 71.8 + 81.2 + 69.4 + 77.6 + 25.6 = 401.8 = \text{sum of lower-maturity} \\ \text{groups' scores.}$$

Square the above sums, divide by the number of scores on which each of the sums was based, and add the quotients.

$$\frac{612.6^2}{144} + \frac{401.8^2}{144} = \frac{375,278.76 + 161,443.24}{144} = \frac{536,722}{144} = 3,727.24$$

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Subtract the correction term from the above to get the sum of squares for the maturity-level factor (SS_{mat})

$$3,727.24 - 3,572.94 = 154.30 = SS_{\text{mat}}$$

Step 7. To compute the effects of the second factor (the over-all effects of TA versus B Mod): first sum the scores of the two same-treatment groups, disregarding the maturity and treater-competence levels.

$$115.8 + 100.6 + 102.8 + 76.2 + 71.8 + 81.2 = 548.4 = \text{sum of the TA groups' scores.}$$

$$90.4 + 99.3 + 103.7 + 69.4 + 77.6 + 25.6 = 466.0 = \text{sum of the B Mod groups' scores.}$$

Square the above sums, divide by the number of scores on which each was based, and add the quotients.

$$\frac{548.4^2}{144} + \frac{466.0^2}{144} = \frac{300,742.56 + 217,156.00}{144} = \frac{517,898.56}{144} = 3,596.52$$

Then subtract the correction term.

$$3,596.52 - 3,572.94 = 23.58 = SS_{\text{method}}$$

Step 8. Compute the effects of the third factor (the over-all effects of highest-treater-competence versus middle-treater-competence versus lowest-treater-competence): first sum the scores of the three same-level-of-treater-competence groups, disregarding the maturity level and treatment method.

$$115.80 + 90.40 + 76.20 + 69.40 = 351.80 = \text{sum of the highest-treater-competence groups' scores.}$$

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$100.60 + 99.30 + 71.80 + 77.60 = 349.30 =$ sum of the middle-treater-competence groups' scores.

$102.80 + 103.70 + 81.20 + 25.60 = 313.30 =$ sum of the lowest-treater-competence groups' scores.

Square the above sums, divide by the number on which each was based, and add the quotients.

$$\begin{aligned} \frac{351.80^2}{96} + \frac{349.30^2}{96} + \frac{313.30^2}{96} &= \frac{123,763.24}{96} + \frac{122,010.49}{96} \\ &+ \frac{98,156.89}{96} = \frac{343,930.62}{96} = 3,582.61 \end{aligned}$$

Then subtract the correction term.

$$3,582.61 - 3,572.94 = 9.67 = SS_{tc} \text{ (treater competence)}$$

Step 9. To compute the interaction effects of the first and second factors (maturity level X treatment method): first sum the scores of the groups that have the same pairings of maturity level and treatment method, disregarding the treater-competence factor.

$115.80 + 100.60 + 102.80 = 319.20 =$ sum of the hi-mat, TA groups' scores.

$90.40 + 99.30 + 103.70 = 293.40 =$ sum of the hi-mat, B Mod groups' scores.

$76.20 + 71.80 + 81.20 = 229.20 =$ sum of the lo-mat, TA groups' scores.

$69.40 + 77.60 + 25.60 = 172.60 =$ sum of the lo-mat, B Mod groups' scores.

Square the above sums, divide by the number of scores on which each sum was based, and add the quotients.

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$$\frac{319.20^2}{72} + \frac{293.40^2}{72} + \frac{229.20^2}{72} + \frac{172.60^2}{72} = \frac{101,888.64}{72}$$

$$+ \frac{86,083.56}{72} + \frac{52,532.64}{72} + \frac{29,790.76}{72} = \frac{270,295.60}{72} = 3,754.11$$

Subtract the correction term, the SS_{mat} , and the SS_{meth} .

$$3,754.11 - 3,572.94 - 154.30 - 23.58 = 3.29 = SS_{\text{mat} \times \text{meth}}$$

Step 10. To compute the interaction effects of the first and third factors (maturity level x treater competence): first sum the scores of the groups that have the same pairings of maturity and treater-competence levels, disregarding the treatment method factor.

$$115.80 + 90.40 = 206.20 = \text{sum of the hi-mat, HTC groups' scores.}$$

$$100.60 + 99.30 = 199.90 = \text{sum of the hi-mat, MTC groups' scores.}$$

$$102.80 + 103.70 = 206.50 = \text{sum of the hi-mat, LTC groups' scores.}$$

$$76.20 + 69.40 = 145.60 = \text{sum of the lo-mat, HTC groups' scores.}$$

$$71.80 + 77.60 = 149.40 = \text{sum of the lo-mat, MTC groups' scores.}$$

$$81.20 + 25.60 = 106.80 = \text{sum of the lo-mat, LTC groups' scores.}$$

Square the above sums, divide by the scores on which each was based, and add the quotients.

$$\frac{206.20^2}{48} + \frac{199.90^2}{48} + \frac{206.50^2}{48} + \frac{145.60^2}{48} + \frac{149.40^2}{48} + \frac{106.80^2}{48}$$

$$\frac{42,518.44}{48} + \frac{39,960.01}{48} + \frac{42,642.25}{48} + \frac{21,199.36}{48} + \frac{22,320.36}{48}$$

$$+ \frac{11,406.24}{48} = \frac{180,046.66}{48} = 3,750.97$$

Subtract the correction term, the SS_{mat} , and the SS_{tc} .

$$3,750.97 - 3,572.94 - 154.30 - 9.67 = 14.06 = SS_{\text{mat} \times \text{tc}}$$

Step 11. To compute the interaction effects of the second

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and third factors (treatment method x treater competence): first sum the scores of the groups that have the same pairings of method and treater competence, disregarding the maturity-level factor.

$$115.80 + 76.20 = 192.00 = \text{sum of the TA, HTC, groups' scores.}$$

$$100.60 + 71.80 = 172.40 = \text{sum of the TA, MTC groups' scores.}$$

$$102.80 + 81.20 = 184.00 = \text{sum of the TA, LTC groups' scores.}$$

$$90.40 + 69.40 = 159.80 = \text{sum of the B Mod, HTC groups' scores.}$$

$$99.30 + 77.60 = 176.90 = \text{sum of the B Mod, MTC groups' scores.}$$

$$103.70 + 25.60 = 129.30 = \text{sum of the B Mod, LTC groups' scores.}$$

Square the above sums, divide by the number of scores on which each was based, and add the quotients.

$$\begin{aligned} & \frac{192.00^2}{48} + \frac{172.40^2}{48} + \frac{184.00^2}{48} + \frac{159.80^2}{48} + \frac{176.90^2}{48} + \frac{129.30^2}{48} \\ &= \frac{36,864.00}{48} + \frac{29,721.76}{48} + \frac{33,856.00}{48} + \frac{25,536.04}{48} + \frac{31,293.61}{48} \\ & \quad + \frac{16,718.49}{48} = \frac{173,989.90}{48} = 3,624.79 \end{aligned}$$

Subtract the correction term, the SS_{meth} and the SS_{tc} .

$$3,624.79 - 3,572.94 - 23.58 - 9.67 = 18.60 = SS_{\text{meth} \times \text{tc}}$$

Step 12. To compute the interaction effects of the first, second, and third factors (maturity x method x treater competence): first square the sums of each of the experimental groups' scores, divide by the number of measures on which each sum was based, and then add the quotients.

$$\frac{115.80^2}{24} + \frac{100.60^2}{24} + \frac{102.80^2}{24} + \frac{90.40}{24} + \frac{99.30^2}{24} + \frac{103.70^2}{24}$$

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$$\begin{aligned}
 & + \frac{76.20^2}{24} + \frac{71.80^2}{24} + \frac{81.20^2}{24} + \frac{69.40^2}{24} + \frac{77.60^2}{24} + \frac{25.60^2}{24} \\
 & = \frac{91,932.78}{24} = 3,830.53
 \end{aligned}$$

Subtract the correction term, the SS_{mat} , the SS_{meth} , the SS_{tc} , the $SS_{\text{mat} \times \text{meth}}$, the $SS_{\text{mat} \times \text{tc}}$, and the $SS_{\text{meth} \times \text{tc}}$.

$$\begin{aligned}
 & 3,830.53 - 3,572.94 - 154.30 - 23.58 - 9.67 - 3.29 \\
 & \quad - 14.06 - 18.60 = 34.09 = SS_{\text{mat} \times \text{meth} \times \text{tc}}
 \end{aligned}$$

Step 13. To compute the error-term sum of squares (SS_{error}): subtract SS_{mat} , SS_{meth} , SS_{tc} , $SS_{\text{mat} \times \text{meth}}$, $SS_{\text{mat} \times \text{tc}}$, $SS_{\text{meth} \times \text{tc}}$, and $SS_{\text{mat} \times \text{meth} \times \text{tc}}$ from SS_{total} .

$$\begin{aligned}
 & 18,840.10 - 154.30 - 23.58 - 9.67 - 3.29 - 14.06 - 18.60 \\
 & \quad - 34.09 = 18,582.51 = SS_{\text{error}}
 \end{aligned}$$

Step 14. Since the F ratios are ratios of mean squares, compute the degrees of freedom (df) for each of the components.

df for SS_{total} = the total number of scores minus 1.

$$288 - 1 = 287$$

df for SS_{mat} = the number of maturity levels minus 1.

$$2 - 1 = 1$$

df for SS_{meth} = the number of treatment methods minus 1.

$$2 - 1 = 1$$

df for SS_{tc} = the number of treater-competence levels minus 1.

$$3 - 1 = 2$$

df for $SS_{\text{mat} \times \text{meth}}$ = the df for maturity level times the

df for method.

$$1 \times 1 = 1$$

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df for $SS_{\text{mat} \times \text{tc}}$ = the df for maturity level times the df for treater competence.

$$1 \times 2 = 2$$

df for $SS_{\text{meth} \times \text{tc}}$ = the df for method times the df for treater competence.

$$1 \times 2 = 2$$

df for $SS_{\text{mat} \times \text{meth} \times \text{tc}}$ = the df for maturity level times the df for method times the df for treater competence.

$$1 \times 1 \times 2 = 2$$

df for SS_{error} = the df for SS_{total} minus the dfs for SS_{mat} , SS_{meth} , SS_{tc} , $SS_{\text{mat} \times \text{meth}}$, $SS_{\text{meth} \times \text{tc}}$, $SS_{\text{mat} \times \text{tc}}$, and $SS_{\text{mat} \times \text{meth} \times \text{tc}}$.

$$287 - 1 - 1 - 2 - 1 - 2 - 2 - 2 = 276$$

Step 15. Compute the mean squares as SS/df .

$$ms_{\text{total}} \quad (\text{not needed for this analysis})$$

$$ms_{\text{mat}} = \frac{SS_{\text{mat}}}{1} = \frac{154.30}{1} = 154.30$$

$$ms_{\text{meth}} = \frac{SS_{\text{meth}}}{1} = \frac{23.58}{1} = 23.58$$

$$ms_{\text{tc}} = \frac{SS_{\text{tc}}}{2} = \frac{9.67}{2} = 4.84$$

$$ms_{\text{mat} \times \text{meth}} = \frac{SS_{\text{mat} \times \text{meth}}}{1} = \frac{3.29}{1} = 3.29$$

$$ms_{\text{mat} \times \text{tc}} = \frac{SS_{\text{mat} \times \text{tc}}}{2} = \frac{14.06}{2} = 7.03$$

$$ms_{\text{meth} \times \text{tc}} = \frac{SS_{\text{meth} \times \text{tc}}}{2} = \frac{18.60}{2} = 9.30$$

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$$ms_{\text{mat} \times \text{meth} \times \text{tc}} = \frac{SS_{\text{mat} \times \text{meth} \times \text{tc}}}{2} = \frac{34.09}{2} = 17.05$$

$$ms_{\text{error}} = \frac{SS_{\text{error}}}{276} = \frac{18,582.51}{276} = 67.33$$

Step 16. The F ratios are computed as:

$$\frac{ms_{\text{mat}}}{ms_{\text{error}}} = \frac{154.30}{67.33} = 2.29$$

$$\frac{ms_{\text{meth}}}{ms_{\text{error}}} = \frac{23.58}{67.33} = 0.35$$

$$\frac{ms_{\text{tc}}}{ms_{\text{error}}} = \frac{4.84}{67.33} = 0.07$$

$$\frac{ms_{\text{mat} \times \text{meth}}}{ms_{\text{error}}} = \frac{3.29}{67.33} = 0.05$$

$$\frac{ms_{\text{mat} \times \text{tc}}}{ms_{\text{error}}} = \frac{7.03}{67.33} = 0.10$$

$$\frac{ms_{\text{meth} \times \text{tc}}}{ms_{\text{error}}} = \frac{9.30}{67.33} = 0.14$$

$$\frac{ms_{\text{mat} \times \text{meth} \times \text{tc}}}{ms_{\text{error}}} = \frac{17.05}{67.33} = 0.25$$