EFFECTS OF SHORT-TERM TREATMENT ON ALCOHOL-RELATED BEHAVIOR

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INTRODUCTION

At last year's NCA conference in San Diego, Tom Clay presented a paper on interim evaluation results for the Phoenix ASAP's DWI School and Alcohol Awareness Programs (1). That paper summarized key results for enforcement and judicial countermeasures and compared DWI rearrest experience between randomly assigned treatment and control/comparison group conditions. A number of options for future program planning were suggested and reference was made to the fact that other, potentially more sensitive outcome measures related to problem drinking behavior would be utilized to further assess rehabilitation effectiveness. Results of these analyses, completed last summer for inclusion in the Project's Final Report, are the subject of this paper.

THE PHOENIX ASAP PROJECT

Before launching into an explanation of the design, methodology and results of this evaluation, it might be helpful to trace in broad stroke some of the background of the Phoenix ASAP, and summarize the results of the recidivism analysis. The City of Phoenix Alcohol Safety Action Project began operations in 1972, as one of 35 demonstration programs funded by the National Highway Traffic Safety Administration. Following a two-year extension, the operational phase came to a close at the end of 1976. Additional funding has permitted the evaluation component of the Project to continue on a reduced scale through the Spring of 1979. Altogether, $3.2 million in Federal funds and $1.9 million in City monies were expended.

Countermeasures included enforcement, judicial, rehabilitation, and public information and education. The overall objective of the program was to achieve a significant reduction in alcohol-related fatal crashes. The evaluation model was based on management-by-objectives, with goals identified for each countermeasure. Success in meeting secondary objectives proved to be a vital component of the overall evaluation, since it has been very difficult to demonstrate crash reduction (2).

RECIDIVISM RESULTS

DWI School

Phoenix is perhaps best known for its "DWI School"--the classic educational model for rehabilitation of drunken drivers. This course was begun in 1966 and served as a prototype for hundreds of similar programs in this country and others (3). With the advent of the ASAP in 1972, provision was made for random assignment of DWI offenders to one of the School's three treatment conditions (exposure to four-sessions, one-session, or literature-only) or to a no-treatment control group (4). The recidivism analysis, based on five years' follow-up data, revealed that rearrest rates for the three treatments were not significantly different, varying between 23.9% for the four-session School to 26.2% for the literature group. Recidivism for the control group was 30.6%, a significantly higher rate compared to the other three formats. This suggests that some form of intervention--even take-home reading materials--was somewhat better than no rehabilitation exposure at all.

Alcohol Awareness Program

The Phoenix DWI School was phased out in mid-1974 when ASAP management decided to move from large group lectures to small group discussion sessions. DWI Prevention Workshops, a four-session, ten-hour educational program designed for social drinkers, began in July 1974. Two problem drinker programs--DWI Therapy Workshops and Power Motivation Training (PMT)--were begun early the following year. Therapy Workshops consisted of six 2½ hour sessions plus an individual exit interview, for a total of 15+ hours of small group discussion. PMT was longer term, involving 32 hours of therapeutic contact. This program employed a series of experiential exercises to give participants feedback on their level of risk-taking, strategies of goal setting and quality of interpersonal communication in stressful situations (5). (With the exception of PMT, these programs are still in existence today.)

Large scale random assignment was undertaken during 1975 to provide for rigorous evaluation of the Alcohol Awareness Program. The three treatment modalities were compared with a minimal exposure Home Study Course consisting of a single 30-minute distribution session of an educational learning guide (6).

Recidivism results for the new modalities were no more positive than those just cited for the DWI School. Although the Alcohol Awareness Program demonstrated marginally lower recidivism than the four-session DWI School, exposure to treatment did not result in a significant decrement in the frequency of rearrest when each modality was compared to its corresponding Home Study

Course group. Considering the large sample sizes, percentage differences were extremely small, ranging from 2% to less than 1% after almost two years of follow-up.

Despite these negative results, it might still be argued that the recidivism analysis is too insensitive to detect actual differences between treatment and comparison groups. A DWI arrest is a statistically rare event, and ASAP rehabilitation was received by a relatively small number of licensed drivers. In addition, recidivism does not account for other client behaviors which typical alcohol treatment countermeasures are intended to modify. For these reasons, two distinct but analogous studies were undertaken to assess program effects on various nondriving behavioral criteria both directly and indirectly related to problem drinking. I'd like to share the results of these two studies with you today.

FOLLOW-UP INTERVIEW RESULTS

The Short-Term Rehabilitation (STR) Study

Phoenix was one of 11 ASAP sites to participate in the DOT-sponsored Short-Term Rehabilitation (STR) study (7). The Human Factors Laboratory, University of South Dakota, was responsible for developing instruments to measure client life change related to treatment effectiveness, in addition to conducting program-level analyses of the aggregated data. Local projects were responsible for developing and implementing an adequate experimental design, and collecting and transmitting the data to the national evaluator. Projects in turn were provided with an STR abstract file on tape for use in local analyses. The NHTSA also

sponsored a number of evaluation workshops to help evaluators come to grips with this mass of data. The evaluation model for STR included an initial contact data collection session and periodic follow-ups at 6, 12 and 18 months to assess change in problem drinkers' life activities. We will be limited today to a discussion of 12 month results inasmuch as the 18 month data are not yet available (8).

Everyone entering the Phoenix ASAP rehabilitation system routinely underwent a first stage diagnosis to determine social or problem drinker status (see Figure 1). Individuals classified as problem drinkers had their screening test examined to determine if basic STR selection criteria were met (lower test score, male, 18-55 years old, minimum of 8th grade education). Persons meeting these requirements were then interviewed to confirm their eligibility. Random assignments were made equally to PMT, Therapy Workshops, and the Home Study Course.

The STR data collection package consisted of four parts: the Mortimer-Filkens Questionnaire; the Life Activities Interview (LAI); the Current Status Questionnaire (CSQ); and the Personality Assessment Scale (PAS). Police records were also secured for use in program-level analyses. The data collection package was constructed especially for the STR study, although its development relied heavily on several earlier research efforts (9,10). Creation of scale scores was accomplished by the program-level evaluator (11). Factor analytic procedures applied to the LAI, CSQ, and PAS raw score variables yielded a total of 32 scales,

27 of which were subjected to analysis (12). These scales, with some overlap, measured behaviors and problems associated with alcohol use, physical health, employment stability, family status and social interaction. Also included were 14 factors from the PAS defining a broad spectrum of personality traits/states. The set of measures derived from the LAI and CSQ closely corresponds to outcome measures utilized in the Rand evaluation of NIAAA treatment programs (13) and the Stanford Research Institute's study of joint NIAAA/DOT alcoholism treatment programs (14).

Baseline data were collected on 351 DWI offenders referred to Therapy Workshops, Power Motivation Training, or the Home Study Course, although analyses were not based on the complete sample because of missing data. Attrition reached 26% at both the 6 and 12 month follow-up periods, a relatively low rate compared with other studies (15). In order to conserve sample size, it was decided to analyze each scale separately (16). With two follow-up points, a multivariate analysis of variance approach was used. The experimental hypothesis was that persons exposed to short-term treatment would improve relative to their baseline performance, while those receiving minimal exposure would not. This would be expected to result in a statistically significant interaction of treatment and comparison group profiles.

Analysis of 15 LAI-CSQ scales failed to turn up much in the way of positive results (see Figure 2). None of the interaction tests was significant indicating rough parallelism of group profiles over time. The only noteworthy finding was the abundance of time main effects which were observed. This indicates

improvement or degeneration of performance that is undifferentiated by group membership. An examination of group profiles for LAI Scale 6 (immoderate drinking behavior) will illustrate this point (see Figure 3). This graph reveals that the direction of change across groups is downward, or positive, since this scale has a negative valence. It can also be noticed that the two treatment groups showed relatively more improvement than the comparison group in immoderate drinking from initial contact to six months. This divergence in slope resulted in a marginally significant interaction term.

In the absence of interaction, a significant time main effect might indicate that something external was occurring to affect the way subjects responded. In our case, it does not seem unreasonable to imagine that clients' perceptions about receiving a plea agreement, participating in rehabilitation activities, cooperating with interviewers or even being in an experiment might affect their responses in a systematic way. This particular phenomenon has been termed the "Hawthorne effect," where it was observed that to single out a group of workers for a special project made them feel and act differently. This brought about a consistent increase in productivity which was independent of changes in working conditions. Seven of the ten significant main effects for time were indicative of relative improvement across groups at the later testing periods. Lacking any alternative explanations, it appears likely that the internal validity of the experimental design may have been affected (17).

Analysis of the 12 PAS scales also produced neutral results (see Figure 4). However, it should be noted that the PAS may not be particularly useful as a primary indicator of treatment effectiveness. Unlike the LAI and CSQ, it does not measure behavior which is easily quantified, such as frequency/amount of drinking or income production. Nor are the relationships as simple for predicting the direction of change that would be expected on the basis of the experimental hypothesis. The fact that some of the PAS scales are without valence illustrates this point. For example, Scale 9, which measures introversion/extroversion, has no valence because classification on this dimension involves a subjective judgement (see Figure 5). It is therefore difficult to interpret the meaning of significant interaction for this scale. The PAS was originally included in the STR design to stratify groups on a number of personality dimensions thought to be potentially interactive with other effects under study. A recent program-level evaluation, however, did not find these scales very useful when they were introduced in the analysis as covariates (18).

The Short-Term Rehabilitation in Phoenix (STRIP) Study

The Short-Term Rehabilitation in Phoenix (STRIP) study was an offshoot of STR in terms of the design and procedures involved. The study was undertaken to provide treatment effectiveness analyses for social as well as problem drinker programs (see Figure 6). The data collection package utilized the Current Status Questionnaire from the STR study, and a shortened version

of the Life Activities Interview. Data collection was limited due to time constraints and a belief that PAS and police record data would be of little value in determining treatment effectiveness. Scales were derived based on previous analyses of 3,681 STR cases at initial intake (19).

In order to maximize available life status information, a decision was made to use the five composite LAI/CSQ scales of: current quantity/frequency of drinking; employment/economic stability; physical health problems; social interaction; and current drinking problems. The CSQ marital problems scale was also included. The employment/economic stability scale (LAI/CSQ Scale 2) was subsequently dropped from the analysis due to low internal consistency reliability brought about by a narrow range of responses on items defining this scale.

Baseline data were collected on 436 clients referred to Prevention Workshops, Therapy Workshops, or Home Study. An attempt was made to follow up this sample eight months following entry into treatment. Separate analyses were conducted for social and problem drinkers. Scales were analyzed one at a time using a repeated measures univariate analysis of variance. Sample sizes fluctuated slightly as the result of missing data. A total of 314 persons were followed up, or almost three-quarters of the original sample.

Analysis of these data also produced nothing in the way of positive results. None of the interaction tests achieved statistical significance, a result contrary to what would be expected if treatment were affecting subsequent behavior. Like STR, there

was evidence of undifferentiated improvement in some areas of client life status. In the area of physical health, for example, all four groups experienced significantly fewer problems at eight months following their date of initial contact (see Figure 7). The two problem drinker curves were indicative of relatively more physical health complaints at both testing periods (they are more elevated), but with more improvement shown (they possess slightly steeper slopes). Other evidence for improvement in the form of a significant time main effect was obtained for Scale 5 (current drinking problems). Analysis of one scale actually produced a negative result; both social drinker groups reported increased quantity/frequency of alcohol consumption at follow-up. It would appear on this basis that DWI Prevention and Therapy Workshops had no more effect than the minimal-exposure Home Study Course in improving the quality of social or problem drinkers' life situations.

Inspection of group profiles over time revealed that, compared to social drinkers, problem drinkers' scores were relatively more indicative of consequences associated with drinking. (The one exception was LAI/CSQ Scale 1, defining current quantity/frequency of drinking.) This informal observation suggests that scale scores derived for the STRIP study represent valid criteria for assessment of life status change. It should be pointed out, however, that since these scales were originally derived for the evaluation of treatments designed for problem drinkers, their application to a group of social drinkers may be somewhat inappropriate.

DISCUSSION

The findings from the STR and STRIP studies are similar to those reported by other investigators for both alcoholic patients and DWI offenders. The Rand study concluded that different types of alcoholism treatments had little or no differential effects on subsequent drinking behavior (see Note 13). Remission was nearly 70% for both follow-up samples regardless of treatment assigned. Another study found a decrease in mean scores on two alcohol impairment measures for DWI's over a 30-day period that was similar for treatment and control groups (20).

Faced with negative results, it is the responsibility of the evaluator to suggest alternative courses of action. Our recommendation has been that substantial changes should be made to the content and delivery of DWI rehabilitation programs. In this regard, it should be recognized that short-term exposure to rehabilitation may not be sufficient to modify the behavior of any but the "light" (easily influenced) social drinkers. Really intensive treatment is probably needed for problem drinkers and alcoholics--in other words, much longer term exposure to rehabilitation than has been possible up to now. This presents a challenge to a criminal justice system which has limited control over the DWI misdemeanant.

Unfortunately, it appears that Phoenix city officials may be unwilling to accept this challenge. As noted in a recent Phoenix newspaper editorial, plans are underway to negotiate a new contract with the same agency, without requesting proposals from other alcoholism professionals in the community (21). The

present contractor may be the best provider of rehabilitation services, but this will never be known unless alternate approaches are explored. It is disturbing from the point of view of an evaluator to see political expediency stand in the way of progress. It also makes little sense to continue evaluating programs if results are not used for decision-making.

Political considerations aside, evaluators of social programs have the challenge of devising better methods of accomplishing their task. One problem concerns the criteria employed to measure change. The fact that most instruments, the present one included, do not measure change relative to the subject's condition at the onset of treatment and do not account for the total amount of change possible, underscores the need for more innovative strategies in evaluation research. A number of techniques have been proposed to account for these kinds of differences, among them, a relative change index (22) and goal attainment scaling (23). Although these methods require substantially more time to administer than self-report questionnaires, their potential for strengthening the evaluation of alcohol treatment programs may make their use worthwhile. The present studies, by expanding traditional approaches to include more extensive measures of treatment effectiveness, are a step in the right direction. Future research on DWI behavior should take the same tack. This statement in essence acknowledges an intuitive feeling that indices of overt drinking behavior and those known to be associated with problem drinking can prove useful in evaluating DWI program effectiveness.

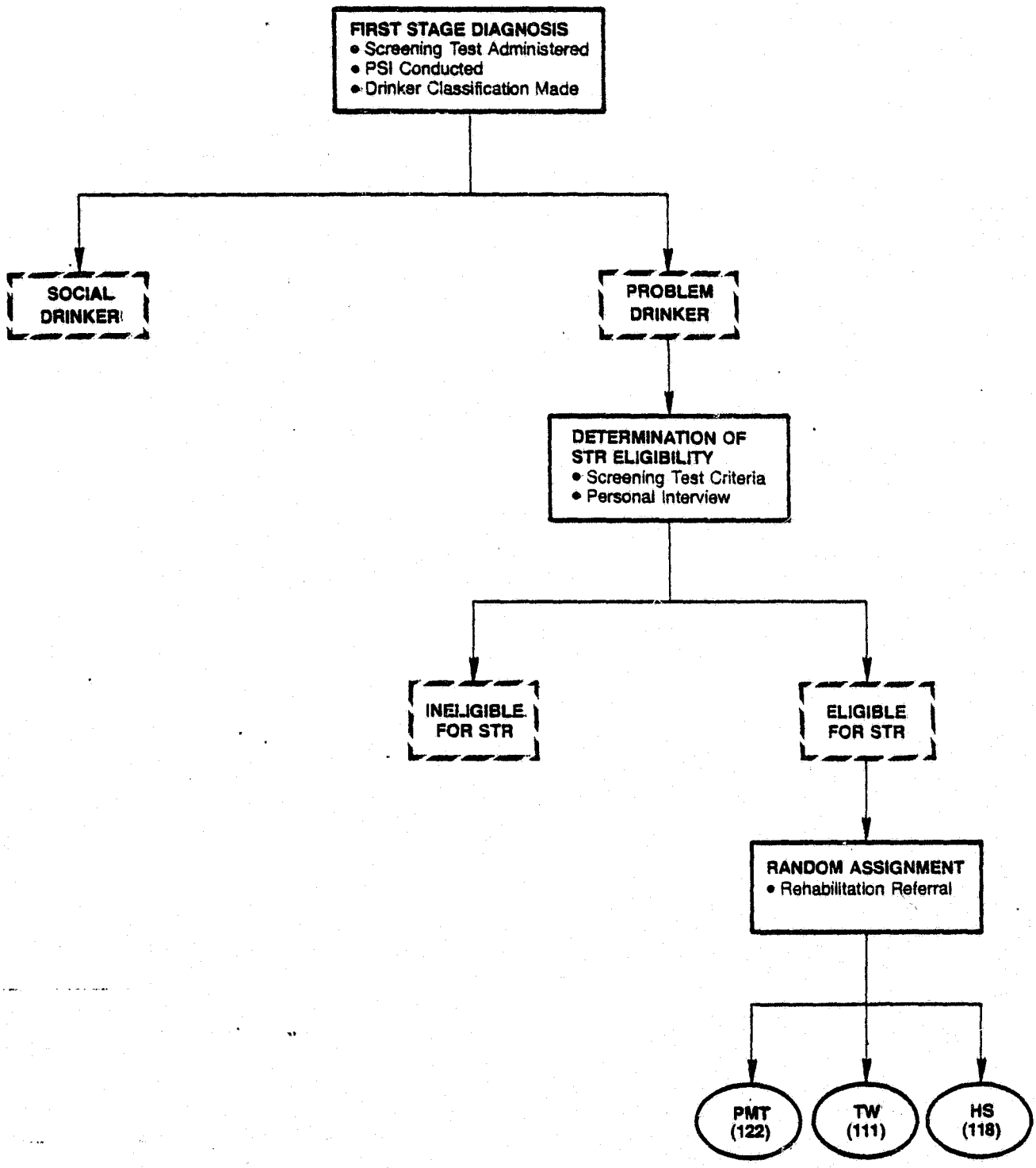

FIGURE 1

STR RESEARCH DESIGN

FIGURE 2

SUMMARY OF LAI AND CSQ RESULTS

SCALE		DIMENSION	EFFECTS: GROUPS	TIME	INTERACTION
LAI	1	EMPLOYMENT	+	*	-
	2	QUANTITY/FREQUENCY	-	-	-
	3	FAMILY STATUS	+	*	-
	4	SOCIAL INTERACTION	-	*	-
	5	HEALTH	-	*	-
	6	HEAVY DRINKING	-	*	+
CSQ	2	CONTROL	-	*	-
	3	EMPLOYMENT	+	*	-
	4	HEALTH	-	-	-
	5	RESIDENTIAL STABILITY	-	+	-
	6	SOCIAL INTERACTION	*	-	-
L/C	1	QUANTITY/FREQUENCY	-	+	-
	2	EMPLOYMENT	*	*	-
	3	HEALTH	-	*	-
	4	SOCIAL INTERACTION	+	*	-

\- NON-SIGNIFICANT

\+ MARGINAL ($p < .10$)

* SIGNIFICANT ($p < .05$)

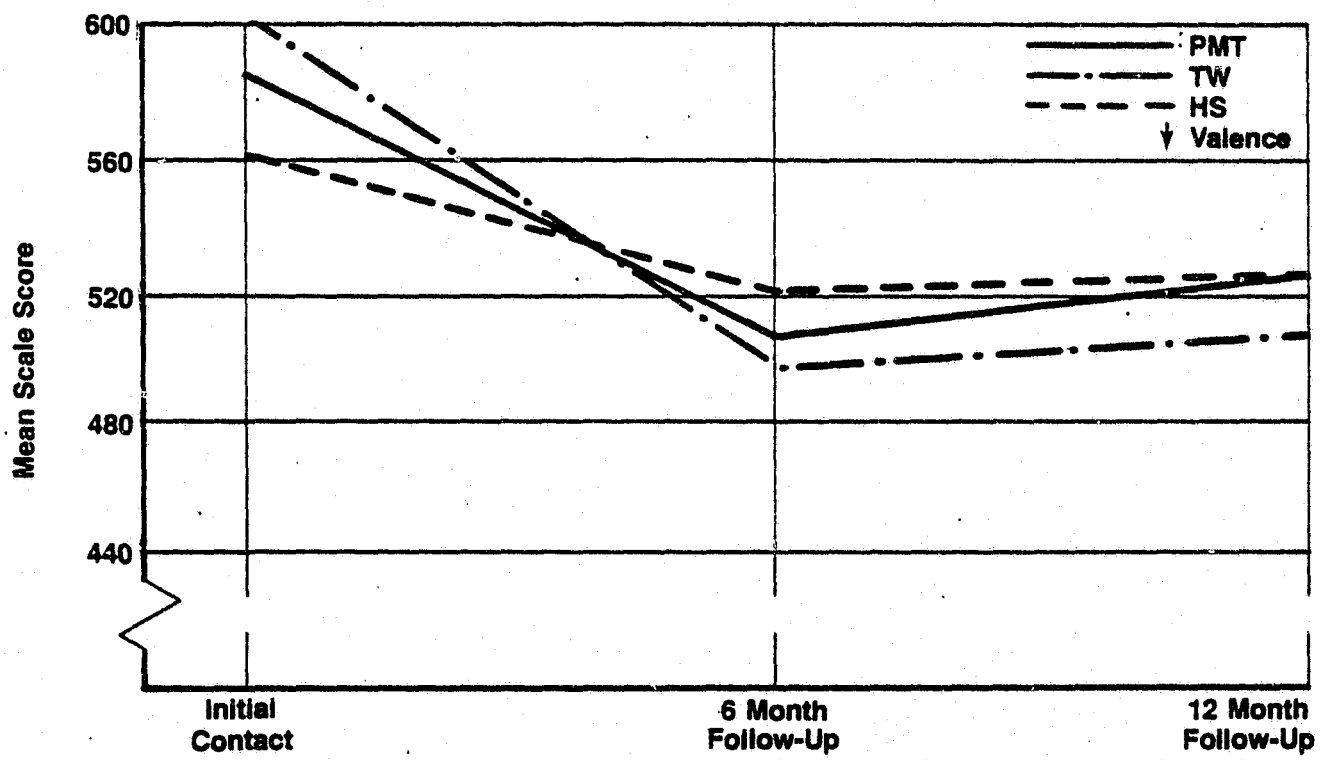

FIGURE 3

GROUP PROFILES FOR LAI SCALE 6

IMMODERATE DRINKING BEHAVIOR

FIGURE 4

SUMMARY OF PAS RESULTS

SCALE	DIMENSION	EFFECTS		
		GROUPS	TIME	INTERACTION
1	STRANGE THOUGHTS	-	-	-
2	ANXIETY	-	-	-
3	NEGATIVE PROJECTION	*	-	-
4	AESTHETICISM	-	-	-
5	PHOBIAS	-	*	-
6	SELF-IMAGE	-	-	-
8	GROUP ATTRACTION	-	-	*
9	INTROVERSION/EXTROVERSION	-		*
10	PARANOIA	-	-	-
11	EMOTIONAL CONTROL	-	-	-
12	HYPOCHONDRIA	-	-	-
14	SENSITIVITY	-	-	-

\- NON-SIGNIFICANT

\+ MARGINAL ($p < .10$)

* SIGNIFICANT ($p < .05$)

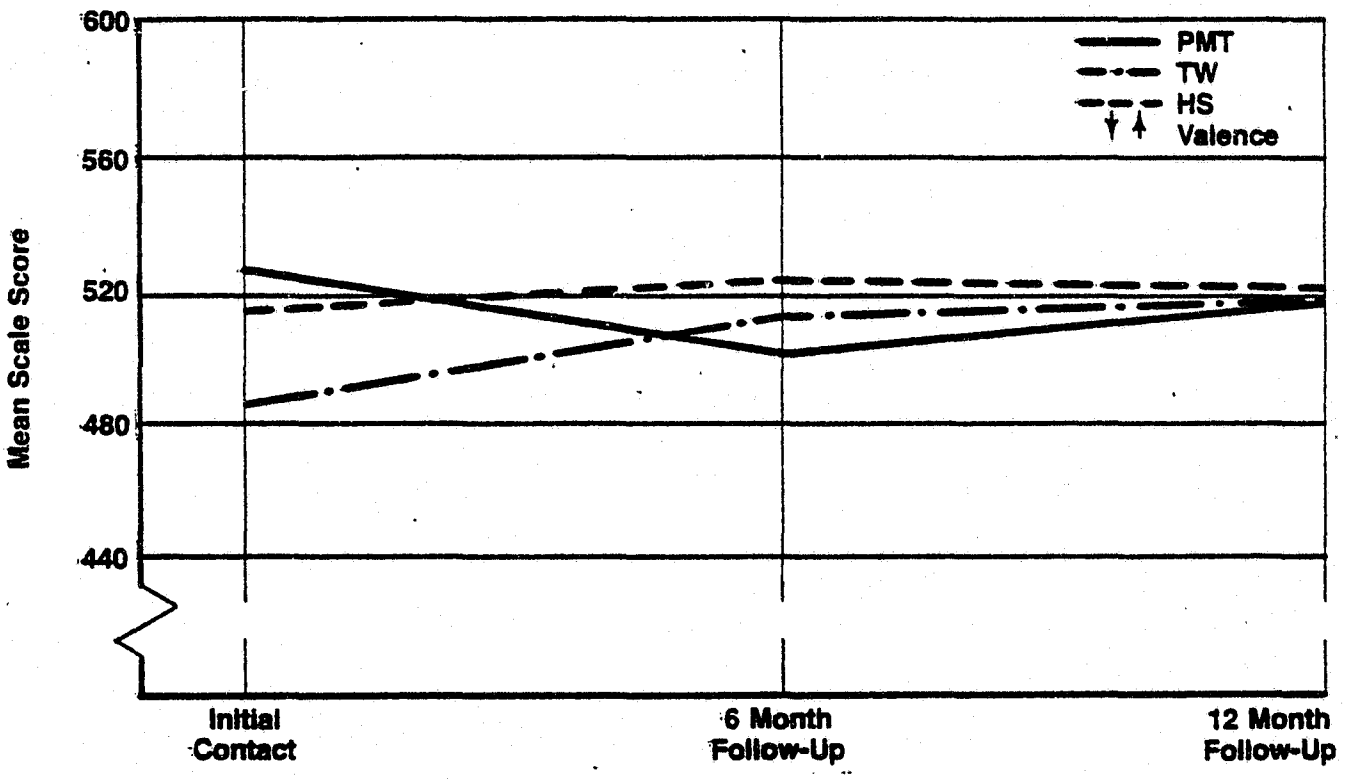

FIGURE 5

GROUP PROFILES FOR PAS SCALE 9

INTROVERSION/EXTROVERSION

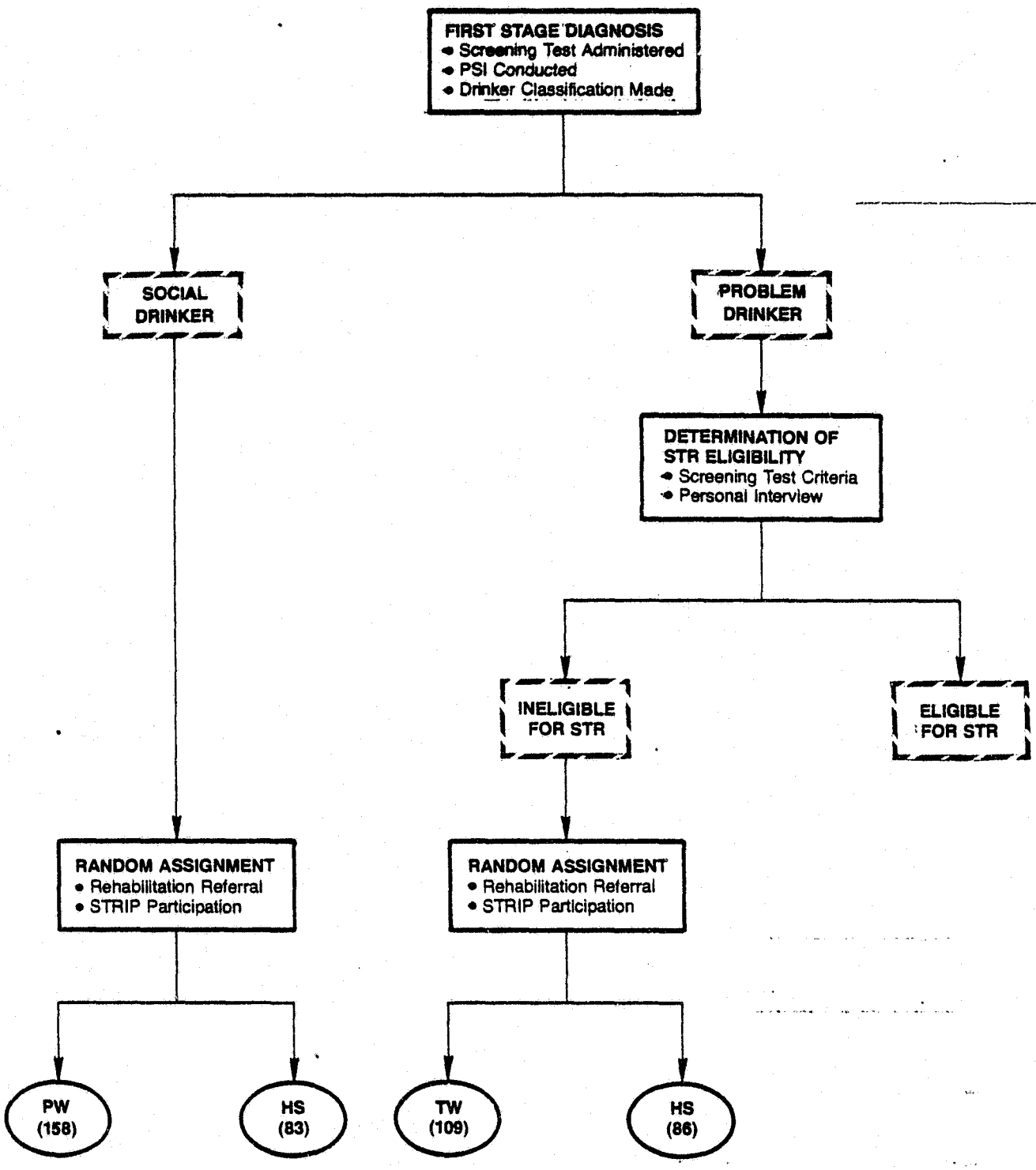

FIGURE 6

STRIP RESEARCH DESIGN

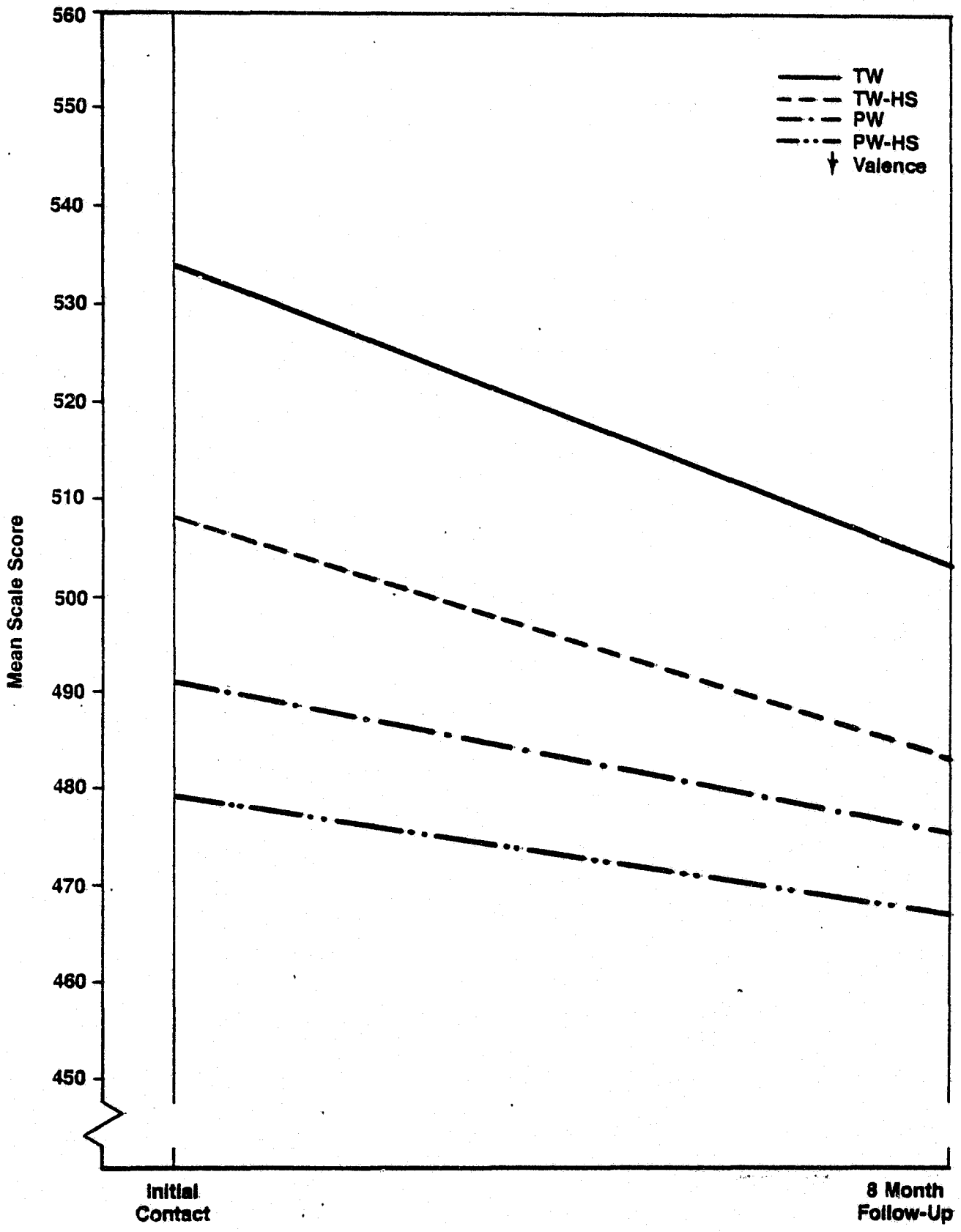

FIGURE 7

GROUP PROFILES FOR LAI/CSQ SCALE 3

CURRENT PHYSICAL HEALTH PROBLEMS

Reference Notes

1. Clay, T. R. Evaluation of the Phoenix ASAP, DWI school and alcohol awareness programs. Paper presented at the 1977 National Alcoholism Forum of the National Council on Alcoholism, San Diego, May 1977.
2. Clay, T. R., & Ellingstad, V. S. An analysis of total project impact: Final report, section two, analytic study I. Phoenix, Ariz.: City of Phoenix Alcohol Safety Action Project, June 1977. (Contract No. DOT-HS-052-1-068)
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7. Ellingstad, V. S. Program level evaluation of ASAP diagnosis, referral and rehabilitation efforts: Volume IV - Development of the short term rehabilitation (STR) study (DOT-HS-191-3-759-F4). Vermillion, S. Dak.: University of South Dakota, Human Factors Laboratory, September 1976. (NTIS No. DOT-HS-802 045)

8. It is anticipated that analysis of 18 month data will be undertaken in the near future. Results should be available by Fall, 1978.

9. Foster, F. M., Horn, J. L., & Wanberg, K. W. Dimensions of treatment outcome: A factor-analytic study of alcoholics' responses to a follow-up questionnaire. Quarterly Journal of Studies on Alcohol, 1972, 33, 1079-1098.

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11. Ellingstad, V. S., & Struckman-Johnson, D. L. Interim analysis of STR performance and effectiveness (HFL-77-3). Vermillion, S. Dak.: University of South Dakota, Human Factors Laboratory, June 1977. (NTIS No. DOT-HS-802 569)

12. CSQ Scale 1 (marital problems) was excluded because scores were recorded only for clients who were married at the time of interview. This constrained data availability to approximately one-half of the sample. LAI/CSQ Scale 5 (current drinking problems) was rendered unusable by a faulty missing

data indicator on the STR abstract file. Three other scales were omitted on the basis of low internal reliability. Internal consistency reliability coefficients were computed as an estimate of scale score stability. In each instance, the coefficients computed were the generalized KR20 or Cronbach's alpha. Scales with coefficients of less than 0.6 were considered to have insufficient internal reliability. CSQ Scale 7 (control of drinking), PAS Scale 7 (moralism) and PAS Scale 13 (acting out/anxiety) were excluded for this reason.

13. Armor, D. J., Polich, J. M., & Stambul, H. B. Alcoholism and treatment (Report No. R-1739-NIAAA). Santa Monica, Calif.: The Rand Corporation, June 1976.

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15. Vannicelli, M., Pfau, B., & Ryback, R. S. Data attrition in follow-up studies of alcoholics. Journal of Studies on Alcohol, 1976, 37, 1325-1330.

16. The disadvantage of including only one scale at a time in the analysis is that the risk of making an experiment-wise error increases in relation to the number of analyses being conducted.

17. Campbell, D. T., & Stanley, J. C. Experimental and quasi-experimental designs for research. Chicago: Rand McNally, 1963, pp. 5-6.

18. Ellingstad, V. S., & Struckman-Johnson, D. L. Short term rehabilitation (STR) study: Interim analysis of STR performance and effectiveness, 12 month analyses (DOT-HS-803-285). Vermillion, S. Dak.: University of South Dakota, Human Factors Laboratory, January 1978. (Contract No. DOT-HS-6-01366)

19. See Note 11. Appreciation is extended to Vernon S. Ellingstad, Project consultant, who derived the outcome measures for this study and offered technical assistance regarding scoring of the data.

20. Scoles, P., & Fine, E. W. Short-term effects of an educational program for drinking drivers. Journal of Studies on Alcohol, 1977, 38, 633-637.

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23. Kiresuk, T. J., & Sherman, R. E. Goal attainment scaling: A general method for evaluating comprehensive community mental health programs. Community Mental Health Journal, 1968, 4(6), 443-453.

END