

IMPROVING ATTENDANCE AT RUGBY PRACTICE: A BEHAVIOURAL APPROACH

by

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to the required standard


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ABSTRACT

The purpose of this study was to investigate the effect of a lottery incentive system on attendance at rugby training sessions. Data was collected on 20 male, under-19 rugby players, who were requested to attend five weekly training sessions over a 24-week period. In all, three experiments were conducted, of which the first two followed an ABA design (baseline, intervention, return to baseline) and the third an AB design. Attendance was generally shown to increase when treatment was implemented and decrease when it was not in effect. Treatment consisted of the awarding of a playing card for each training session attended. At the end of each treatment week a cash prize was given to the player whose cards constituted the best poker hand. The three experiments differed slightly in the number of cards awarded on different days. In Experiment I, following the introduction of treatment, attendance rose above baseline levels before returning to, or near to, baseline levels following the withdrawal of treatment. This occurred across five specific conditions (Tuesday run, Tuesday practice, Wednesday weight training, Thursday run, Friday practice) as well as a weekly total. In Experiment II this pattern occurred in some but not all conditions in which treatment was implemented. In Experiment III, the pattern of baseline followed by an increase in attendance following the implementation of treatment occurred under only one condition. Attendance at the training sessions was seen to be affected by

seasonal and person factors. It was concluded that a lottery incentive system can be effective in increasing attendance at rugby training sessions.



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DEDICATION

To Lorna.

Thanks for your love and support.

INTRODUCTION

The purpose of this study was to determine the effects of applying behavioural contingencies in a sporting environment. More specifically, the study examined the effect of manipulating a reinforcement contingency on attendance, at rugby training sessions, of an under nineteen male varsity team. Players' attendance at rugby training sessions, in previous years, was described by their coaches as being poor and irregular. Non-attendance by players at these sessions obviously interfered with and limited the content and effectiveness of the sessions and according to the coaching staff this had detracted from competition performance. In previous years coaches had attempted to increase attendance at training sessions through the use of penalties for non-attendance. However, according to coaches' reports, these attempts had been unsuccessful.

The majority of studies on absenteeism have examined the problem as it related to industry (see Appendix C). Procedures for enhancing attendance, in this context, fall into one of two categories: (a) use of punishment; and (2) application of positive reinforcement. The evidence suggests that punishment has not been effective in curbing absenteeism in industry. Nicholson (1976) and Rosen and Turner (1971) reported that there was no evidence for an effect of punishment on absenteeism. It has therefore been proposed that positive reward systems might be more effective. (Hermann, de Montes, Dominguez, Montes, and Hopkins, 1973; Johnson and Peterson,

1975). Positive reward systems may take a number of forms and these include the application of praise and recognition, cash bonuses, and lottery incentive systems.

In a review of industrial reports Hamner and Hamner (1976) pointed out that a number of companies had employed programmes involving the use of praise and that they had reported significant decreases in absenteeism. However, Hamner and Hamner reported, in regard to the Emery Air Freight company, that the constant use of praise dulled its effect as a reinforcer. Thus, Skinner's (1973) prediction about the need for using more than praise, after the programme has been in operation for a period of time, has been supported.

IR Research Services (1982) reported that bonuses were the most common form of reward for good attendance. Since bonuses require a payment to everyone who fulfils the attendance criterion, such a programme may prove to be very expensive should the bonus be given frequently. This could lead to the use of small bonuses which might be of little incentive to the individuals involved.

A variation on the reward theme is one in which employees who have attained a set criterion level of attendance are eligible to participate in a lottery for some kind of prize. The impetus for using behavioral lotteries to increase employee attendance at work has been attributed to Skinner (1973), as cited by Durand (1985). It has the advantage of economy, since the total cash outlay can be significantly lower with a single prize than for bonuses given to

all who meet an attendance criterion. Carlson and Hill (1982), Shoemaker and Reid (1980), Stephens and Burroughs (1978), and Pedalino and Gamboa (1974) have all employed lottery incentive systems and all have reported a subsequent increase in attendance.

In the amateur sport environment only one study has employed a behavioural modification, that is, positive reinforcement approach, in an attempt to increase attendance (McKenzie and Rushall, 1974). Working with nine to sixteen year-old swimmers they reported a 45% reduction in absenteeism using a public posting of attendance procedure. There is no record of a lottery incentive system being employed to reduce absenteeism in the sports setting.

The researcher believed that a lottery with a monetary prize could be used to improve attendance at training sessions with an older age group. The large number of studies reporting the effectiveness of monetary reinforcers in reducing absenteeism in industry should have relevance for present context. Furthermore, the research would suggest that a lottery incentive system is the most economical monetary method (Nord, 1970).

The basic hypothesis of this study was that behaviour modification, in the form of a lottery incentive system, can be utilized to reduce absenteeism in a sporting environment.

METHODS

Subjects

The members of the University of Victoria Under-19 Rugby Team served as subjects. The team was made up of twenty males. Player, parent, and coach consent was sought prior to the study (see Appendices 1 and 2).

Training Schedule

There were five training sessions per week. The number of players who attended and who were absent (not present when the training session started) was recorded by the researcher. Those who were not on time for training were counted as being absent. Players who were late, no matter by how little, were still counted as being absent. Training sessions were characterized by the following content and timing:

1. Run	Tuesday	7:00 a.m.
2. Practice	Tuesday	4:30 p.m.
3. Weights	Wednesday	7:00 a.m.
4. Run	Thursday	7:00 a.m.
5. Practice	Friday	4:30 p.m.

EXPERIMENT I

Procedure

The experimental approach followed in Experiment I was an ABA design, in which baseline measures were taken (A); intervention was applied (B); and treatment was withdrawn in a return to baseline condition (A).

The main dependent variable was weekly frequency of attendance for the total group (the maximum rate being 20 players at all 5 practices = 100). As a means of examining weekly variation in attendance at each of the five practice sessions, attendance was also analyzed on a daily basis.

Baseline 1. In the baseline condition no experimental contingencies were in effect and attendance was recorded by the researcher. Players were aware that attendance was being recorded as prior to the commencement of the study they had been briefed in full. They were told what the purpose of the study was and how it would operate.

Intervention 1. A lottery incentive system, using a poker game strategy, was employed. For each session that a player came to practice and was on time, he was permitted to draw one card from a deck of playing cards. The drawing took place at the conclusion of the Friday practice. When a player attended all five sessions, he drew five cards, of which he was permitted to change two. When a player had attended four sessions, he drew four cards, one of which

he could change. Players with one, two, or three cards were not permitted to change any cards. The player with the best poker hand, at the conclusion of the drawing, won \$40, and the player with the second best, \$10.

Withdrawal 1. Following seven weeks of treatment the intervention was discontinued and there was a return to baseline conditions.

Results

The data showed a clear effect for treatment, both for the weekly total and across all conditions, that is, for each daily session individually, except Friday practice. The average attendance for each phase of Experiment I is outlined in Table 1.

Phase	N	Weeks	Condition		
			Baseline 1	Treatment 1	Withdrawal 1
Experiment I	20	19			
Median			36	57	34
M			40.11	54.14	36.33
SD			10.61	6.36	4.04

Table 1

Medians, Means and Standard Deviations of Attendance for Treatment and Nontreatment Conditions in Experiment I

Weekly Total. After a drop over the first four weeks from an initial high of 62, to a low of 32, attendance remained fairly constant, hovering between 31 and 37 over the last five weeks of baseline data. During treatment attendance increased to the high 50's and low 60's, except for a marked dip in week 13. Following withdrawal of treatment, attendance returned to a level more characteristic of baseline (see Fig. 1).

The effects of treatment on Tuesday runs, Tuesday practice, Wednesday weights and Thursday run were all similar to that recorded for the weekly totals (see Figs. 2, 3, 4, and 5).

In the case of the Tuesday run (see Fig. 2), baseline attendance, after the initial three weeks, dropped from a high of 11 to values ranging between 2 and 4. Treatment brought about an increase in attendance, with values ranging between 5 and 11. By the second week of withdrawal of treatment, attendance dropped to baseline.

In regard to the Thursday run (see Fig. 3), attendance during baseline had levelled out at between 1 and 5 by the third week. During treatment, attendance values for 4 of the 7 weeks exceeded - although not always by very much - those found during all but the first 2 weeks of baseline. With the withdrawal of treatment, scores declined to values lower than those observed during all but the first week of treatment.

Following an initial large and steady decline, baseline attendance for the Wednesday weight training sessions alternated between 2 and 3 (see Fig. 4).

With the implementation of treatment, attendance increased to values consistently between 8 and 11 and then decreased to between 3 and 7 following the withdrawal of treatment.

For the Tuesday practice (see Fig. 5) attendance during baseline ranged between 9 and 13. Following the introduction of treatment, attendance increased to levels greater than all but the first baseline session and then decreased, after the withdrawal of treatment, to values which were all below any seen during treatment.

The effect of treatment on attendance at Friday practice was not as marked or as reliable as the effect on the other sessions. After an initial drop during the early stages of baseline, attendance climbed to near maximum levels for the remainder of baseline. Attendance remained high during treatment except for a dip during weeks 13 and 14 but the return to baseline conditions failed to produce any unequivocal effects on attendance (see Fig. 6).

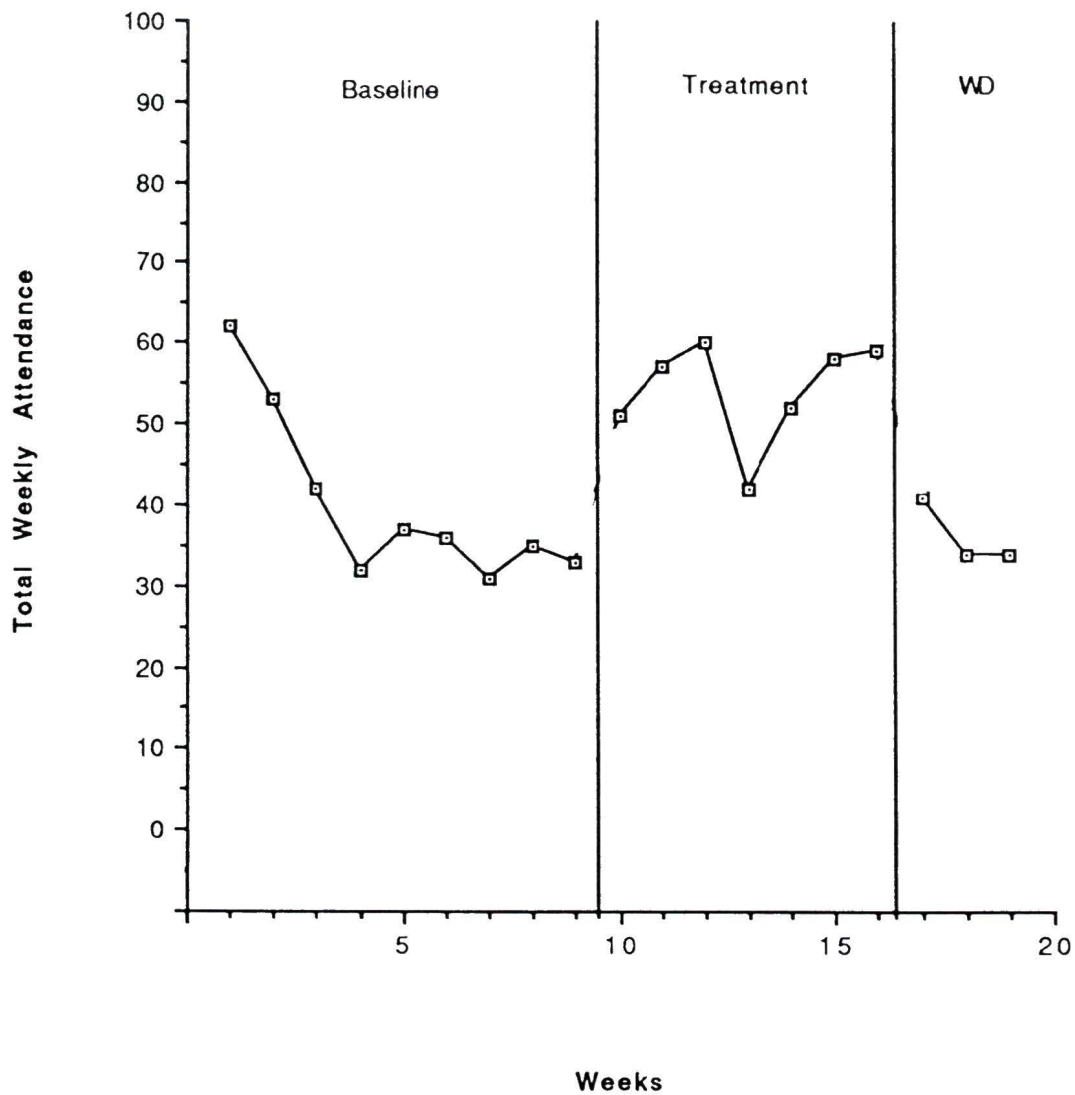


Figure 1 The Accumulated Weekly Attendance Total Across All Sessions For Experiment I.

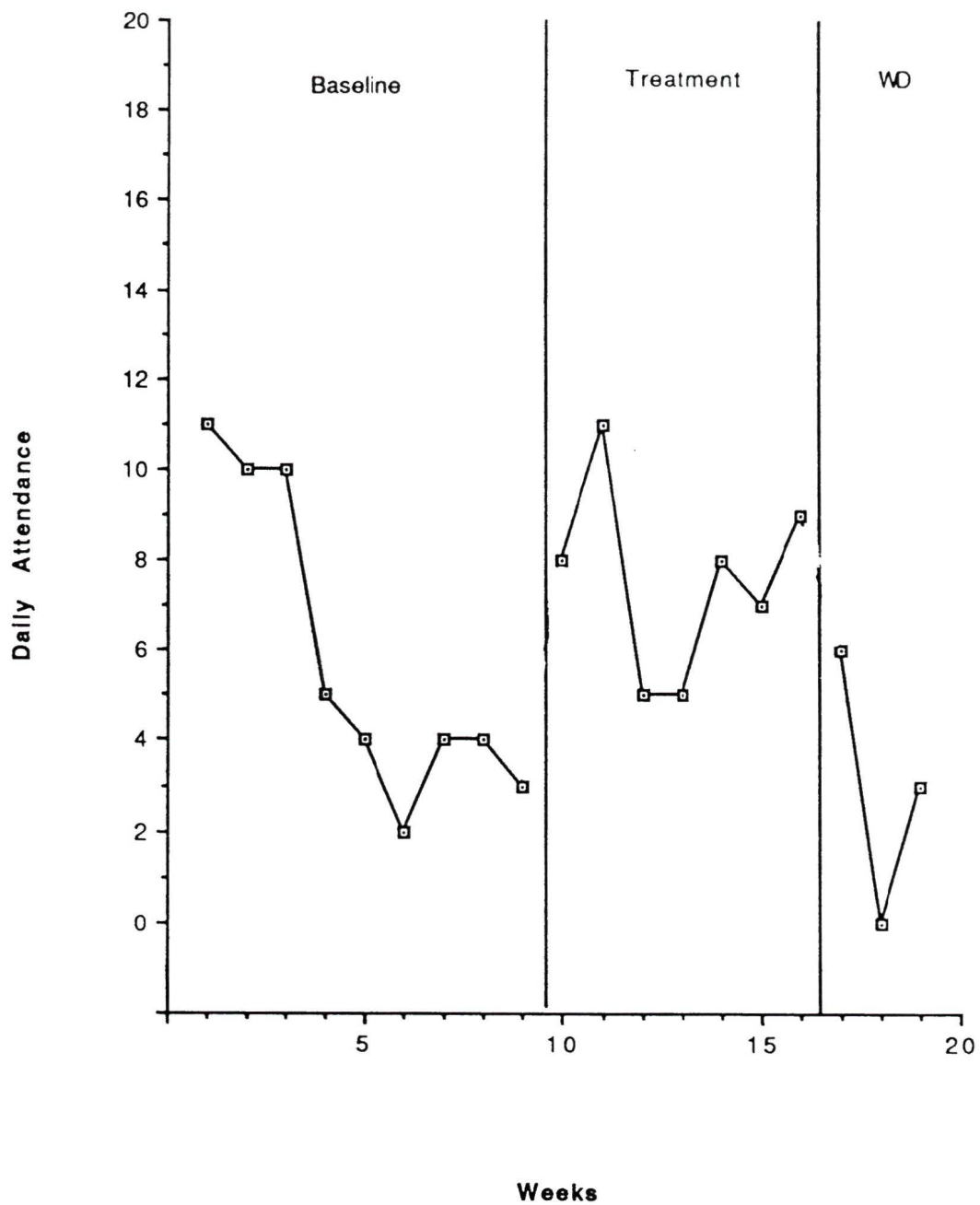


Figure 2 Tuesday Run Attendance for Experiment I.

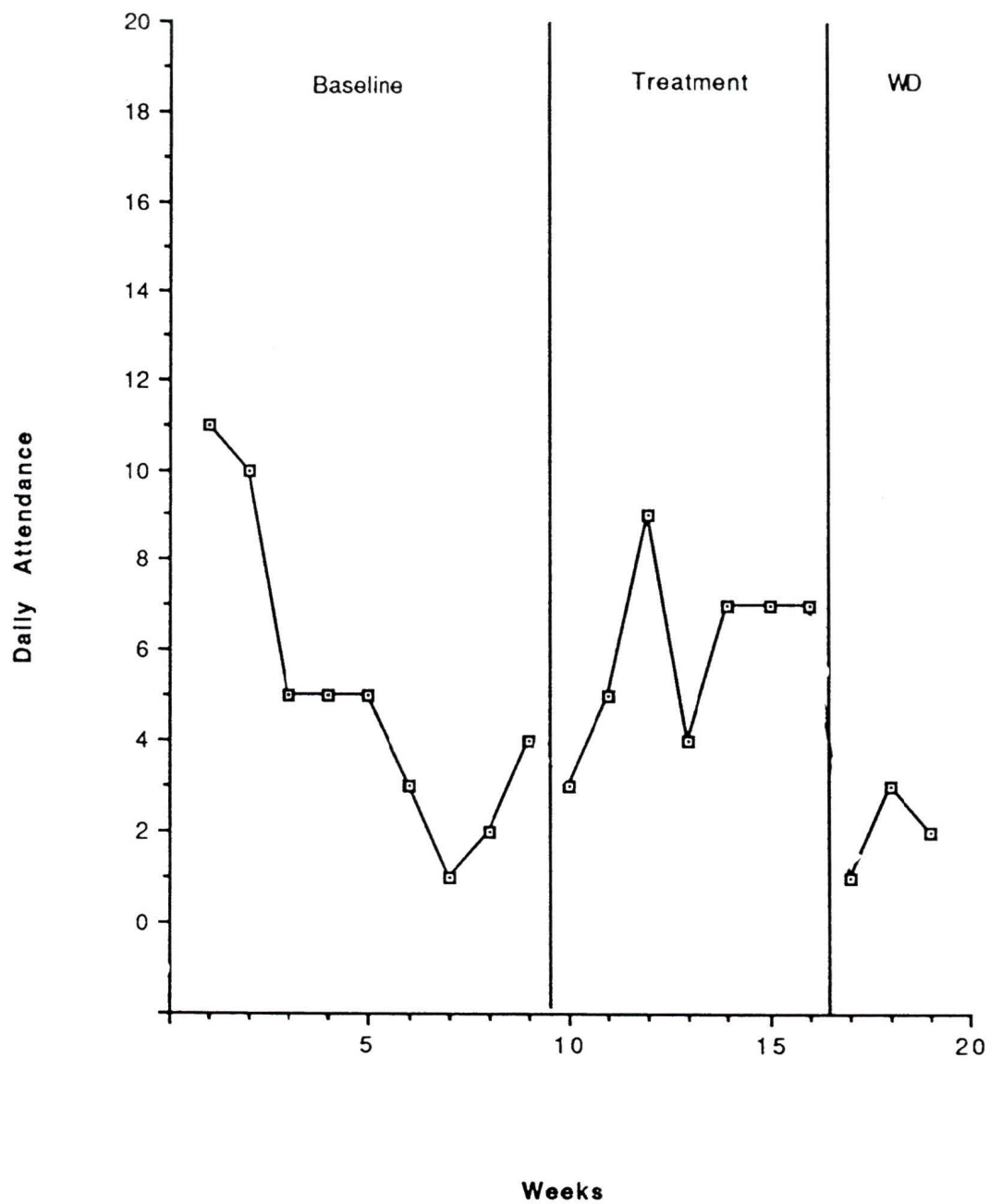


Figure 3 Thursday Run Attendance For Experiment I.

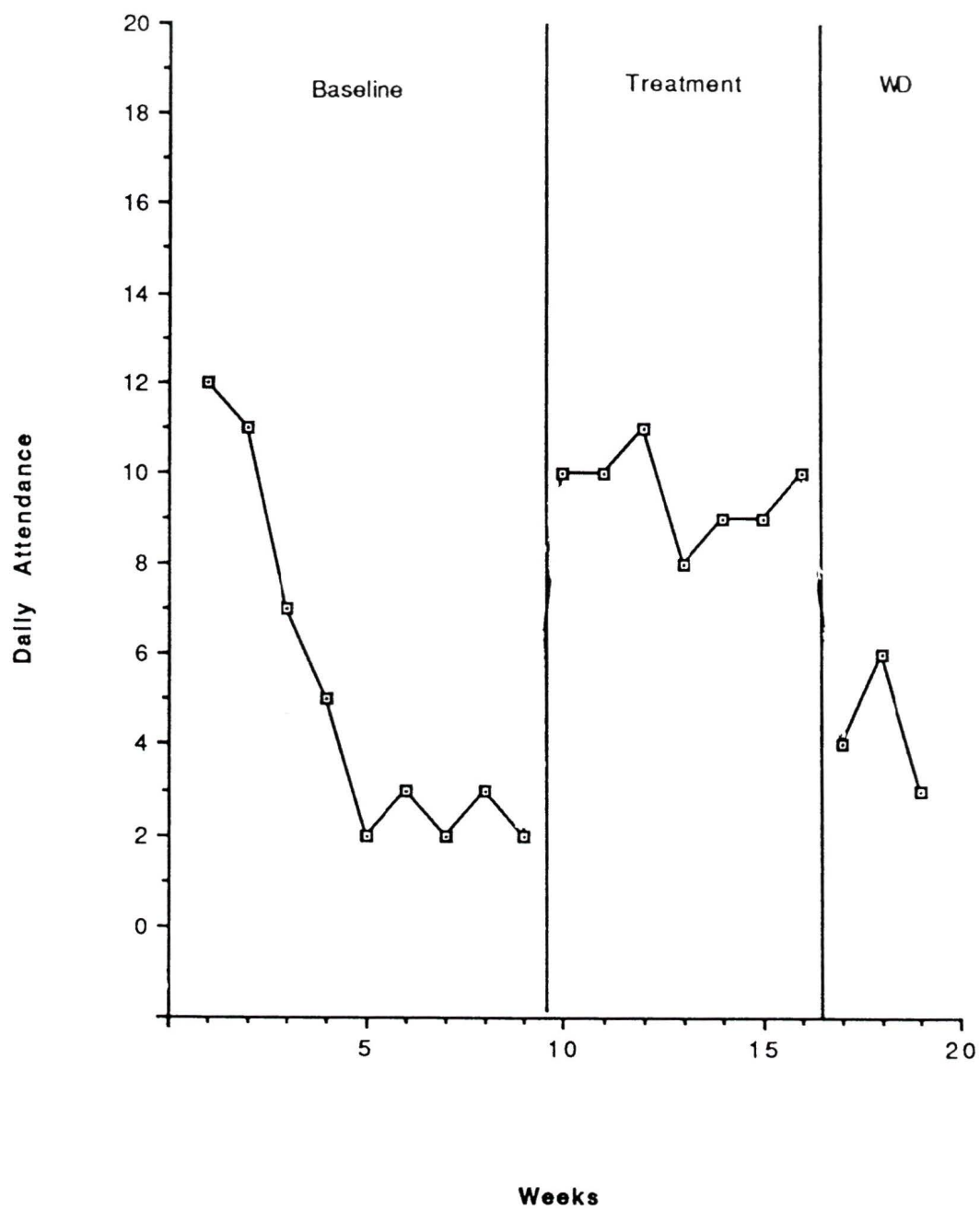


Figure 4 Wednesday Weight Training Attendance For Experiment I.

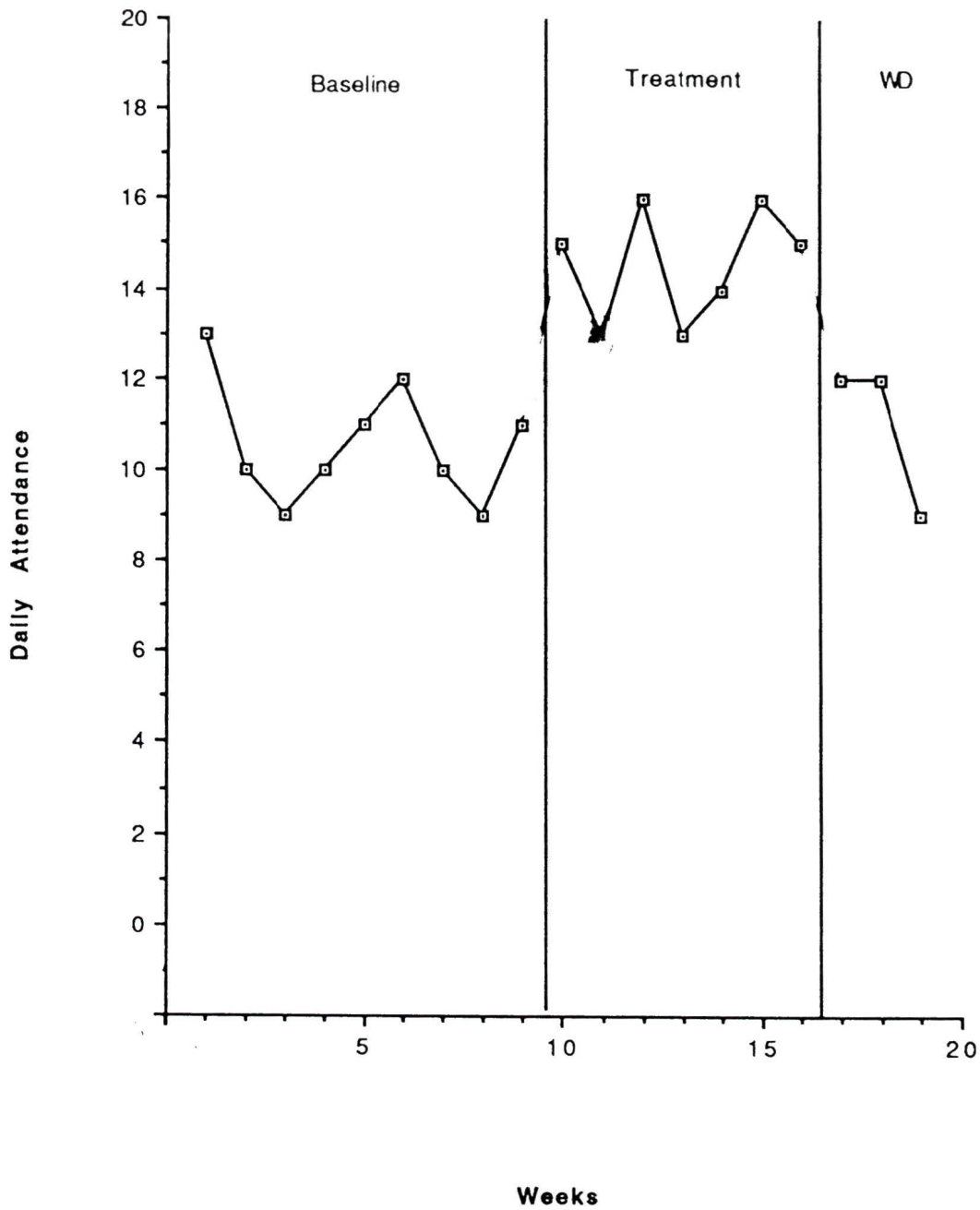


Figure 5 Tuesday Practice Attendance For Experiment I.

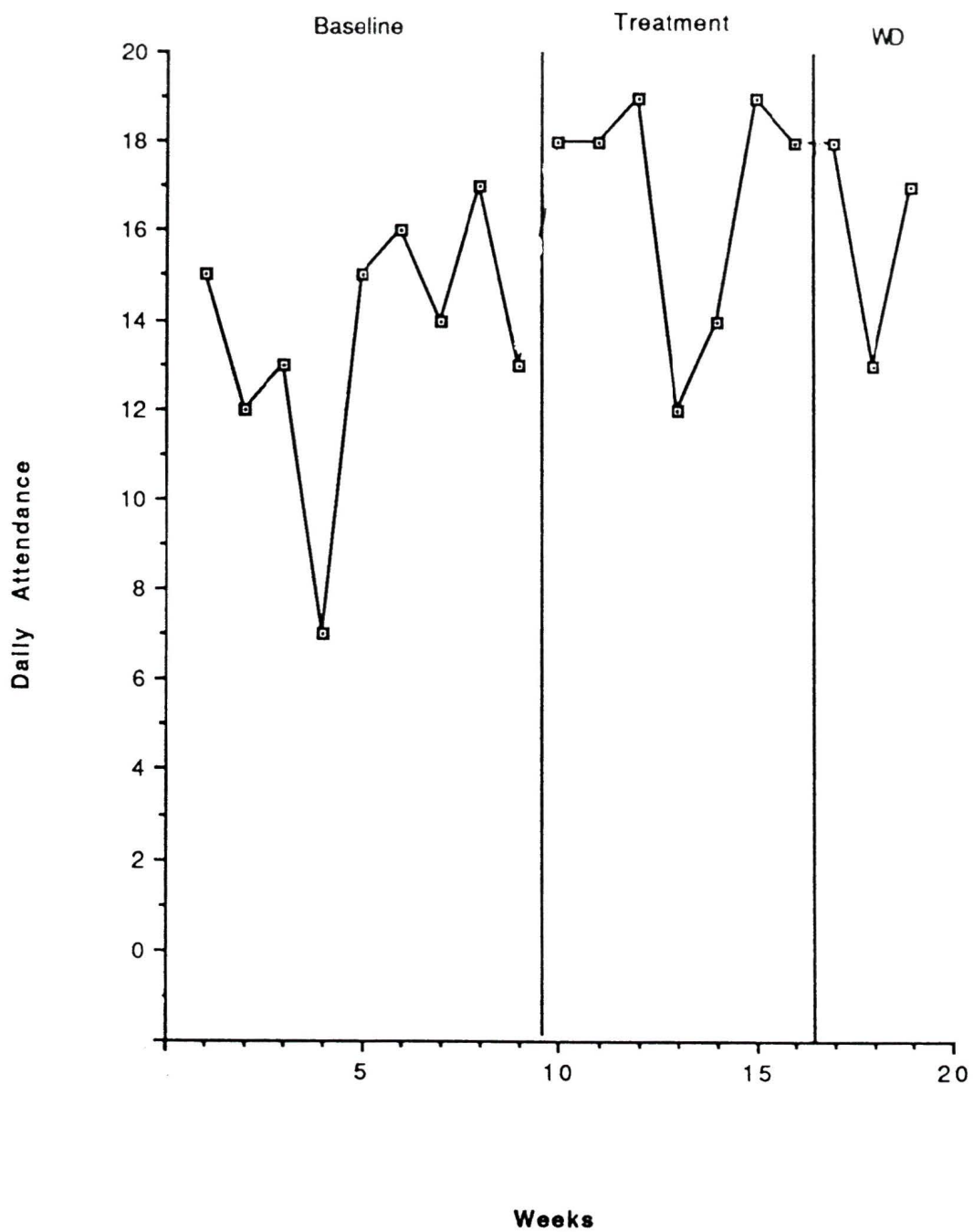


Figure 6 Friday Practice Attendance For Experiment I.

Discussion

The results of this study show a clear effect for treatment across all conditions except the Friday practice.

In regard to the group total, as well as for all daily training sessions except Friday practice, baseline values declined during the initial few weeks before levelling out. The relatively high level of attendance evident during the initial baseline sessions, may have resulted from contingencies specific to these early sessions: First, some players may have had the experience of being penalized for early absences from club or team meetings, either by missing out on desirable positions and appointments, or, in some cases, by having their membership cancelled. Second, demands - both curricular and extracurricular - would tend to increase after the first few weeks of the school term, providing competing contingencies which would tend to reduce attendance.

The implementation of treatment brought about an increase in attendance, in comparison to the later weeks of baseline, across all sessions, including but less reliably, the Friday practice. In these Tuesday, Wednesday, and Thursday treatment sessions, attendance increased, sometimes returning to a level equal to or even exceeding those recorded at the onset of baseline. This increase would suggest that, at least for some of the time and for some of the subjects, the lottery prize functioned as an effective reinforcer. However, the fact that weekly attendance for all sessions taken as a whole reached a level no higher than 60%, would suggest that either the prize was

not a reinforcer, or not a powerful enough reinforcer for all subjects.

The increase to peak attendance in all sessions, excepting Friday occurred gradually. It may have been that initially the subjects did not "understand" the procedure, that is, that high level of attendance increased the chances of winning a prize. However, it is more likely that some of the subjects adopted a "wait-and-see" policy. Watching the process in operation and witnessing some of their colleagues winning money may have been, for some subjects, the final incentive or justification needed to participate.

In all types of training sessions attendance dipped during week 13. This was the first week back after the Christmas holidays. Some subjects had not returned to school during that week. Other subjects had other matters to deal with: timetabling, meeting friends, etc. Nevertheless, one would have to conclude that during this week the reinforcement contingencies of the programme were not powerful enough to encourage subjects to attend at the level recorded earlier in the study. Attendance was, however, still somewhat higher than that recorded during most of baseline. During the remaining three weeks of treatment, data collection showed an improvement in attendance to levels generally greater than most baseline sessions.

After seven weeks of implementation, treatment was removed and a return to baseline conditions instituted. With the removal of the monetary incentive, weekly attendance scores rapidly declined to values comparable to those reached during most of the first baseline condition.

A similar effect was shown across all sessions when examined individually, except for the Friday practice session, thus demonstrating the influence of the lottery incentive programme on attendance during this phase of the study.

In the case of the Friday practice session, attendance during the treatment phase was generally higher than that recorded during baseline. The increase in attendance during treatment was not as great or reliable as that found in the other sessions. The Friday practice was the last session before the weekend game and since the players needed to know playing position, kick off time, and so forth, there were a number of negative consequences to missing these sessions. The baseline level tended, possibly for these reasons, to be higher than the baseline level recorded for any other condition. Since baseline attendances were high, in some cases approaching maximum attendance, further improvement would have been difficult owing to a ceiling effect. This would have been especially true, if, as the results suggest, the incentive programme was not powerful enough.

Nonetheless, treatment values for these Friday sessions were, for the most part, quite high, with four weeks showing values of 18 and 19, values greater than all those reached during baseline. The period which followed the Christmas break provided the two lowest scores.

Following the withdrawal of treatment, attendance remained high for two of the three weeks. This suggests that in regard to Friday's session the lottery

incentive programme was not the only contingency maintaining Friday attendance.

EXPERIMENT II

Procedure

Following a return to baseline levels, a modified treatment programme was implemented for two weeks. Intervention 2 was similar to Intervention 1, except that two cards were available for attendance at the Tuesday run, and no cards were available at the Thursday run. This modified treatment was implemented so as to provide two indices of treatment effectiveness: (a) between-week comparisons of attendance assessed for all sessions except the non-reinforced Thursday run (this was essentially equivalent to Experiment I except for the loss of the Thursday run measurement) and (b) within-week comparisons of treatment and non-treatment across two equivalent daily sessions, which would hopefully provide a more sensitive evaluation of treatment. One of the reasons for this implementation was concern over the possibility that over these last few weeks of the academic year (see Appendix D) other contingencies might compete against increasing effectiveness with those promoting attendance at rugby training, leading to lower and lower attendance as the end of the year approached.

Results

The average attendance for each phase of Experiment II is outlined in Table 2.

Phase	N	Weeks	Condition		
			Baseline 2	Treatment 2	Withdrawal 2
Experiment II	20	6			
Median			34	42.5	20
M			36.33	41.0	19
SD			4.04	4.95	0

Table 2

**Medians, Means and Standard Deviations of Attendance for
Treatment and Non-treatment Conditions in Experiment II
(Thursday run excluded)**

In the case of the treatment, exempted Thursday run, attendance during the first week of treatment exemption (Week 20) remained at the low level of 2 and dropped to 1 during the second week (Week 21) of treatment exemption (see Fig. 7). Values this low were only seen during the previous withdrawal phase.

In comparison to the Thursday run, attendance at the Tuesday run, with the implementation of treatment, increased to a level more comparable to those recorded during the first treatment phase. Following a return to baseline conditions attendance dropped to a level lower than all but one of the previous weeks (see Fig. 8). The difference in trends between the Tuesday and

Thursday runs is emphasized in Figure 9.

In regard to the Tuesday practice the reintroduction of treatment in Weeks 20 and 21 brought attendance back to a level reached during the previous treatment phase. The second withdrawal of treatment was characterized by a drop in attendance to a level lower than that recorded during the initial baseline, and less than that for all previous withdrawal values (see Fig. 10).

With the implementation of treatment the decrease in attendance at the Wednesday morning weight training sessions was halted and even displayed the suggestion of an increase. However, with a second return to baseline conditions, attendance dropped to a level lower than that recorded under any previous condition (see Fig. 11).

For the Friday practice, attendance during the modified treatment phase returned to relatively high levels. However, during the second withdrawal phase attendance dropped down to 13 (see Fig. 12).

As shown in Figure 13, attendance for all four treated sessions combined increased over the two weeks of treatment relative to the previous withdrawal phase. The return to baseline conditions brought about a decrease in attendance to a level lower than that recorded during any previous condition.

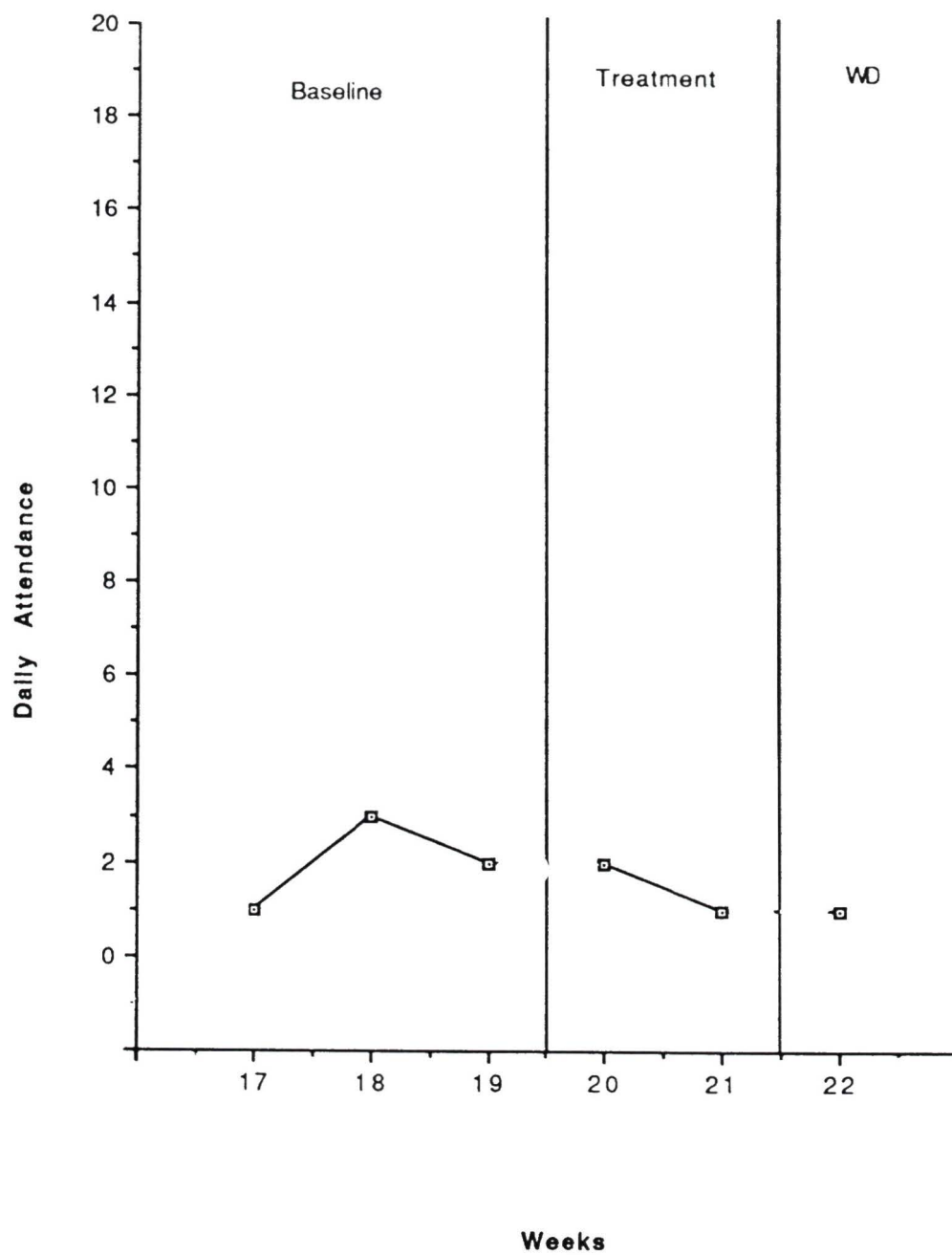


Figure 7 Thursday Run Attendance For Experiment II.

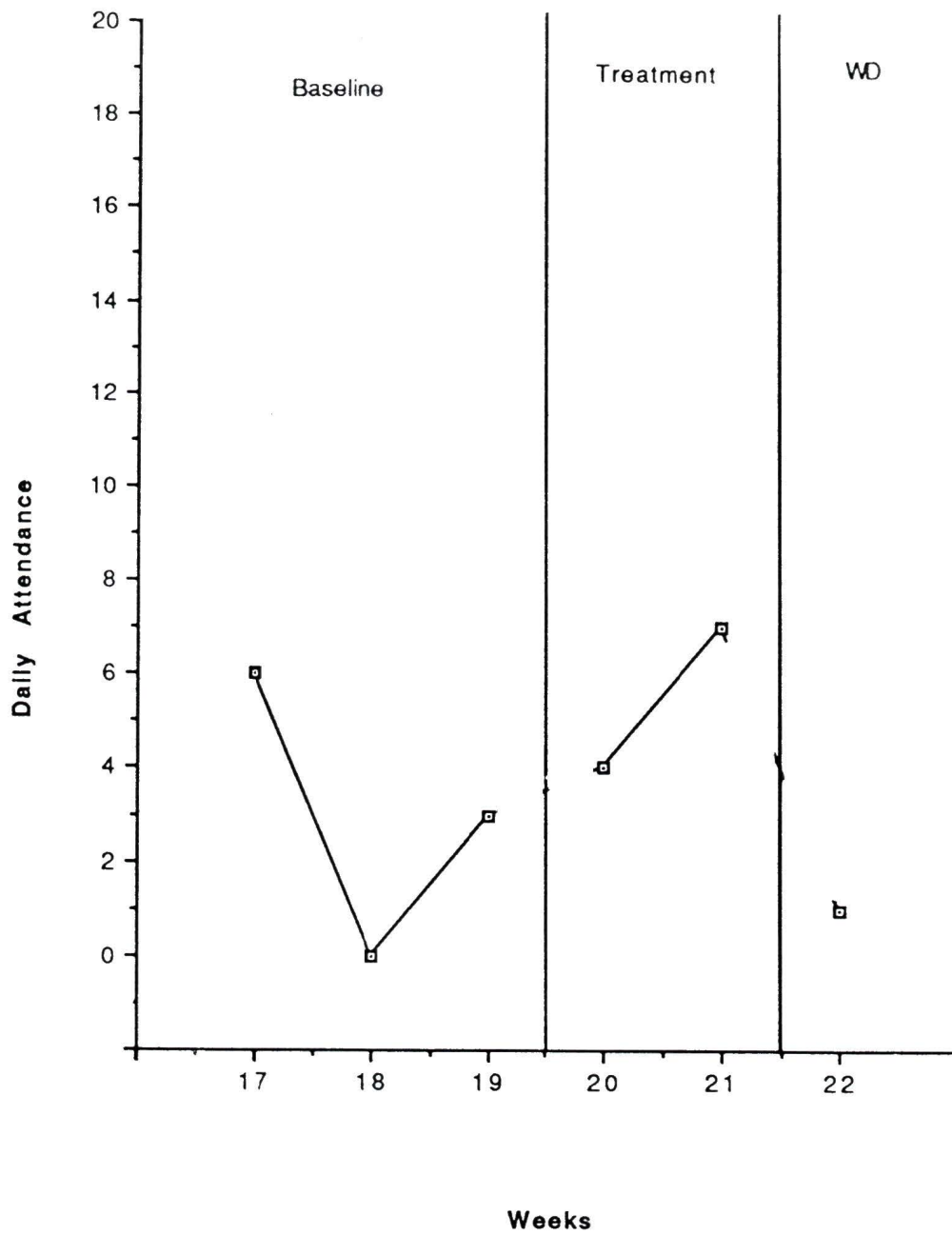


Figure 8 Tuesday Run Attendance For Experiment II.

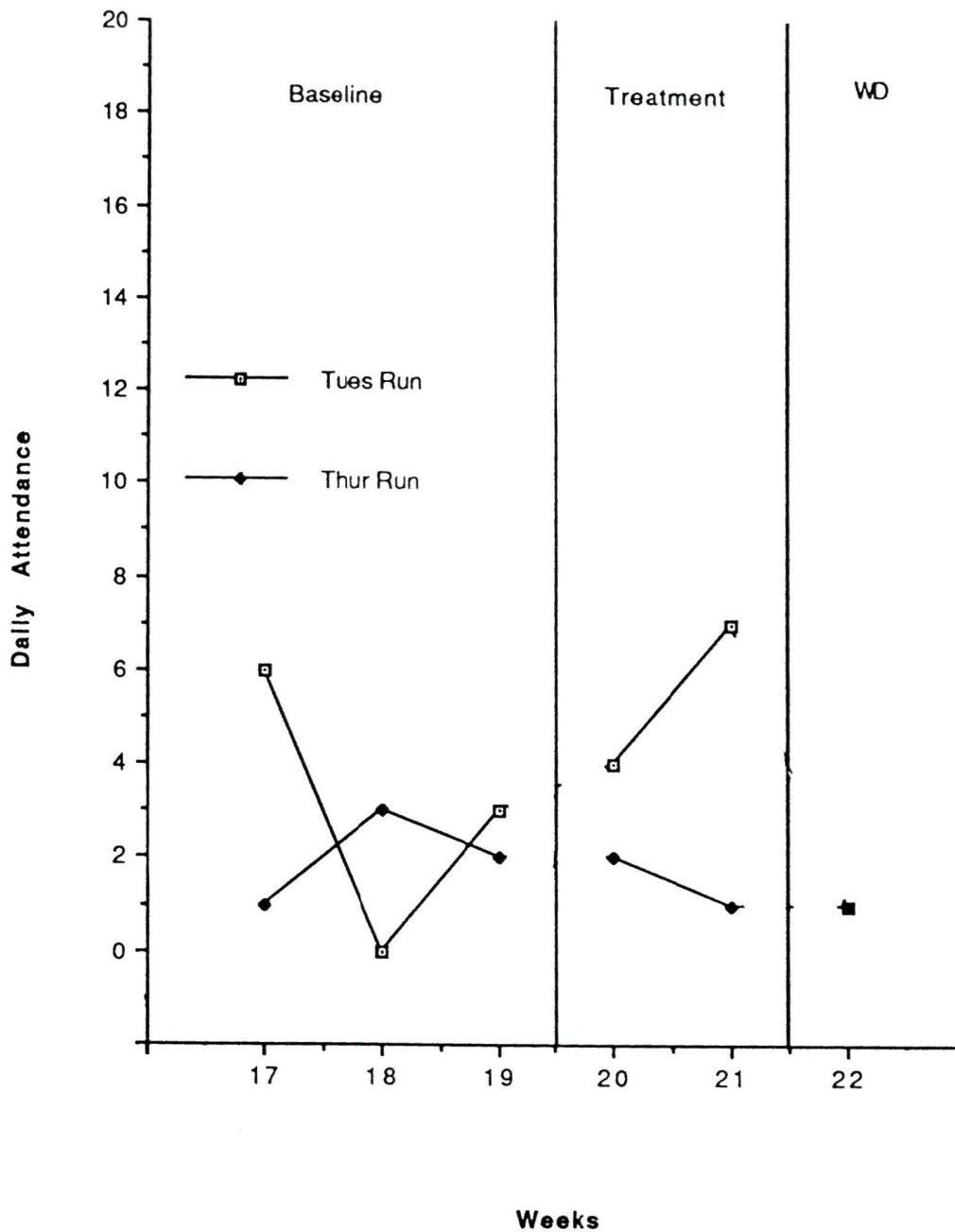


Figure 9 Tuesday Run and Thursday Run Attendance For Experiment II.

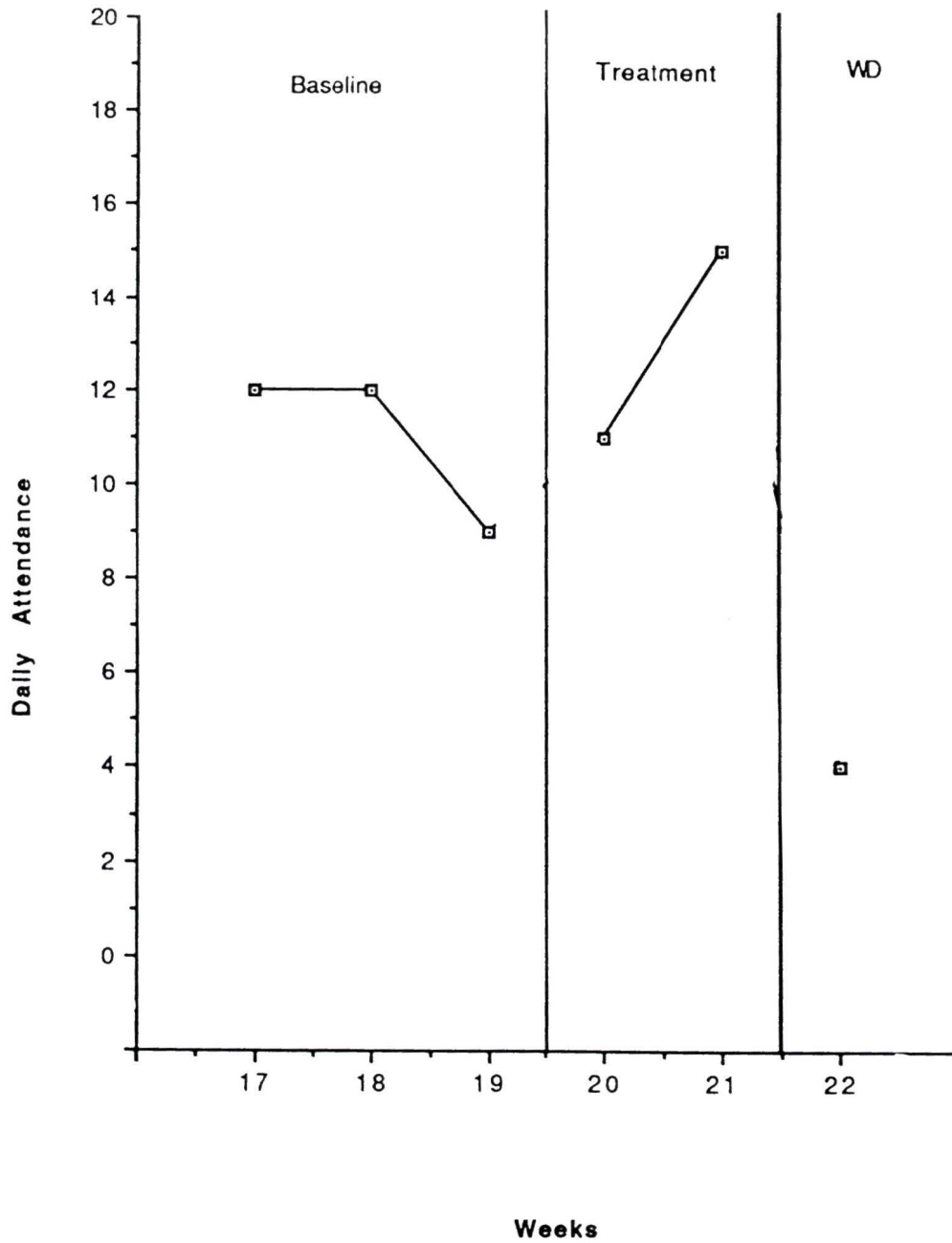


Figure 10 Tuesday Practice Attendance For Experiment II.

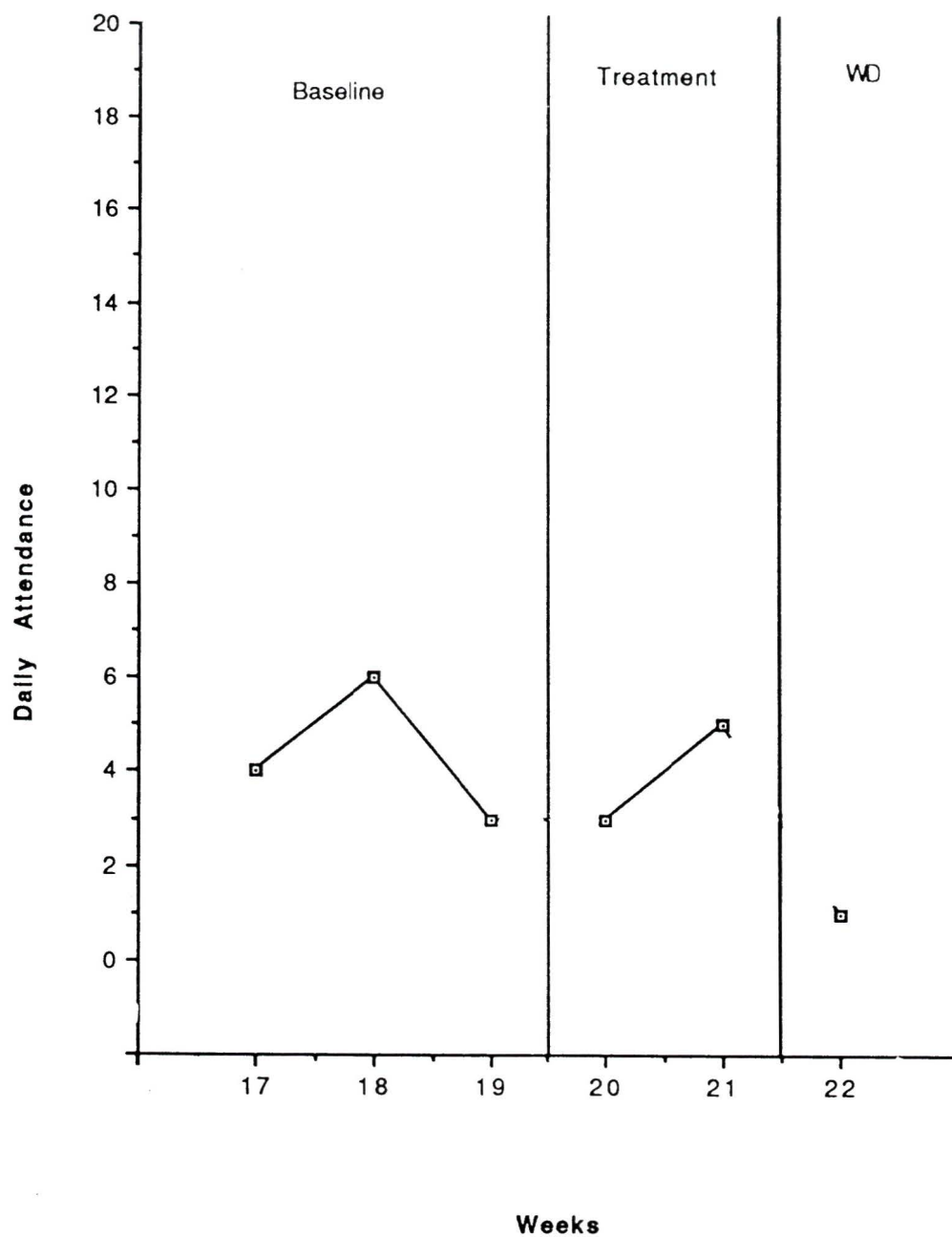


Figure 11 Wednesday Weight Training Attendance For Experiment II.

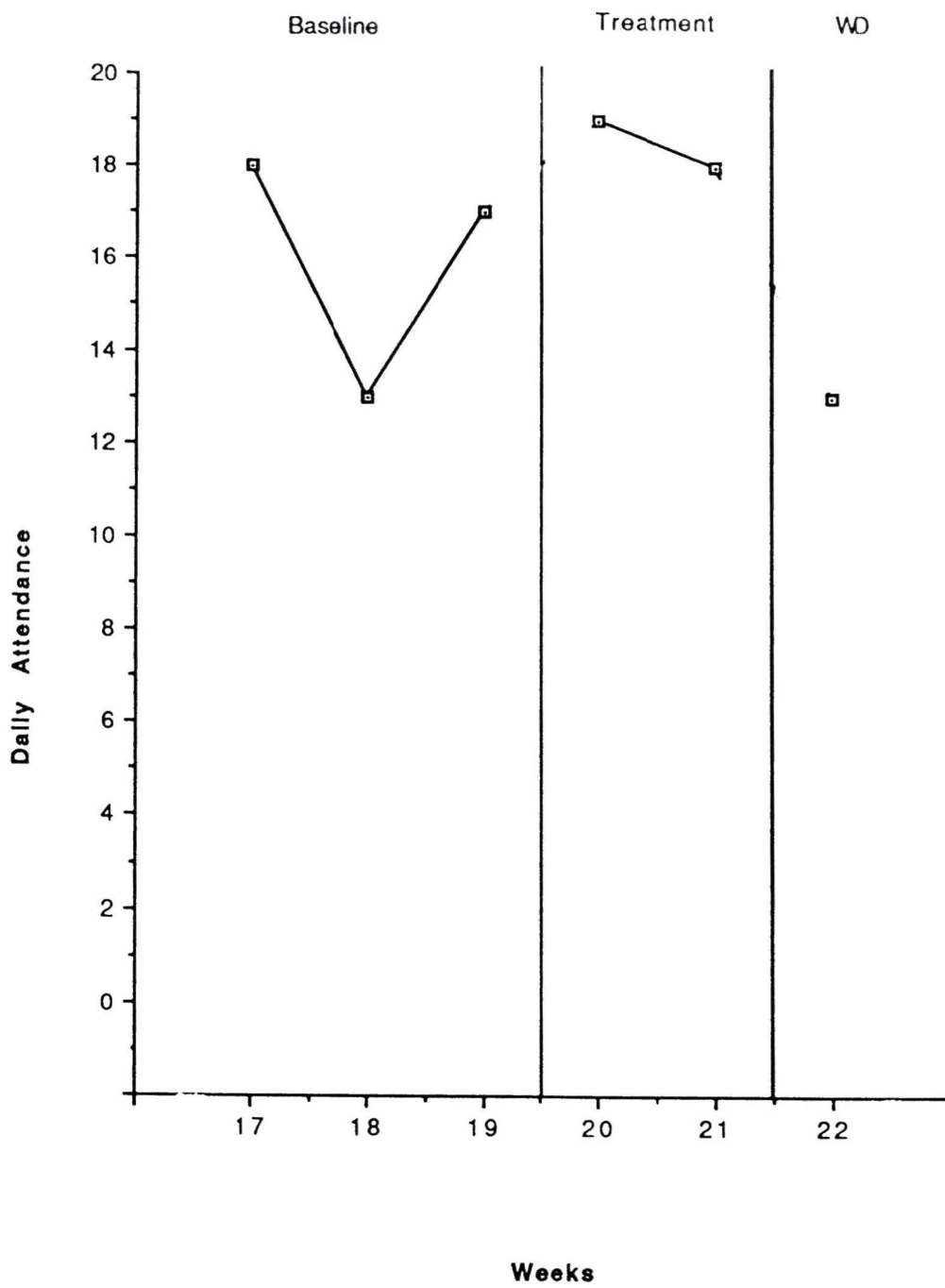


Figure 12 Friday Practice Attendance For Experiment II.

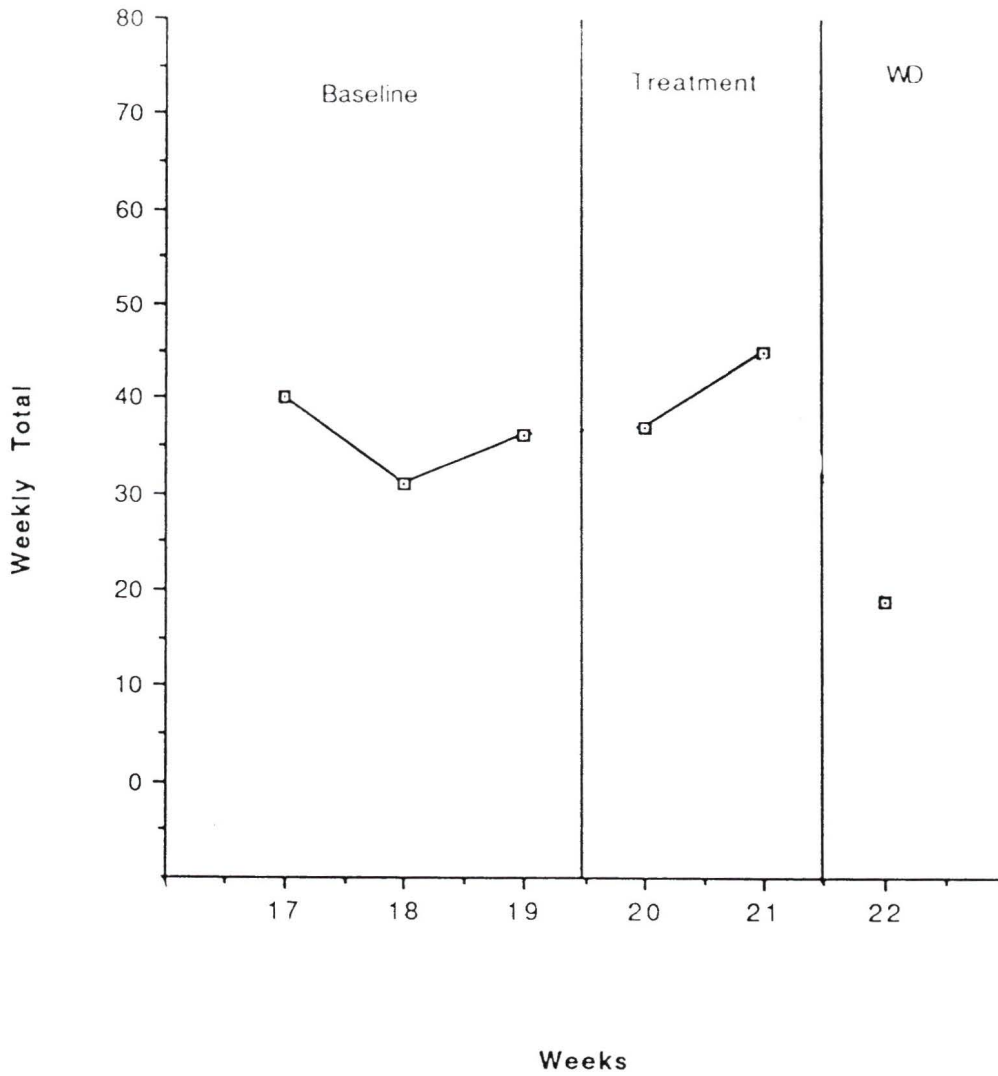


Figure 13 The Accumulated Weekly Attendance Across All Sessions (Except Thursday Run) For Experiment II.

Discussion

Thursday was different from all other sessions in its display of a decline during treatment; all other sessions with the possible exception of the Wednesday weight training session, but including the Tuesday run - the session most similar to the Thursday session - showed at least some indication of an increase in attendance under treatment relative to the previous withdrawal phase, as well as a decrease under a subsequent return to baseline conditions. Although there was little evidence for an effect of a magnitude seen in Experiment I, the pattern would seem, arguably, to be consistent with an overall trend for decreasing values from Withdrawal 1 on, with a treatment effect working to slow or reverse this trend. The evidence for a downward trend is most clearly seen with regard to the Thursday run. No cards were available for this session and correspondingly attendance displayed an uninterrupted drop.

The period of time during Experiment II coincided with the last weeks of the school term and the beginning of exams (see Appendix D). This factor seemed to account for the drastically low levels seen under Withdrawal 2. A similar drop in attendance was noted by the coaches of the other university rugby teams, who also stated that this effect had occurred regularly over a number of years.

An explicit comparison of the Tuesday run and Thursday run data provided similar evidence for an effect of treatment. In Experiment II, runs on

Tuesday were worth two cards and runs on Thursday zero cards (the sessions were equal in all other respects). Thursday attendance stayed at the baseline level. However, Tuesday attendance increased to a level above that recorded during the previous withdrawal period, and attained a level observed during the first treatment phase. With the withdrawal of treatment, attendance again returned to baseline levels. This difference in attendance between Tuesday and Thursday runs suggested that the treatment had had an effect.

EXPERIMENT III

Procedure

Owing to the declining attendance during the last few weeks of the study a third intervention was employed. In this modified intervention, applied during the last two weeks of the study, five cards were awarded for attendance at the Thursday morning run. No cards were available for any of the other occasions. Attendance at the Thursday run had been poor. The researcher was interested in examining if attendance would increase in this session if the incentive was made more powerful, and if attendance would continue to drop at the other sessions if cards were withdrawn from those while still being available for the Thursday run.

Results

Attendance at the Thursday run increased from the second baseline level, and reached a level recorded during the first treatment phase (see Fig. 14). Attendance remained high over both weeks of treatment. All other sessions declined relative to the preceding withdrawal period (see Figs. 15, 16, 17, and 18).

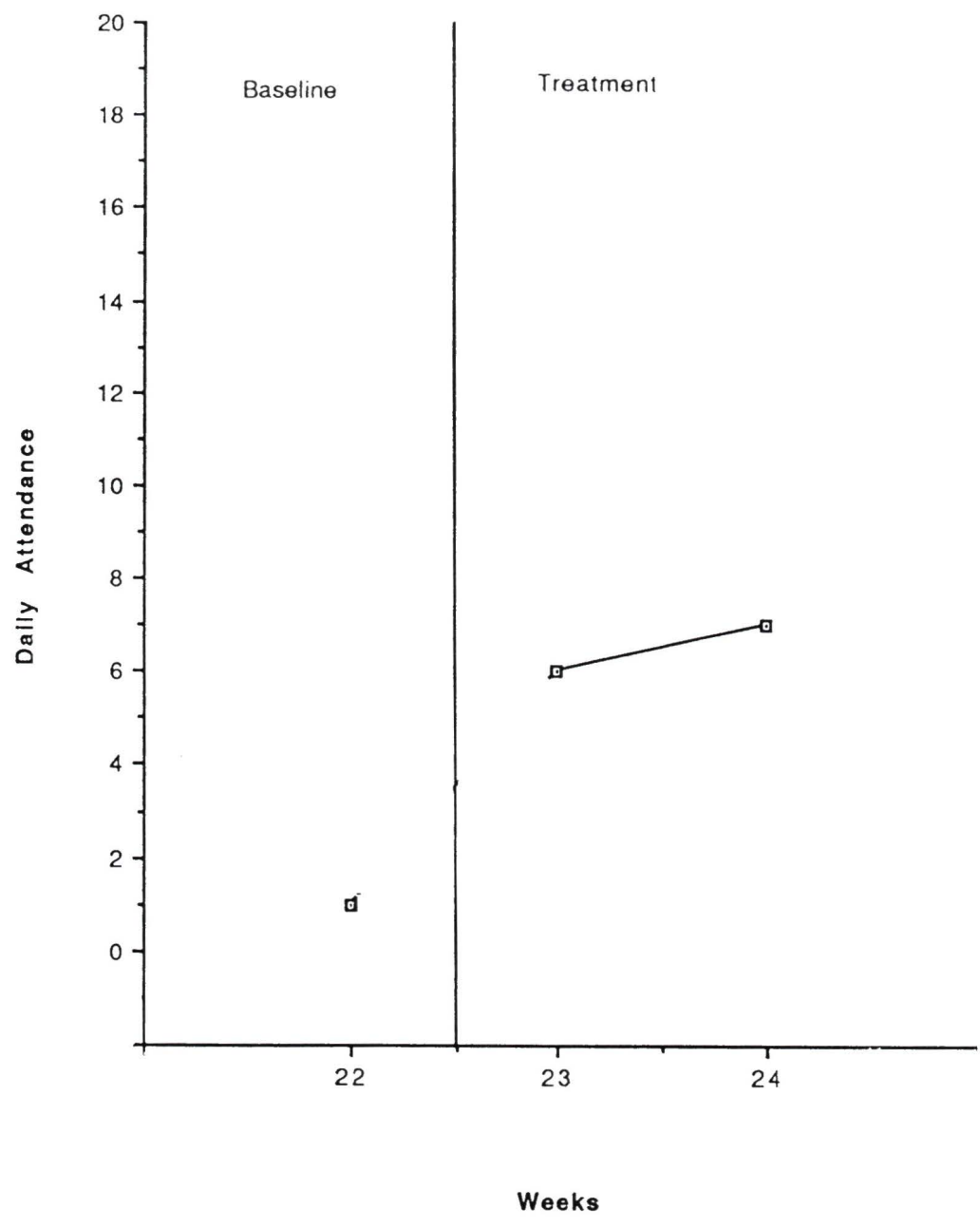


Figure 14 Thursday Run Attendance For Experiment III.

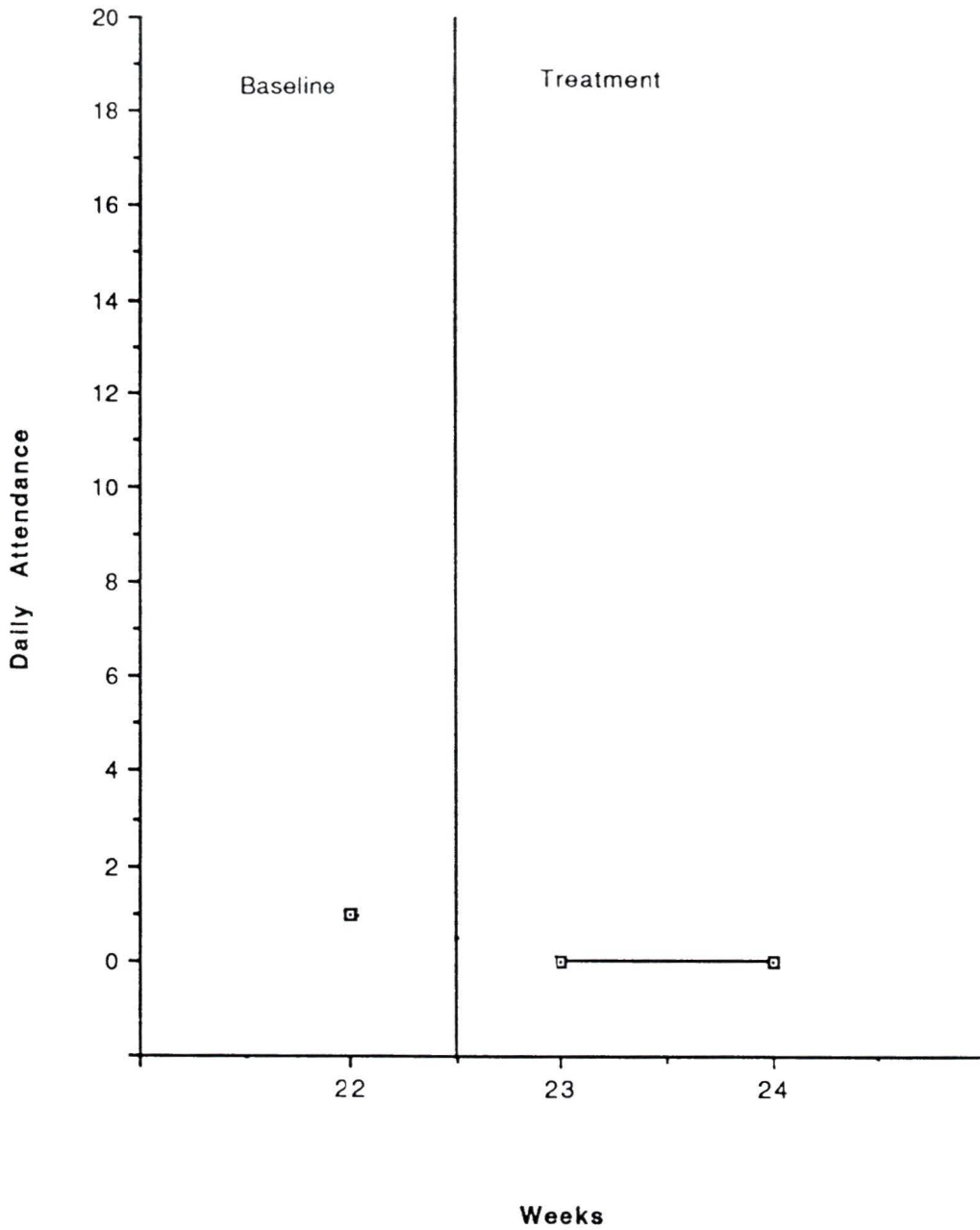


Figure 15 Tuesday Run Attendance For Experiment III.

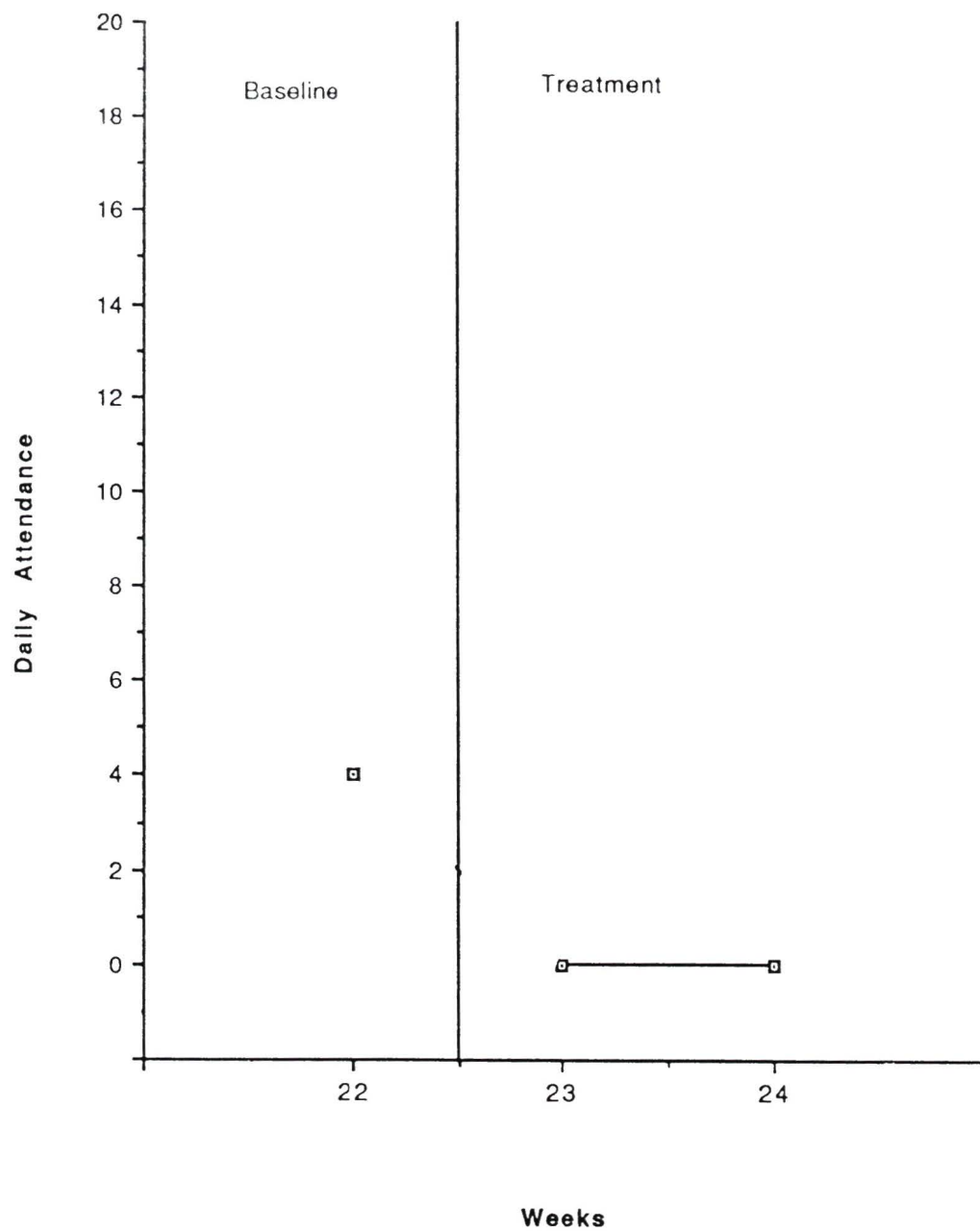


Figure 16 Tuesday Practice Attendance For Experiment III.

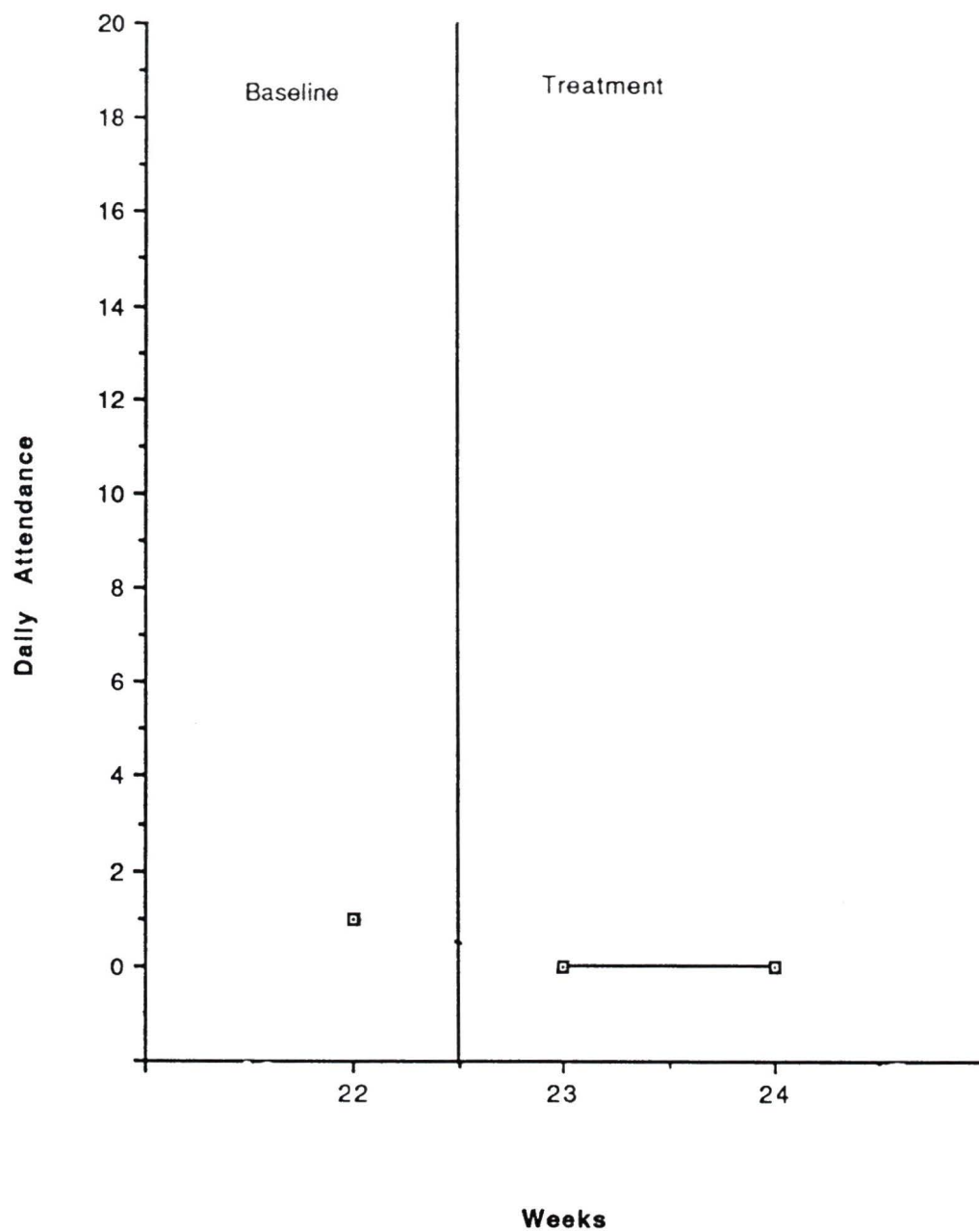


Figure 17 Wednesday Weight Training Attendance For Experiment III.

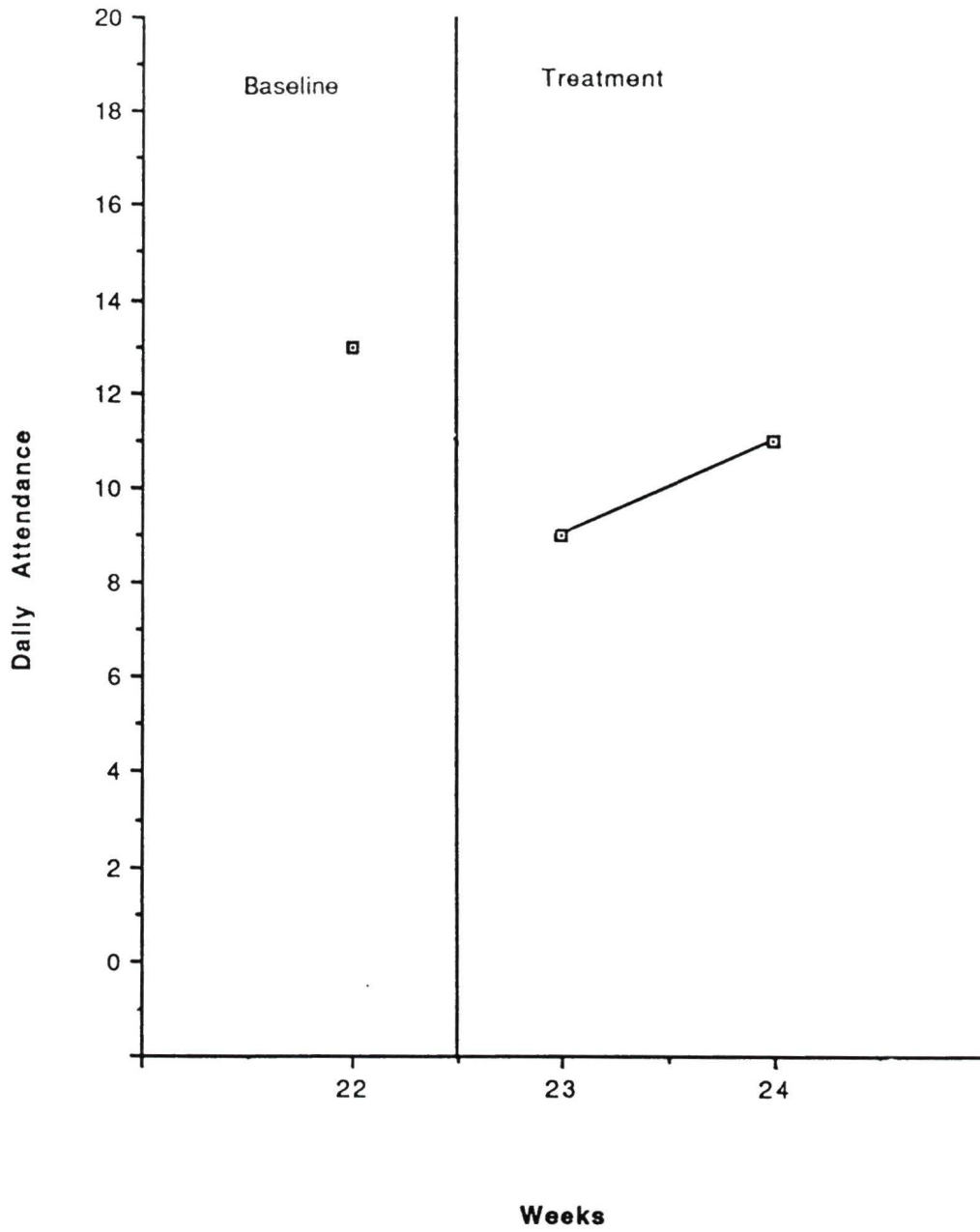


Figure 18 Friday Practice Attendance For Experiment III.

Discussion

Essentially, forty dollars was offered as a possible reward for attending Thursday's run. Attendance at this session increased above that recorded during the baseline sessions, to a level recorded during the first treatment phase. This was directly opposite to the previous treatment phase when Tuesday run attendance increased and Thursday run attendance did not, and was unique relative to all other sessions during Experiment III. This again served to demonstrate the powerful effect of the treatment over the two training sessions.

CONCLUSIONS

The results of this study would suggest that the chance of winning a lottery influenced attendance at rugby training sessions. Generally speaking, attendance at training sessions varied with the application and withdrawal of treatment; attendance was generally higher in those sessions where the lottery was in effect, and declined in those sessions where no lottery prize was offered.

The possible winning of a lottery prize was not the only contingency which influenced attendance. In fact the number of contingencies which had influence on all individual players may indeed have been vast. Furthermore, it should be noted that the power of a reinforcer at any given time is dependent on the fluctuating power of other reinforcers. As a result, attendance tended to be high at the start of the season and lower during the Christmas and end of term/beginning of exams periods. When a contingency such as exams became important, the lottery contingency lost some of its power and attendance at practice decreased.

Nevertheless, the results suggest that treatment did have a clear effect on level of attendance although the extent of the effect fluctuated depending presumably on the varying power of other reinforcers.

McKenzie and Rushall (1974) reported that public posting of attendance can reduce absenteeism in a children's swimming environment. This present

study explored the effects of a lottery-based incentive programme which had been shown effective in reducing absenteeism in industrial contexts, on improving attendance in an adult sporting environment. It would seem that such a programme can be effective in this area although the continued effectiveness of such a programme, at least over most of an academically-bound season, is unclear.

This study did not address the question of the effectiveness of lotteries over extended periods of time. Nord (1970) has suggested that there is some doubt as to the effectiveness of such programmes over prolonged periods. Had this particular programme continued for two or more seasons in its present form, it is hard to predict the effect that it might have had on attendance.

Although the study did show increases in attendance in combination with a lottery incentive system the study did not seek the opinions of the players who took part in the study. It may have been useful to know if the players enjoyed participating in the programme, would have liked the programme to have continued, and what changes they would like to have seen made in the programme.

Finally, it is worth noting that at no time was there full attendance at any session. This is a surprising result given the contingencies and training sessions involved. It would have been of interest to note the effect that a more powerful reinforcer might have had.

REFERENCES

- Alexander, R.N., T.F. Corbett and J. Smigel (1976). The effects of individual and group contingencies on school attendances with predelinquent adolescents, *Journal of Applied Behavioral Analysis*, **9**, 221-226.
- Carlson, J.G. and K.D. Hill (1982). The effect of gaming on attendance and attitude, *Personnel Psychology*, **35**, 63-73.
- Hamner, W.C. and E.D. Hamner (1976). Behavior modification on the bottom line, *Organisational Dynamics*, **4**, 2-21.
- Herman, J.B., A.I. de Montes, B. Dominiquez, F. Montes and B.L. Hopkins (1973). Effects of bonuses for punctuality on the tardiness of industrial workers, *Journal of Applied Behavioral Analysis*, **6**, 563-570.
- IR Research Services (1982). Absenteeism: Policies and Programs for the 80's. Kingston: IR Research Services.
- McKenzie, T.L. and B.S. Rushall (1974). Effects of self recording on attendance and performance in a competitive swimming training environment, *Journal of Applied Behavioral Analysis*.
- Nicholson, N. (1976). Management sanctions and absence control, *Human Relations*, **29**, 139-151.
- Nord, W. (1970). Improving attendance through rewards, *Personnel Administration*, **4**, 37-41.
- Pedalino, E. and V.U. Gamboa (1974). Behavior modification and absenteeism: Intervention in one industrial setting, *Journal of Applied Psychology*, **59**, 694-698.
- Robertson, D.E., R.D. Johnson and A.L. Bethke (1980). Reducing absenteeism with fixed and variable interval reinforcement, *Review of Business and Economic Research*, **3**, 73-82.
- Rosen, H. and J. Turner (1971). Effectiveness of two orientation approaches in hard-core unemployment turnover and absenteeism, *Journal of Applied Psychology*, **55**, 296-301.

- Shoemaker, J. and D.H. Reid (1980). Decreasing chronic absenteeism among institutional staff, *Journal of Organisational Behavior Management*, **2**, 317-329.
- Stephens, T.A. and W.A. Burroughs (1978). An application of operant conditioning to absenteeism in a hospital setting, *Journal of Applied Psychology*, **63**, 518-521.
- Wallin, J.A. and R.D. Johnson (1976). The positive reinforcement approach to controlling employee absenteeism, *Personnel Journal*, **55**, 390-392.

APPENDIX A**INFORMED CONSENT**

I understand that the purpose of this study is to examine attendance at rugby practice under conditions where attendance provides the opportunity to win a weekly cash prize.

I confirm that _____ participation as a subject is entirely voluntary. No coercion of any kind has been used to obtain my/his cooperation.

I understand that I/he may withdraw my/his consent and terminate his participation at any time during the study.

I understand that all results will remain completely confidential.

Signature: _____

Date: _____

APPENDIX B

November 23, 1990

To the parent/guardian of _____

Dear Parent/Guardian:

I am a graduate student working in the area of Behavioural Psychology and at present I am investigating the effect of incentives on attendance at rugby practice. The program involves a chance for a weekly cash prize to be won based on frequency of attendance at rugby practice.

_____ has agreed to participate in this study (see enclosed consent form). It would be appreciated if you would give your consent by signing the enclosed form and returning it to me in the envelope provided.

Thank you for your cooperation. Should you require any further information please write or telephone 721-8392.

Yours sincerely,

David Scott,
Researcher

Dr. Bram Goldwater,
Supervisor

APPENDIX C

REVIEW OF LITERATURE

This literature review examined the following areas:

1. The defining of absence:
2. The measurement of absence:
3. Causes of absence:
 - the influence of an "absence culture";
 - job satisfaction and motivation;
 - attendance as a function of reinforcement contingencies.
4. Reducing absenteeism:
 - non-monetary rewards;
 - cash payments;
 - lottery systems;
 - sick pay;
 - group versus individual contingencies.

The Defining of Absence

The defining of absence is no simple task. Differing conditions dictate that absence be defined in a specific manner. As a result many definitions have been developed and as early as 1963 Gaudet had reported 40 different definitions of absence.

The vast majority of studies view absence as a socially defined event. That is, should a player fail to turn up for a practice he is labelled as absent by someone in the organization. Without the organization and its concept of attendance, absence would have no meaning. Thus, as Goodman and Atkin (1984) have argued, absence exists only as defined by the organization and its relationship to the player.

A number of studies of absenteeism in the industrial sector have differentiated between absence owing to "legitimate illness" and what they term as "deviant problem illness" (Yolles, Carone and Krinsky, 1975). Studies which utilize specific or precise definitions of absence are usually not looking just at attendance versus non-attendance but also at various types of non-attendance (Steers and Rhodes, 1982). On the other hand, in a study which is only examining attendance versus non-attendance, absence can be defined simply as being present at a certain place and at a certain time with no reference to the reasons for the absence.

Measurement of Absence

The measurement of absence is directly related to the definition of absence - you measure what you define. In cases involving simple attendance versus non-attendance a frequency measure may be utilized. However, should the absentee data contain such information as type of event, timing of each event, or sequence of events, then measures involving duration or magnitude may be used (Goodman and Atkin, 1984). This has led to a wide range of absence measurements, making comparisons difficult. Muchinsky (1977) concluded that the "single most vexing problem associated with absenteeism, as a meaningful concept, involves the metric or measure of absenteeism." Miner (1977) supported this position by pointing out that "what is counted as job absenteeism in one company may differ considerably from what is counted in another study."

When concerned only with the frequency of absence the most simple method of computing absence is simply to total the frequency of occurrence over some time period so as to give a total time lost. The effect of long term sickness or injury may be of some concern, but this method is nevertheless simple to calculate and is common in the literature.

Causes of Absence

Skinner (1974) stated that when a bit of behaviour has the kind of consequence called reinforcement, it is more likely to occur again. Further-

more, a behaviour which produces rewarding or "reinforcing" consequences, should increase relative to other behaviours.

If attendance is a function of somewhat stable reinforced contingencies, one might expect that a set of rules which govern attendance could be identified, that prior absenteeism should predict subsequent absenteeism (given constant reinforcement contingencies), and, assuming that both attendance and satisfaction are a function of overall degree of reinforcement for working, satisfaction should predict attendance.

The Influence of an "Absence Culture"

According to Nicholson and Johns (1982), an absence culture refers to "the set of shared understandings about absence legitimacy . . . and the established custom and practice of employee absence behaviour and its control" (p. 136). Thus, in an absence culture the worker acquires an understanding of the operation of rules, norms, and sanctions, that is, rules regarding the consequences of absence under different conditions.

According to Nicholson and Johns (1982) the rules of an "absence culture" can be seen as operating in a number of ways. First, they argued that they may exert a direct effect on the level and patterning of absences for a given collection of workers, as when a specific norm regarding the level of absence that is tolerable determines the maximum amount of time a worker is absent.

Secondly, Nicholson and Johns (1982) proposed that absence cultures

may operate indirectly but subtly through less obvious social information processing mechanisms. Workers may observe the behaviour of other workers and then adopt a pattern or level of absence that reflects these observations. An example of such an effect operating in the home environment might be Turkat's (1982) finding that diabetics, who reported that their parents had avoided work when sick, were themselves more likely to avoid work than were diabetics who did not have such a learning history.

Thirdly, Nicholson and Johns proposed that job satisfaction or other personal characteristics might influence absence. For example, a culture might signal that absence is a legitimate response to dissatisfaction.

In regard to absence through illness, Kinsman, Dirks and Jones (1982) and Turkat and Pettigrew (1983) have both observed that individuals who show high rates of illness behaviour are likely to be reinforced by having attention behaviour directed toward them, or by being allowed to refrain from working while ill. This would suggest that illness itself may have operant components. In fact Moss (1986), based in part on Turkat's (1982) finding with diabetics (mentioned earlier), concluded that absenteeism has operant components.

Ivancevich (1985) proposed that prior absenteeism in one job situation was related to subsequent absenteeism in another. This hypothesis was derived from the work of Waters and Roach (1979), who found a correlation of .62 between frequency of absences in two consecutive years, (in different

but related job situations) but a correlation of only $-.26$ between frequency of absences and job satisfaction in the previous year. Morgan and Herman (1977) also found a substantial correlation between frequency of absence in two consecutive years ($r = .70$). Beaugh (1981) studied 112 research scientists using a longitudinal research design and showed that past absenteeism was a better predictor of current absenteeism than such things as work attitudes, work satisfaction, and supervisory satisfaction. Although this would suggest that any one specific work environment may not necessarily cause absenteeism such correlations may be suspect to susceptibility to illness when correlations are calculated for different work environments.

Absence and Job Satisfaction

Much organizational research, using self-administered questionnaires, has focused on a hypothesized relationship between job satisfaction and attendance (Locke, 1976). A frequent basis for the suggestion of such a relationship is the assumption is that employees will withdraw, or be absent, from a work situation as a result of dissatisfaction with that situation. Steers and Rhodes (1976) proposed that all things being equal, when employees enjoy their work environment one would expect those employees to have a strong desire to come to work. However, researchers have found little evidence to support this relationship. Locke (1976) reported that the magnitude of the correlation between job satisfaction and attendance to be quite low, seldom passing $r = .40$. No significant correlations between these two variables were

found by Elgen and Hollenback (1977), Gadourek (1965), Newman (1974), Nicholson, Wall and Lischeron (1977), and Waters and Roach (1973). Hackett and Guion combined all studies using measures of satisfaction and attendance and found the mean correlation to be $r = -.09$. In an examination of 29 studies reporting the relationship between job satisfaction and absences, Chadwick-Jones, Nicholson, and Brown (1982) stated that no one reported more than a weak correlation, and concluded that the theory that an undesirable work situation caused absenteeism had little empirical support.

Skinner (1973) suggested that factors such as how pleasant the work conditions are, how easy or how awkward a job is, how good a worker's tools are, and so on, have an enormous influence on the actions of the worker. However, as mentioned previously, research would suggest that there is no relationship between job satisfaction and attendance. It may well be the case however that in such studies employee satisfaction ratings and attendance are not influenced by the same factors. For example a loss in pay brought about through absence may affect attendance and not measures of "satisfaction". Moreover, the factors mentioned by Skinner may affect "actions" related to neither satisfaction nor attendance, depending in part on the contingencies involved.

Kringsman and O'Brien (1987) reported that the workers in a "quality circle" demonstrated significant decreases in absenteeism. Quality circles usually involve six to ten employees who voluntarily sit down with a supervisor

once a week to problem solve on company time. The underlying rationale would suggest that workers find the making and implementation of work policy to be reinforcing. Gryna (1981) stated that "the underlying idea that workers ought to be responsible for monitoring the quality of their work, combined with the notion that the people who do the job are in the best position to troubleshoot it, gives quality circles a rationale that is hard to refute" (p. 23). Support for the Kringsman and O'Brien findings have been reported by Marks, Mirvas, Hackett, and Grady (1986).

Attendance as a Function of Reinforcement Contingencies

Although research demonstrates that self-rated satisfaction with the actual work environment is a poor predictor of absenteeism (Nicholson, Wall and Lischeron, 1977), this need not imply that no on-the-job rewards can affect attendance. It may be suggested that a powerful enough reinforcer, if made directly contingent on attendance, might secure high levels of attendance, even in an environment where rated satisfaction with the actual job environment is low. In other words, where the worker is rewarded for attendance, regardless of whether satisfaction with the job situation is high or low, rates of absenteeism will be low.

Reducing Absenteeism

Introduction

Shoemaker and Reid (1980) have stated that a variety of procedures have been effectively employed in different industrial settings to combat excessive absences. However, research has been mainly concerned with experimental manipulation of a variety of consequent events, *e.g.* rewards and punishers (O'Brien, Dickinson and Roscow, 1984).

Aversive Control

As a means of curbing and decreasing absenteeism in the work place, attempts at aversive control have had somewhat mixed results. Nicholson (1976) investigated the effects of a "sudden clampdown" on the absence behaviour of a female workforce. The "sudden clampdown" was based on verbal dismissal warnings to people with more than five absences in the previous fifteen months. Successive stages of the procedure were triggered by additional multiples of five absences within a twelve month period. The procedure comprised a sequence of oral warnings, then written warnings, and finally dismissal. As a result of this process, eight employees were dismissed. Nicholson reported that the aims of the program - to reduce the total amount of absence, and secondly to reduce the associated costs of sick pay - were not achieved. In fact total absence time increased. Nicholson therefore concluded that punishment did not have the desired effects and suggested that "reliance

on the 'stick' of punitive sanctions to encourage high attendance can have quite the opposite effect" (p. 150). These conclusions are supported in similar studies reported by Baum and Yougblood (1975), Rosen and Turner (1971), and Seatter (1961). In light of findings such as these, it has been suggested that positive reward systems might be more effective than punishment (Carlson and Sperduto, 1982; Johnson and Peterson, 1975; Herman, de Montes, Dominquez, Montes and Hopkins, 1973).

Positive Reinforcement

A threat of a penalty for poor attendance and a reward for good attendance constitute negative and positive reinforcement, respectively of attendance. However, positive reinforcement has long been preferred over aversive control by behaviour analysts.

IR Research Services (1982) outlines the following various forms of positive reinforcement:

1. Non-monetary forms of recognition, such as posting the names of employees who have excellent attendance records;
2. Cash payments, additional time off, or prizes for those who meet specified attendance records in a certain period;
3. Lottery type systems in which all of those who have perfect attendance in a specified period are eligible to participate in a draw for prizes;
4. Plans under which employees are entitled to some refund of

unused sick leave or personal leave credits;

5. Plans which offer incentives to groups of employees rather than to individual employees.

IR Research Services (1982) have suggested that some employers object to incentives for the following reasons. They take the position that employees should not receive additional compensation for doing only what is required of them. Furthermore, employers may argue that they reward those employees who would have been at work anyway. Ultimately, it becomes a case of economics - is the payout in extra incentives less than the expenses incurred through absenteeism?

It may be argued that the effectiveness of incentive schemes will vary depending on the nature of the plan. IR Research Services have proposed four basic principles which should be reflected in any incentive scheme:

1. The reward must constitute a genuine incentive to improve attendance;
2. The reward must be realistically attainable by those at whom it is aimed;
3. The scheme must be equitable;
4. The potential benefits from the programme should exceed the costs.

Principles 1 and 2 are important factors when developing any behaviour through positive reinforcement, that is, the reward must have sufficient

reinforcement value and/or its announcement sufficient S^0 value, and the probability of reinforcement must be reasonably high for all.

Non-monetary Rewards

Money is not the only reinforcer. McKenzie and Rushall (1974) examined the effects of self-recording on attendance in a competitive swimming training environment. A large display board was constructed on which each swimmer could indicate his/her cumulative attendance at practice. During the experimental conditions, each swimmer indicated attendance at practice by entering a check mark in the appropriate space. McKenzie and Rushall (1974) reported that the frequencies of absences were reduced. The findings of this study have been supported, in differing areas, by Hall, Christler, Cranston and Tucker (1970) and Hutchinson, Jarman and Bailey (1980). Kempton and Hall (1977) reported significant decreases in absenteeism following implementation of an Attendance Management System (AMS). For perfect attendance over a 13-week period employees had the choice of:

1. Recognition in a news letter for long term good attendance;
2. Freedom from the annoyance of time clocks; and
3. A reasonable amount of approved time off to attend to personal matters.

These choices had been based on interview and questionnaire data.

Research has shown that an activity occurring at a high rate under free operant conditions, may be used to reinforce a less frequently occurring

response (Premack, 1959). In a study with retarded children, Allen and Iwata (1980) sought to improve exercise attendance by making the availability of games (highest rate behaviour) contingent upon exercise completion. They reported that exercise participation increased markedly under these conditions. In a directly related study Pierce and Risley (1974) found that increased recreation time could be used effectively to increase membership and attendance at a large urban recreation centre.

Hamner and Hamner (1976) reported, in a review of behaviour modification in industry, that praise tended to be the most widely used means of positive reinforcement. They listed a number of companies including Michigan Bell Operator Services and ACDC Electronics Division of Ermson Electronics which had used praise as a method of decreasing rates of absence. Michigan Bell Operator Services reported a 50 percent improvement in attendance and ACDC Electronics Division of Emerson Electronics reported an increase in attendance from 93.5 percent to 98.2 percent. However, in a number of companies including Emery Air Freight, praise has been supplemented by other positive reinforcers. In fact, as mentioned previously, Skinner (1973) had suggested the need for using more than praise after that reinforcement programme had been around for awhile.

Cash Payments

IR Research Services (1982) pointed out that extra pay for good attendance may be provided on a weekly, quarterly, or annual basis. It may be given for perfect attendance or it may be graduated so that those with no more than a few absences may receive a bonus. It is suggested by the IR Research Services that the shorter the time period covered by the reward the more realistic it is to demand perfect attendance. Conversely, the longer the time period the more desirable it is to provide some reward to those who come close to having perfect attendance.

Examples of some current plans which have been shown to have been effective, as cited by IR Research Services, include:

1. Massey Ferguson Limited - one half hour extra pay for each week of perfect attendance.
2. Livingston Industries - Up to 15 cents extra per hour worked for employees who work a full regularly scheduled week.
3. Tridon Limited - For the preceding twelve months:

No absenteeism: \$150;

One day absence: \$100;

Two days absence: \$50.

Orpen (1981), in an attempt to decrease absenteeism in a sample of 46 workers, employed a behaviour technique in which the treatment group received a small cash bonus for each week they attended work every day,

while a non-treatment group received no extra money for attendance. Orpen reported that the bonus payment (50 cents/week) decreased the rate of absenteeism in the treatment group significantly, compared to their own baseline rates and to those of the non-treatment group over the same time periods.

In a related study Hermann, de Montes, Dominguez, Montes and Hopkins (1982) evaluated the effects of a bonus programme designed to increase the punctuality of six workers who were chronically late to work. Each day a worker arrive on time he received a slip of paper stating this. Each slip could be exchanged for money at the end of the week. Using a reversal design, they reported that the contingent bonuses increased the workers rate of punctuality compared to their baseline and reversal rates. They also reported that a control group of six workers observed during the same 77-week period showed a trend toward decreasing punctuality.

Nord (1970) reported on a study involving absenteeism and teachers. The system developed provided for a \$150 award for each teacher who had not been absent for an entire semester. Results demonstrated decreases in absenteeism over baseline rates.

These three studies (Hermann, de Montes, Dominguez, Montes and Hopkins, 1982; Nord, 1970; Orpen, 1981) highlight a debate which is ongoing in the literature: Which is likely to be the more effective - a bonus for perfect attendance over a short period of time (week) or good attendance over a longer

period of time (semester/year)?

IR Research Services make the following points:

1. The shorter the time period on which an attendance reward is based, the greater the probability that it will be paid to people who would be at work even if no incentive was offered.
2. The more frequent the incentive is offered, the smaller the affordable incentive involved.
3. A plan which offers \$200 for perfect attendance, over a long period, may be more attractive than one that offers \$4 per week. To the employee, the potential loss from one day's absence in the former is considerably greater than in the latter. However, such a plan may have limited effectiveness. It would, in all probability motivate those who are already good attenders rather than those with high absentee records. Furthermore, following an absence and thus the loss of the incentive, workers would have no reason to maintain perfect attendance thereafter.
4. Long term plans would be more effective if they provided partial bonuses to those who had few absences over shorter time periods.

The literature is unclear as to the best procedure in regard to bonuses.

One might speculate that an "intermediate scheme" occurring every few weeks

would be best (IR Research Services, 1982).

Lottery Type Systems

Skinner (1973) stated:

Let's take a look at how you could use a lottery to solve the problem of absenteeism. With today's high wages, missing a day's wages doesn't much matter. But suppose you had something like a door prize every day. When you come to work you get a ticket, and at the end of the day there is a drawing. Then a man might think twice about staying away.
(p. 36)

It has been clearly demonstrated in behavioral research that although the size of the reinforcement can be important, it is not as important as the schedule of reinforcement. Giving the example of bingo, Skinner pointed out that the bingo player works hard and carefully although the probability of payoff is very low. A large part of behaviour is reinforced intermittently. As Skinner (1953) pointed out, we do not always get good snow when we go skiing, or a good meal when we go to a restaurant. Moreover, behaviour which is reinforced only intermittently is usually persistent, showing great resistance to extinction.

In regard to lotteries, a similar situation as that which is found with bingo arises, that is, high rates of behaviour at comparatively little cost. In a review of the literature, Durand (1986) stated that in all, six investigations have used variations of behavioral lotteries.

Stephens and Burroughs (1978), in a hospital setting, used two financial

reward systems to reduce absenteeism among 92 nurses, ward clerks, and nursing assistants. In treatment A subjects were told that individuals would become eligible for a lottery of cash prizes if there was no absenteeism over a three-week period. Treatment B subjects were told that individuals would become eligible for a cash lottery, if over the same period, they were not absent on eight randomly selected dates. Stephens and Burroughs reported that both treatment groups showed an overall decrease in absenteeism during the contingency period. The subsequent removal of the contingency led to an increase in absenteeism to a level approaching baseline conditions. There was no significant difference reported between treatments A and B.

Pedalino and Gamboa (1974) also tested the hypothesis that a lottery type behaviour modification technique can be utilized in an industrial organization to reduce absenteeism. Working with 215 hourly employees at a manufacturing/distribution facility, they employed an ABA intervention with a lottery incentive system constituting treatment (workers drew a playing card every morning he/she attended work and the employee with the best card hand, come Friday, won \$20). Pedalino and Gamboa reported that absenteeism decreased by 18.27 percent during the intervention.

In dealing with absenteeism at a machine-making plant which employed 80 workers, Carlson and Hill (1982) introduced an attendance bonus programme based on the games of bingo and wheel-of-fortune. At the beginning of the week each worker was issued a five-number bingo card. Five numbers

were drawn each day, and if an employee was present and on time they were permitted to cover those numbers on their card. On the Friday afternoon all the employees were brought together and additional numbers were drawn (if necessary) until five winners for the week were found. The winners then spun a "wheel-of-fortune" which was divided into 24 sections with values of \$5 to \$25 randomly distributed. Carlson and Hill reported that following the first intervention, hours lost per week per employee had dropped dramatically. However, with a return to baseline conditions absenteeism again increased. The second intervention initially brought about a decrease in absenteeism. However, the researchers reported that the holiday season in December overshadowed the effects of the game and absenteeism increased.

In a case study involving a shipping distributor, Carlson and Sperduto (1982) employed a lottery incentive system as a means of decreasing absenteeism. Each staff member was rewarded with a lottery ticket at the end of the week, provided they had not been absent that week. A draw was held each Friday afternoon during working hours. Carlson and Sperduto reported that attendance improved 25 percent over the eight weeks of the intervention.

Nord (1970) reported on a lottery system which was being employed by a large hardware company. At the end of each calendar month there would be a drawing. Those who had perfect attendance for that month would be eligible for the draw. At the end of six months a drawing would be held for a major prize. To be eligible for the major prize draw, perfect attendance was required

for the entire six months. The results showed the intervention to be successful. The programme, which had been in existence for a number of years, had reduced absenteeism by one-quarter its prior level.

A number of comparisons can be made between lottery systems and bonus systems. Since there are only a small number of winners in a lottery system, it is possible to offer a more substantial reward, on a more frequent basis, than would be feasible under a bonus system, when all those with perfect attendance would have to be compensated. Secondly, as Nord (1970) suggested, the lottery method is more consistent with knowledge about the control of human behaviour, that is, the effectiveness of intermittent reinforcement schedules "will lead to more of the desired behaviour" (p. 40).

Sick Pay

The central purpose of a sick leave programme is to provide short term insurance to employees against loss of wages due to short term illness. However, there are a number of studies which suggest that sick leave programmes may actually increase sick leave use by employees (Kopelman, Schweller and Silver, 1981; Willings, 1968) - basically employees are paid for taking a day off and are thus positively reinforced for being absent. Willings (1968) went so far as to state that organizations with paid sick leave programmes experience almost twice the absenteeism of organizations without a programme.

Harvey (1983) viewed the problem as one of sick leave abuse, the

employee's position being that sick leave is a right of employment and will be lost if it is not used whether legitimately or otherwise. In overcoming sick pay abuse Harvey has suggested two alternatives:

1. The Personal Time Bank (PTB);
2. Well Pay Program (WPP).

The PTB program involves giving employees the ability to control the use of all organizationally sanctioned leave time (holiday, sick, personal leave, and vacation) as they see fit. One year after implementing the PTB with a hospital in the Midwestern United States, Harvey noted a decrease in the number of unscheduled absences.

Harvey (1981) reported a second study which illustrated the application of Well Pay in a private, non-profit organization with 120 employees. The Well Pay concept reinforces or rewards employees for not being absent or sick.

The WPP gives a bonus to employees who stay well for four consecutive weeks of good attendance. Following this, the bonus pay would be discontinued for the first eight hours of absence owing to illness. Harvey reported that the programme was effective in reducing absenteeism.

IR Research Services (1982) stated that a common type of incentive, in organizations which have paid sick leave plans, is to provide a monetary refund for unused sick days. Such a scheme certainly provides more of an incentive not to make unnecessary use of sick leave than one which provides no provision for rewards. Finally, an advantage of a sick leave gratuity plan over

incentive plans that reward only those with perfect or near perfect attendance during the year, is that it provides a greater incentive to high absence employees to improve their attendance.

Groups Versus Individual Programmes

Brown and Redman (1989) investigated the effects of a group reinforcement contingency on staff use of unscheduled sick leave. In particular, the study examined the effects of a group based lottery on unscheduled absences. Sixty workers, employed at a residential treatment facility, were divided into five groups. At the end of a two week period the payroll summary sheets were examined. When the sick leave total for any particular group was under the set absence criterion, a drawing took place within that group. Groups that were disqualified for failing to meet the absence criterion were notified and encouraged to try again. Brown and Redman reported that the mean number of unscheduled sick leave hours used in each of the five units was reduced during the intervention period.

A number of studies (Alexander, Corbett and Smigel, 1976; Newby and Robinson, 1983; Stewart and McLaughlin, 1986) have compared group with individual programmes. The results have been equivocal - one found group to be best, one individual best, and one study found no difference between them.

Alexander, Corbett and Smigel (1976) examined the effects of individual and group contingencies on school attendance. Under the individual contingency, a student could receive \$1 for lunch money for every day that he

attended all five classes that morning. Under the group contingency, for anyone to receive the money every student had to attend all his classes for any given morning. Alexander, Corbett, and Smigel reported that the group contingency was more effective than the individual contingency in getting students to attend class.

Using a modified withdrawal design, Newby and Robinson (1983) investigated group versus individual contingencies in regard to employees working in a retail business setting. They reported that attendance was enhanced most effectively under the individual contingency.

Stewart and McLaughlin (1986) examined the effects of group and individual contingencies on attendance within native American junior high school students. They reported no difference between the contingencies in regard to control over attendance.

Attendance and Sport

Despite the effectiveness of behaviour modification techniques in regard to improving attendance in the workplace and in schools, they have been neglected in the sports arena. At its simplest level sport can be divided into two categories, professional and amateur. The professional sports environment is similar to the industrial workplace environment in that payment is dependent on attendance, punctuality, performance, and so forth. However, in the amateur sports environment there is no payment and thus it cannot be used as a means of regulating or controlling attendance.

Only one study is to be found in the literature which deals with attendance in the sporting environment. McKenzie and Rushall (1974), in a study mentioned previously, stated that swimmers' attendance at training had been described by their coaches as poor and irregular. They employed an ABCD design using group rates of attendance as the dependent variable. In the baseline condition, no contingencies were in effect. In the first experimental condition, an attendance board was introduced. During this phase, a team member had to attend practice in order to record his/her attendance. The second experimental condition stipulated that in order to record their attendance a club member had to be on the pool deck when practice started. The third experimental condition defined attending as being present when practice started and remaining until it had ended. During the experimental conditions, each swimmer indicated attendance at practice by entering a checkmark in the appropriate space. McKenzie and Rushall reported that all the attendance board conditions were effective in the reduction in absenteeism.

References

- Alexander, R.N., T.F. Corbett and J. Smigel (1976). The effects of individual and group contingencies on school attendances with predelinquent adolescents, *Journal of Applied Behavioural Analysis*, **9**, 221-226.
- Allen, L.D. and B.A. Iwata (1980). Reinforcing exercise maintenance using existing high-rate activities, *Behaviour Modification*, **4**, 337-354.
- Baum, J.F. and S.A. Youngblood (1975). Impact of an organisational control policy on absenteeism, performance, and satisfaction, *Journal of Applied Psychology*, **60**, 688-694.
- Breaugh, J.A. (1981). Predicting absenteeism from prior absenteeism and work attitudes, *Journal of Applied Psychology*, **66**, 555-560.
- Brown, N. and W.K. Redman (1989). The effects of a group reinforcement contingency on staff use of unscheduled sick leave, *Journal of Organisational Management*, **10**, 3-17.
- Carlson, J.G. and K.D. Hill (1982). The effect of gaming on attendance and attitude, *Personnel Psychology*, **35**, 63-73.
- Carlson, R.M. and W.A. Sperduto (1982). Improving attendance and punctuality within a behavioral consultation model. In R.M. O'Brien, R.M. Dickinson, and M.P. Roscow (Eds.), *Industrial Behaviour Modification: A Management Handbook*. New York: Pergamon.
- Chadwick-Jones, J.K., N. Nicholson and C. Brown (1982). *Social Psychology of Absenteeism*. New York: Praeger.
- Durand, V.M. (1986). Employee absenteeism: A selective review of antecedents and consequences, *Journal of Organisational Behaviour Management*, **7**, 135-167.
- Educational Research Services. (1980). *Absenteeism*. Arlington: Educational Research Services.
- Gadourek, I. (1965). *Absence and well-being of workers*. Assen: Van Goruim.

- Goodman, P.S. and R.S. Atkin (1984). *Absenteeism: New Approaches to Understanding, Measuring, and Managing Employee Absenteeism*. San Francisco: Jossey-Bass.
- Gryna, F.M. (1981). *Quality Circles: A Team Approach to Problem Solving*. New York: Amacon.
- Hackett, R.D. and R.M. Guion (1985). A re-evaluation of absenteeism-job satisfaction relationships, *Organisational Behaviour and Human Decision Processes*, **35**, 340-381.
- Hall, R.V., C. Christler, S. Cranston and B. Tucker (1970). Teachers and parents as researchers using multiple baseline designs, *Journal of Behavioral Analysis*, **3**, 247-255.
- Hamner, W.C. and E.D. Hamner (1976). Behaviour modification on the bottom line, *Organisational Dynamics*, **4**, 2-21.
- Harvey, B.H. (1983). Two alternatives to traditional sick leave programs, *Personnel Journal*, **62**, 374-378.
- Herman, J.B. (1973). Are situational contingencies limiting job attitude - job performance relationships, *Organisational and Human Performance*, **10**, 208-224.
- Herman, J.B., A.I. de Montes, B. Dominiguez, F. Montes and B.L. Hopkins (1973). Effectiveness of bonuses for punctuality on the tardiness of industrial workers, *Journal of Applied Behavioral Analysis*, **6**, 563-570.
- Hutchinson, J.M., P.H. Jarman and J.S. Bailey (1980). Public posting with an habituation team: Effects on attendance and performance, *Behaviour Modification*, **4**, 57-70.
- Ilgen, D.R. and J.H. Hollenback (1977). The role of job satisfaction in absence behaviour, *Organisational Behaviour and Human Performance*, **22**, 431-444.
- IR Research Services. (1982). *Absenteeism: Policies and Programs for the 80's*. Kingston: IR Research Services.
- Ivancevich, J.M. (1985). Predicting absenteeism from prior absence and work attitudes, *Academy of Management Journal*, **28**, 219-228.

- Johns, G. and N. Nicholson (1982). The meanings of absence: New strategies for theory and research. In B.M. Shaw and L.L. Cummings (Eds.), *Research in Organisational Behaviour*. Greenwich: JAI Press.
- Johnson, R.d. and T.O. Peterson (1975). Absenteeism or attendance: Which is industry's problem? *Personnel Journal*, **54**, 568-572.
- Kempton, R.W. and R.V. Hall (1977). Reeducation of industrial absenteeism: Results of a behavioral approach, *Journal of Organisational Behaviour Management*, **1**, 1-21.
- Kinsman, R.A., J.I. Dirks and N.F. Jones (1982). Psychomaintenance of chronic physical illness, clinical assessment of personal styles affecting medical management. In J. Millon, C. Green, and R. Meagher (Eds.), *Handbook of Clinical Health Psychology*. New York: Plenin Press.
- Kopelman, R.E., G.O. Schweller and J.J. Silver (1981). Parkinson's law and absenteeism: A program to reign in sick leave costs, *Personnel Administrator*, **7**, 57-63.
- Kringsman, N. and R.M. O'Brien (1987). Quality circles, feedback reinforcement: An experimental comparison and behavioral analysis, *Journal of Organisational and Behaviourial Management*, **9**, 67-82.
- Locke, E.A. (1976). The nature and causes of job satisfaction. In M.D. Dunette (Ed.), *Handbook of Industrial and Organisational Psychology*. Chicago: Rand McNally.
- Marks, M.L., P.H. Mirvis, E.J. Hackett and J.F. Grady (1986). Employee participation in a quality circle program: Impact on quality of work life, productivity, and absenteeism, *Journal of Applied Psychology*, **71**, 61-69.
- McKenzie, T.L. and B.S. Rushall (1974). Effects of self recording on attendance and performance in a competitive swimming training environment, *Journal of Applied Behavioral Analysis*.
- Miner, M.G. (1977). Job absence and turnover: A new source of data, *Monthly Labor Review*, **100**, 24-31.
- Morgan, L.G. and J.B. Herman (1977) Perceived consequences of absenteeism, *Journal of Applied Psychology*, **68**, 88-101.

- Moss, R.A. (1986). The role of learning history in current sick-role behaviour and assertion, *Behaviour Research Therapy*, **24**, 681-683.
- Muchinsky, P.M. (1977). Employee Absenteeism: A review of the literature, *Journal of Vocational Behaviour*, **10**, 316-340.
- Newby, T.J. and P.W. Robinson (1983). Effects of grouped and individual feedback and reinforcement on retail employee performances, *Journal of Organisational Behaviour Management*, **5**, 51-68.
- Newman, J.E. (1974). Predicting absenteeism and turnover: A field comparison of Fishbein's model and traditional job attitude measures, *Journal of Applied Psychology*, **55**, 92-94.
- Nicholson, N. (1976). Management sanctions and absence control, *Human Relations*, **29**, 139-151.
- Nicholson, N. and G. Johns (1985). The absence culture and the psychological contract - who's in control of absence, *Academy of Management Review*, **10**, 397-407.
- Nicholson, N., T.D. Wall and J. Lischeron (1977). The predictability of absence and propensity to leave from employee's job satisfactions and attitudes toward influence in decision making, *Human Relations*, **30**, 499-514.
- Nord, W. (1970). Improving attendance through rewards, *Personnel Administration*, **4**, 37-41.
- O'Brien, R.M., A.M. Dickinson and M.P. Roscow (1982). *Industrial Behaviour Modification: A Management Handbook*. New York: Pergamon Press.
- Organisational Dynamics. (1973). Conversation with B.F. Skinner. *Organisational Dynamics*, **1**, 31-50.
- Orpen, C. (1981). The effect of a behaviour modification program on employee job attendance, *Management and Labor Studies*, **7**, 73-76.
- Pedalino, E. and V.U. Gamboa (1974). Behaviour modification and absenteeism: Intervention in one industrial setting, *Journal of Applied Psychology*, **59**, 694-698.
- Pierce, C.H. and T.R. Risley (1974). Recreation as a reinforcer: Increasing membership and decreasing disruptions in an urban recreation center, *Journal of Behaviour Analysis*, **7**, 403-411.

- Premack, D. (1959). Toward empirical behaviour laws: I. Positive reinforcement, *Psychological Review*, **66**, 219-233.
- Robertson, D.D., R.D. Johnson and A.L. Bethke (1980). Reducing absenteeism with fixed and variable interval reinforcement, *Review of Business and Economic Research*, **3**, 73-82.
- Rosen, H. and J. Turner (1971). Effectiveness of two orientation approaches in hard-core unemployment turnover and absenteeism, *Journal of Applied Psychology*, **55**, 296-301.
- Seatter, W.C. (1961). More effective control of absenteeism, *Personnel*, **38**, 16-29.
- Shoemaker, J. and D.H. Reid (1980). Decreasing chronic absenteeism among institutional staff, *Journal of Organisational Behaviour Management*, **2**, 317-329.
- Skinner, B.F. (1974). *About Behaviorism*. New York: Vintage.
- Skinner, B.F. (1953). *Science and Human Behaviour*. New York: McMillan.
- Steers, R.M. and S.R. Rhodes (1978). Major influences on employee attendance: A process model, *Journal of Applied Psychology*, **63**, 391-407.
- Stephens, T.A. and W.A. Burroughs (1978). An application of operant conditioning to absenteeism in a hospital setting, *Journal of Applied Psychology*, **63**, 518-521.
- Stewart, J.P. and T.F. McLaughlin (1986). Effects of group and individual contingencies on reading performance with Native American junior high school students, *Journal of Remedial Education and Counselling*, **2**, 133-144.
- Turkat, I.D. (1982). An investigation of parent modelling in the etiology of diabetic illness, *Behaviour Research Therapy*, **20**, 547-552.
- Turkat, I.D. and L.S. Pettigrew (1983). Development and validation of the illness behaviour inventory, *Journal of Behaviour Assessment*, **5**, 35-47.
- Wallin, J.A. and R.D. Johnson (1976). The positive reinforcement approach to controlling employee absenteeism, *Personnel Journal*, **55**, 390-392.

Walters, L.K. and D. Roach (1979). Job attitudes as predictors of termination and absenteeism: Consistency over time and across organisational levels, *Journal of Applied Psychology*, **55**, 92-94.

Walters, L.K. and D. Roach (1979). Job satisfaction, behavioral intention, and absenteeism as predictors of turnover, *Personnel Psychology*, **32**, 393-397.

Willings, D. (1968). The absentee worker, *Personnel and Training Management*, **3**, 10-12.

Yolles, S.F., A.C. Pasquale and L.W. Krinsky (1975). *Absenteeism in Industry*. Springfield: Charles Thomas.

APPENDIX D
SCHEDULE OF GAMES

<i>Week</i>	<i>Date (Sunday)</i>	<i>Game</i>
1	September 15 (Saturday)	Brentwood
2	23	Presidents XV
3	30	Velox
4	October 6 (Saturday)	W. Washington
5	14	O.B.C.
6	21	Nanaimo
7	28	Cowichan
	31 (Wednesday)	U.B.C.
8	November 4	James Bay
9	11	O.B.C.
10	25	O.B.C.
11	December 2	O.B.C.
12	9	James Bay
13	January 20	No Game
14	27	Douglas College
15	February 3	Presidents XV
16	10	Crimson Tide
17	24	Law School
18	March 3	No Game
19	10	Old Jutes
20	24	No Game
21	31	Campbell River
22	April 7	B.C. High Schools
23	21	Abbotsford
24	28	Capilano

VITA

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Given Names: David

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Date of Birth: November 17, 1963

Educational Institutions Attended, with Dates of Entering and Leaving:

University of Ulster	1982-1986
University of Victoria	1986-

Degrees, Diplomas, Etc., Awarded, with Dates and Names of Institutions:

B.A. (Hons.)	1986	University of Ulster
P.G.C.E.	1986	University of Ulster
M.A.	1988	University of Victoria
M.A.	1991	University of Victoria

Honors and Awards:

Dean's Scholarship	1988
University of Victoria Fellowship	1989-1992

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A BEHAVIOURIAL APPROACH

Author



(Signature)

DAVID SCOTT

(Name in block letters)

25th SEPT 1991

(Date)