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The Effect of an Interdependent Group Contingency Contract on Weight Loss in Women

Carol Daisley
Western Michigan University

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THE EFFECT OF AN INTERDEPENDENT GROUP CONTINGENCY CONTRACT ON WEIGHT LOSS IN WOMEN

by

Carol Daisley

A Project Report
Submitted to the Faculty of The Graduate College
in partial fulfillment of the Specialist in Education Degree

Western Michigan University
Kalamazoo, Michigan
April 1976
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Thanks go to Gloria Gasparotto for her help at the weekly weigh-in sessions, and to Kass Lockhart and Paul Mountjoy for their help in the initial preparation of this manuscript. I also want to thank Brian Iwata for his patient consulting on the design, planning and running of this experiment along with his constructive editing of the many drafts of this final paper. Lastly, I want to thank my parents for their patient understanding and support for the duration of my return to school.

Carol Daisley
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INTRODUCTION

Weight control is an area of popular concern. Hunt (1973) estimated that there were 117 books available which dealt with diets and dieting or which had the word diet in the title. Kimbrell (1975) attributes their popularity to claims of such procedures as being "completely new" or "thoroughly tested", as opposed to "extremely effective". He states that "Buyers buy because of desperation and the promise of easy painless success based upon a newly discovered secret" (pg. 273). Unfortunately, although the details of the diets vary, most can be considered to be basically the same.

Part of the interest in dieting has been brought about by the increasing amount of information presented to the general public correlating overweight with health problems. According to the American Medical Association, a person who exceeds his or her ideal weight by 10 to 15 percent is overweight (Stillman, 1967), and overweight is correlated with such problems as heart disease, hypertension, and diabetes (Sharkey, 1974), as well as hardening of the arteries, arthritis, and strokes (Stillman, 1967). In addition, people who are 10, 20, and 30 percent overweight have 13, 25, and 40 percent increases in the death rate, respectively (Sharkey, 1974). For this reason, many insurance companies charge higher premiums for individuals judged to be overweight.
As early as 1962, Ferster, Nurnberger, and Levitt (1962) suggested that the eating behavior of an obese person was controlled primarily by external rather than internal variables, and that the manipulation and eventual control of these variables would produce a resultant change in the eating behavior. Their program consisted of identifying the circumstances involved in eating such as the location, time of day, stimulus conditions, chaining, prepotent repertoires, and then shaping the skills needed to modify the identified variables. This paper was of major importance in terms of its effect on subsequent obesity research.

Stuart (1967) published one of the first studies using behavioral approaches to produce weight loss. With a modification of the Ferster, et al. (1962) program, Stuart was able to demonstrate weight losses ranging from 26 to 47 pounds for eight female patients over a 12 month period. In a later study (Stuart, 1971), he found weight losses of 35 and 21 pounds for each of two groups treated. By instituting the treatment procedures at different times, he could attribute the weight loss to the environmental control of eating behavior procedures. Harris (1969) studied the effectiveness of a self-directed program for weight loss which stressed the development of permanent eating habits, the awareness of what one was eating, and making only gradual changes. She found significant differences between the experimental and control groups without placing any type of external contingencies on the behavior of the subjects.

McReynolds and Lutz (in press) demonstrated the applicability
of stimulus control and behavioral self-control procedures using non-psychologists as therapists. They found no differences between the groups immediately following treatment, but found the stimulus control procedure to be significantly more effective at both the three-month and six-month follow-ups. They suggested that one reason for the superiority of the stimulus control treatment at follow-up was the relative permanence of the environmental behavior changes (e.g., putting food in opaque containers) in helping to maintain appropriate environmental control over the behavior even after treatment was terminated. Musante and Perelman (1974) also supported the success of environmental control procedures when used in conjunction with diet within a residential dietary clinic setting.

Within the self-control approach to weight reduction, experimenters have studied the differences between self-monitoring and self-reinforcement (Mahoney, 1974; Bellack, in press) or self-monitoring, self-reward, and self-punishment (Mahoney, Moura, and Wade, 1973; Tirrell, 1975). One difficulty with these types of approaches lies in the problem of isolating self-monitoring from self-reward or self-punishment. In addition, Tirrell (1973) suggested that the possible controlling variable may be the educational information provided in the prescribed diets rather than any self-control procedure. Finally, the reliability of self-recorded data has been questioned (Kazdin, 1974).

Comparisons between externally controlled and self-controlled
programs have been contradictory. Jeffrey (1974) indicated that both external and self-control methods were effective in producing weight losses, but the self-control procedures were more effective in producing long term maintenance. Hall (1972) obtained opposite results in that the external control group achieved greater losses than self-control which were maintained at follow-up. Harris and Bruner (1971) compared a contracting procedure with a self-control procedure. The contracting procedure produced a significantly greater short term loss, while the self-control procedures had smaller attrition rates and a greater number of positive comments from the participants. Bellack, Schwartz, and Rosensky (1974) studied the contribution of external control to self-control. They found that groups maintaining contact with the experimenter, whether personal or mail contact, lost more weight than a group given the identical program without contact being maintained. These results suggest that self-control procedures alone may be insufficient to produce significant weight losses.

Studies using Homme's coverants (Homme, 1965) -- thoughts, feelings, and images -- have also been reported in the weight control literature. Tyler and Straughan (1970) failed to produce weight losses by pairing positive and negative non-eating coverants with high probability behaviors such as turning on the water faucet or answering the telephone. Later studies using variations of covariant and high-probability behavior pairings were able to produce significant results (Horan & Johnson, 1971; Horan, Stanley, Baker, Hoffman,
and Schute, 1975; Manno & Marston, 1972). These more recent studies outweigh the lack of success by Tyler and Straughan (1970), suggesting that the use of coverants could be an effective weight loss procedure. However, the problems with this method are similar to those encountered with self-control: reliability and definition. There is no way of ascertaining whether or not the people actually emitted the prescribed coverants.

The self-control studies and the coverant studies both depend on the individual supplying his own motivation for following the procedures. No contingencies are placed on the individual except for possible social reinforcement from the therapist for attempting the procedures. It appears that for individuals having difficulty producing this type of incentive to work at the procedure, as manifested by the number of obese individuals who are still unable to lose weight, these types of procedures offer few assets other than novelty.

Contingency contracting has recently been used as a method of providing external controls over the participants' weight losses. Harris and Bruner (1971) compared the effects of a contingency contract group with those of a self-control group. The self-control group attended meetings in which the rudiments of behavior theory were explained, and recommendations on how to change eating patterns were given. In the contract group, members agreed to make a cash deposit of a determined amount of money which they could earn back at a determined rate per pound lost. For this group, the experimenter
offered no suggestions for altering eating habits aside from conscientiously counting calories. At the end of the twelve weeks, the contract group had lost a significantly larger proportion of their initial weight than the self-control group. Follow-up showed, however, that the contract group did not maintain this loss and at the end of ten months, the experimental groups did not differ significantly from the non-participants. Mann (1972) had each participant surrender articles of value to the experimenter. A contract specified the conditions for the return of the items and emphasized that if the participant did not meet the requirements of the program, the valuables could be permanently lost. These contracts were effective in producing weight loss but did not specify or control for the means of losing weight. Thus, the use of extreme measures, such as laxatives and diuretics were observed on the part of the participants.

Jeffrey (1974) compared external control with a self-control, refundable deposit group and a self-control, non-refundable deposit group. All participants lost significant amounts of weight with the two self-control groups engaging in self-reward on occasions when they had not met the criterion. Follow-up data showed the self-control groups had maintained weight loss while the external control group regained a significant portion. Aragona, Cassady, and Drabman (1975) applied a contingency contracting procedure to the parents of overweight girls, with the refund of their deposits contingent on attendance, completing charts and graphs, and their child
meeting a weekly weight loss criterion. After the twelve week program consisting of information on nutrition, daily exercise instructions, instructions on stimulus control procedures, and similar material, they found significant weight losses for both their experimental groups. Follow-ups reflected a gradual regaining of the weight.

Jeffrey and Christensen (in press) compared the effects of contingency contracting with will power. They found that the contracting group lost significantly more weight than both the no treatment group and the will power group, and maintained their weight loss between post-treatment and follow-up. The contracting group involved contingency contracting, stimulus control, self-monitoring, energy expenditure, and group reinforcement procedures over an 18 week period. Each group member deposited a sum of money with the contractor ranging from $20.00 to $100.00, depending on the participant's financial situation. A portion of the deposit was earned back each week contingent on attendance with the remainder contingent on achieving the prescribed weight loss. Money that was not earned back each week was lost permanently. The will power group was told to do the same as the contract group, but rather than have regular meetings and formal contingencies, they were told to apply "will power" on their own.

Each of the contingency contracting studies indicate that external controls can be effective in producing weight losses, at least on a short term basis. The results of Jeffrey (1974), and
Harris and Bruner (1971) suggest possible limitations of the approach in terms of long term maintenance of the weight loss, but Jeffrey and Christensen (in press) were able to demonstrate maintenance of the weight loss over an 18 week follow-up period.

The above studies have involved the implementation of weight loss procedures on an individual basis. Studies attempting to develop an efficient means of producing weight loss have utilized group treatment procedures. Penick, Filion, Fox, and Stunkard (1971) suggested "that a group setting may increase the effectiveness of behavior modification when compared with individual treatment as utilized by Stuart" (1971, pg. 54). Although their study ran for a shorter duration than did Stuart's, they were able to demonstrate a significant difference between the amount of weight their subjects lost within the first three months and the amount of weight Stuart's subjects lost in the same time period.

Wollersheim (1970) compared group influence in the form of social pressure to non-specific therapy, focal treatment based on learning principles, and no treatment. Results showed that the focal therapy based on learning principles was more effective than the other three groups. In addition, while social pressure alone did produce some weight loss, thus making it more effective than no treatment, the non-specific therapy group was also able to lose weight. Abrahms and Allen (1974) studied the effects of various behavior management groups with a social pressure group. They found that the group utilizing behavioral management and social
pressure and the group utilizing behavioral management and monetary pay-off for weight loss were not significantly different. They both produced more weight loss than either the control group or the social pressure group.

Neither the Wollersheim (1970) study nor the Abrahms and Allen (1974) study defined their concept of social pressure. It is assumed the group members did not know each other prior to the meetings. No contingencies were specified in terms of the other group members to insure either encouragement or censure. It appears the group members were assumed to exert pressure on each other just by the definition of groups.

Another approach to weight control in groups would be the actual implementation of group contingencies for weight loss. The use of group contingencies is not new. Many studies involving school children have used variations of group-oriented contingencies. Patterson (1965) and Patterson, Jones, Whittier, and Wright (1965) used a dependent group-oriented contingency where consequences for the group were based on the performance of a selected group member to modify the behavior of a hyperactive child. Independent group-oriented contingencies, where the contingencies are in effect for all but are applied on an individual basis have been used to increase appropriate classroom behavior (Wasik, 1970) and to improve academic performance (Hopkins, Schutte, and Garton, 1971). In another type of group oriented contingency, an interdependent system, each members' outcomes depend on a level of group performance.
Barrish, Saundres, and Wolf (1969) applied interdependent contingencies with their good behavior game, where all members of the team lost points and possible privileges for each team member's disruptive behavior during baseline, game, and reversal. Other successful interdependent systems have been used by Schmidt and Ulrich (1969) and Dietz and Repp (1973).

Pierce and Risley (1974) reduced disruptive behavior by applying a response cost of lost recreation time in an urban recreation center. The experimenters noted the group contingencies increased the prompting for appropriate behavior by the youths' peers rather than by the adults. This pressure appeared to be a function of the interdependent group contingency and provided evidence that group pressure was being used.

Using a multiple baseline across groups design, the present study attempted to assess the effects of an interdependent group contingency contract on individual weight loss. In addition to the contingency contracts for weight loss, both groups participated in a weekly weight loss program based on the environmental control of one's eating behavior.
METHOD

Subjects and Setting

Subjects consisted of eight female volunteers solicited through an advertisement in the local newspaper. All subjects accepted for inclusion had met the following requirements:

1. Paying the class fee of $25.00.
2. Participating in no other weight control class at the present time.
3. Taking no drugs for the purpose of weight loss.

Ages of the subjects ranged from 24 to 61 with a mean of 34.6 years. All were at least 15 percent over their ideal weight for their height as determined by a table provided by Stillman (1967). Percent overweight was calculated by subtracting their ideal weight from their actual weight, dividing this difference into the ideal weight, and multiplying by 100. The weight range for all subjects was from 125.5 to 220.5 with a mean of 178.75. For the purpose of achieving a relatively even distribution of weight between the two groups, subjects were distributed with respect to their initial weight (see Table 1). The distribution remained somewhat uneven due to the necessity of placing subjects 1 and 2 in the same group as they were living together at the time of this study.

Classes for the weight control program were conducted in a small community room at a local church. Weigh-ins were conducted in an office at the local university.
### TABLE I
DISTRIBUTION OF WEIGHT ACROSS GROUPS

<table>
<thead>
<tr>
<th>Group</th>
<th>Subject</th>
<th>Initial Weight</th>
<th>Ideal Weight</th>
<th>Percent Overweight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>220.5</td>
<td>100</td>
<td>120.5</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>206</td>
<td>100</td>
<td>106</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>195</td>
<td>124</td>
<td>53</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>141.5</td>
<td>124</td>
<td>16.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>( \bar{X} = 190.75 )</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>148.5</td>
<td>117</td>
<td>26.9</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>125.5</td>
<td>100</td>
<td>25.5</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>202</td>
<td>117</td>
<td>72.6</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>191</td>
<td>117</td>
<td>63.2</td>
</tr>
</tbody>
</table>
|       |         |                |              | \( \bar{X} = 166.75 \) | \( \bar{x} = 47.05 \)

**Measurement**

The dependent variable in the present study was body weight as measured on a commercially available balance arm scale, Sears Doctor's Scale, model number 6450. Weights were taken to the nearest quarter pound. Pounds lost were calculated by subtracting the client's weight, as measured at the bi-weekly weigh-in sessions, from her initial weight.
Reliability

Reliability was taken by an independent observer immediately following the regular weigh-in. Due to frequent absenteeism, the number of reliability checks taken varied among subjects and ranged from two to nine. Reliability was calculated by placing the smaller figure over the larger one and multiplying the result by 100 to obtain a percentage. Reliability ranged from 98 to 100 percent with a mean of 99.5 percent.

Weight Program

Each group met weekly with a discussion leader to review the book *Slim Chance in a Fat World: Behavioral Control of Obesity*, condensed edition (Stuart & Davis, 1972). In addition, the class discussed such topics as calorie intake, exercise, proteins and nutrition, environmental control of eating, and various problems brought up by group members (see Table 2).

Records on daily weight and food and caloric intake were kept by all subjects (see Table 3). These records were collected by the discussion leader at each weigh-in time and were reviewed for caloric intake. The daily weights were also compared with the results of the bi-weekly weigh-in sessions. No reliability was taken on the content of these data. Their content was not used as a dependent measure for the contingencies placed on the clients.
Baseline

Both groups were subjected to a brief baseline period of either three or five weeks. During this period, no contingencies were placed on the subjects for losing weight. They were required to attend all classes and to turn in their daily data sheets on which they recorded their daily weight, daily food intake, and calorie intake.

Both groups met together for the first few meetings and all members were presented with a copy of contract 1 (see Appendix 1). This contract stated the contingencies placed on meeting attendance and data collection. Each member signing the contract agreed to pay an additional fee of $3.00 for each meeting missed over one. For every meeting they failed to turn in their data sheets, they paid an additional fee of $1.00. This contract was in effect for the duration of the entire 15 week program. All subjects present at the first meeting signed the contracts.

Group Contingency

Following the baseline period, each group underwent a contingency for weight loss. Each member of the two groups was asked to sign the contract (see Appendix 2). This contract outlined the token reinforcement conditions in effect for appropriate weight loss, and the response cost conditions in effect for not achieving their weight goal.
<table>
<thead>
<tr>
<th>Class</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
</tr>
<tr>
<td>2</td>
<td>Data Recording - Daily Sheets</td>
</tr>
<tr>
<td>3</td>
<td>Basic Calorie Needs</td>
</tr>
<tr>
<td>4</td>
<td>Why Lose Weight?</td>
</tr>
<tr>
<td>5</td>
<td>Enlisting Outside Help</td>
</tr>
<tr>
<td>6</td>
<td>Quantity, Quality, and Situation Control</td>
</tr>
<tr>
<td>7</td>
<td>Nutrition - Proteins</td>
</tr>
<tr>
<td>8</td>
<td>Vegetable Complementing</td>
</tr>
<tr>
<td>9</td>
<td>Carbohydrates, Fats, and Proteins</td>
</tr>
<tr>
<td>10</td>
<td>Exercise</td>
</tr>
<tr>
<td>11</td>
<td>Exercise, Fitness, and Weight Control</td>
</tr>
<tr>
<td>12</td>
<td>Behavior Modification of Obesity</td>
</tr>
<tr>
<td>13</td>
<td>No Class</td>
</tr>
<tr>
<td>14</td>
<td>Behavior Modification of Obesity</td>
</tr>
<tr>
<td>15</td>
<td>Self-Control Procedures</td>
</tr>
<tr>
<td></td>
<td>Class Summary</td>
</tr>
<tr>
<td>Time of Day/Meal</td>
<td>Location</td>
</tr>
<tr>
<td>------------------</td>
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<td></td>
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</tbody>
</table>

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Appropriate weight losses were socially reinforced, while inappropriate weights (not making one's prescribed weight goal) were punished by a $2.00 fine, payable immediately. Data sheets were also collected at the individual weigh-ins, with $1.00 fines collected for not having these sheets when necessary.

Token reinforcement in the form of points was given to each member of the group when all group members achieved their prescribed weight loss for their weigh-in sessions. Points for Group 1 were worth approximately $.30 apiece while points for Group 2 were worth approximately $.45 apiece. The token value varied between the groups since each group had the opportunity to earn back $20.00 total and Group 2 had a shorter contract duration than Group 1 due to the multiple baseline design. The interdependent design of the group contract made reinforcement contingent on the performance of all members of each group rather than on that of each individual. The prescribed weight loss was set at one pound per week from each individual's weight at the end of the baseline period. This meant, for example, that an individual could lose four pounds in one week and then not lose for the next three weeks without penalizing her group. Since group members did not weigh in at the same time, points earned for each of the two weigh-in sessions for each week were awarded to each group at their weekly discussion group. In addition, bi-weekly and running totals of points earned were kept by the discussion leader and were available upon request.
A bonus condition for achieving the regular weight losses was included every fourth weigh-in session. Each group having earned points for appropriate weight loss for the previous four consecutive sessions earned a bonus of two additional points which was added to the regularly earned two points for appropriate weight loss. Thus, at the end of four sessions, the group(s) which earned points for every session earned the bonus points giving them a possible total of 10 points every two weeks.

Points were redeemable at the final session of the program for a portion of their class fee. Of the $25.00 paid for the class, $5.00 was non-refundable, covering the cost of the books, room, and hand-outs. The remaining $20.00 was available to be earned back contingent on the group's weight loss.

Experimental Design

The experiment was conducted using a multiple baseline design (Baer, Wolf, & Risley, 1968). Group 1 underwent baseline conditions for three weeks, followed by the group contingency condition. Group 2 underwent baseline conditions for five weeks, followed by the group contingency conditions for the remaining 10 weeks.
RESULTS

Group Data

Figure 1 shows the mean pounds lost for both groups 1 and 2 minus the data for Subject 2 who dropped from the study. Implementation of the group contingency appears to have effected a marked increase in the mean number of pounds lost for both groups with a continued decrease in weight over the duration of the program. Variations in the data (see arrow) are due to the absences of one or more group members for any particular weigh-in session. Weigh-in sessions where only one member of the group was present were omitted from the group mean graphs.

Individual Data

Figure 2 shows the variability of weight losses for Group 1. During baseline, weigh-in weights for Subject 1 decreased by four pounds then increased to eight and one half pounds over her initial weight resulting in a range of 14 pounds over a three and one half week period. Implementation of the group contingency appeared to effect an initial weight loss, but further weigh-ins failed to demonstrate maintenance. The final weight for this subject was one pound less than her initial weight. Subject 2 was very sporadic in attendance, having missed three sessions immediately following implementation of the group contract. She finally dropped from the
FIGURE 1
MEAN NUMBER OF POUNDS LOST FOR GROUPS 1 AND 2.
Mean number of pounds lost

**Group 1**

**Group 2**

Sessions

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group contingency after six weeks and was placed on an individual contract. This contract was similar to the group contract in format, but eliminated the pressure from the other group members, making all points earned directly due to the subject's own weight loss. During baseline her weight gradually increased at the rate of .85 pounds per week. Implementation of the group contingency did not effect a decrease in weight as she gained 3.25 pounds over a six week period. Implementation of the individual contingency did not effect a decrease (see arrow) but instead was followed by an increase of 1.75 pounds over the second week of the contract. The subject dropped from the entire program after the second weigh-in under the individual contract. Her final weight was six pounds over her initial weight.

Subject 3 maintained a steady weight loss for the duration of the study. Her rate of weight loss during baseline was 3.5 pounds per week. For eight and one half weeks following the implementation of the group contingency, her rate of weight loss was 2.4 pounds per week. The final two and one half weeks of the program showed a sharp increase in weight for the session following Thanksgiving with a weight loss rate of 3.1 pounds per week for the final one and one half weeks of the program. Total weight loss for Subject 3 was 30.75 pounds from her initial weight.

Subject 4 maintained a steady baseline weight with a slight drop following the implementation of the group contingency. The weight loss did not maintain, however, and the subject's weight
gradually increased to a final weight recorded at just three fourths of a pound less than her initial weight. Because she moved from the area, her last weigh-in was on session 23.

Figure 3 shows the weight losses for the four members of Group 2. Subject 5 maintained a fairly stable baseline with fluctuations of three pounds. She lost 8.5 pounds in one week following the contract implementation but gained back five pounds over the next five weeks, resulting in a final weight which was 3.75 pounds less than her initial weight. Subject 6 had a gradual decrease in weight during baseline at a rate of .68 pound per week. After implementation of the contingency, she lost at a rate of 1.9 pounds per week for the three and one half weeks, then regained at the rate of .44 pound per week over the next four and one half weeks. At the end of the program her final weight was 8.5 pounds below her initial weight. Subject 7 also lost weight during the baseline period at a rate of .9 pound per week. After implementation of the contingency, her rate of weight loss increased to 1.5 pounds per week for three and one half weeks. At that point she began to regain weight over the final four weeks at the rate of .68 pound per week.

Subject 8 lost 1.75 pounds over the baseline period at a rate of .43 pound per week. After the implementation of the group contingency contract she lost three pounds in one half week, but steadily regained this weight over time. At the end of the program, she weighed two and one half pounds less than her original weight.
FIGURE 2

NUMBER OF POUNDS LOST FOR MEMBERS OF GROUP 1.
FIGURE 3

NUMBER OF POUNDS LOST FOR MEMBERS OF GROUP 2.
DISCUSSION

Present results suggest that implementation of the contract was initially effective in producing weight loss for five of the eight subjects but that this rate of loss was not maintained over time. For the remaining three subjects, contract implementation did not appear to have an effect on weight loss. Although these results are inconclusive, the mild control exhibited for five members suggests that a modification of this procedure might effect a more significant weight loss.

Several problems with the contract design were encountered during the course of the experiment. Although members signed contracts for attendance at the first meeting, the fining contingencies for more than one absence resulted in two members attempting to quit after five weeks. In order to maintain the original group number, requirements for attendance at both weigh-in sessions were dropped for several members. In addition, the fining system for attendance was modified to allow for the increased number of absences. Those who called at least one day prior to meeting were excused without fines, while unexcused absences were consequtated with the original fines. This change resulted in decreased attendence at the first weigh-in session each week, as expected.

The fining system for not achieving one's weight loss goal was also difficult to maintain. Since weight loss goals were set at one
pound per week from the individual's weight at the time of the weight loss contract implementation and was not changed from this rate, members who failed to meet their weight loss goal for two or three sessions were highly unlikely to meet at all. Since each failure to achieve the prescribed weight loss was consequated with a $2.00 fine at each weigh-in, it was more profitable for the individual to drop from the class than to continue to pay the fines. This would have been better for the group as well, since each member of the group had to make her weight goal at each session in order for the group members to earn points. To maintain participation, adjustments in the fines for failure to make one's weight were made for several participants.

Tighe and Elliot (1968) suggest that "only if the response-reinforcement relation is one which the patient cannot revoke or suspend is it likely to be an effective controller of his behavior when he is confronted by the powerful influence of the discriminative stimuli for inappropriate behavior (temptation) within his usual environment" (pg. 264). In this study, that response-reinforcement relation was not irrevocable. Participants could easily drop from the course, avoid the hassle of recording data, avoid the additional fee payments, and lose only the $25.00 class fee. In addition, the fining or additional fee system was not well designed in that it functioned as a punisher for attending and persevering in spite of little or no weight loss rather than as a reinforcer for continuing one's weight loss.
One would need to use a stronger reinforcer and to make the "trap" more secure in order to exert more complete control over the participant's behavior. To make the reinforcer more enticing, one might eliminate the idea of using a refundable class fee which implies one only gets back what she puts in, and instead establish a contingency by which one could earn or win money or items of value which were not considered to be theirs initially. For example, the use of immediate cash returns or lottery tickets would be expected to have more reinforcing value than the points redeemable for their own class fee as was used in this study. To close the 'trap' or contract, thus reducing the probability of escape, one could eliminate the fining or additional fee system and design a positive contract where all appropriate behavior such as attendance, data collection, or weight loss are consequated positively. The punishing system as used in this study apparently generated more avoidance than motivation. Since dropping out is a problem with many weight control studies, designing a program which would encourage and reinforce attendance is critical. In addition, shortening the duration of the program and reducing the response cost for the participants would help to increase attendance and participation.

Social pressure exerted by members of one's own group was present but not overt in the sense that no members were overheard to encourage others to lose weight for the group points. To the contrary, two group members were overheard telling a third that the money was not important and that they knew she was working hard even
though she was not losing weight at the weigh-in sessions. Several members asked the instructor individually about other group members' feelings with regard to the points and money, thus suggesting that some pressure was being felt by the individual, but none were verbally pressured by others.

Future studies in weight control need to include the concept of social pressure as a defined variable rather than just an assumed one. The results obtained in this study suggest that a functional definition of social pressure can be made given a strong reinforcer that is contingent on group behavior. It might be found that social pressure when defined and controlled can be a strong motivator for behavior change.
Appendix I

Attendance Contract

Weight Control Contract 1

I, ____________________________, agree to abide by all conditions of this contract. I assume full responsibility for maintaining my health during weight loss.

This contract will be in effect from September 9, 1975 to December 18, 1975, a period of fifteen (15) weeks.

I agree to the following conditions:

1) To attend the weight control class on ______________ evenings from __________ to __________ (45 minutes).

2) To attend the weigh-in sessions on ______________ evenings at ______________ for 10 minutes.

3) To pay an additional fee of $3.00 for each session missed over one (1), payable at the next class or session attended.

4) To complete the daily data collection sheets (weight record, food intake, and calorie intake) and turn these sheets in to the instructor at the beginning of each session or class (twice per week).

5) To pay an additional fee of $1.00 for each session, or class at which the data sheets are not turned in, payable at that time.

I have carefully read the above statements and agree to the terms of this contract as stated.

Client: ____________________________ Date: __________
Instructor: ____________________________
APPENDIX II

WEIGHT CONTRACT
Appendix II
Weight Contract

Weight Control Contract 2

I, ______________________________, agree to abide by all conditions of this contract. I assume full responsibility for maintaining my health during weight loss.

This contract will be in effect from ______________________ to ______________________, a period of ______________________ weeks.

The instructor agrees to the following:

1) To give me two points at each session at which I have either lost the required amount of weight, or have stayed at or below my weight loss slope line AND all the members of my group have done the same.

2) To give me a bonus of two points for having earned points at the four previous consecutive sessions, AND all the members of my group have done the same.

I agree to the following:

1) To lose the equivalent of one pound per week by the time of my regularly scheduled weigh-in session. (I am aware this rate is designated by the red sloping line on my weight graph and that I must stay at or below it to achieve my weight loss.)

2) To pay an additional fee of $2.00 for failing to achieve my prescribed weight loss at that same session.

I am aware that the following conditions will be in effect:

1) The points may be cashed in at the final session for cash provided I have abided by all the rules and regulations of the contracts.

2) Neither the points nor the class fee may be used to pay any additional fees.
Appendix II (continued)

3) All contracts must be upheld, as well as the additional fees paid, in order for me to cash in my points.

I have carefully read the above statements and agree to the terms as stated.

Client: ________________________________ Date: __________
Instructor: ______________________________
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