MODIFICATION OF EATING HABITS

THROUGH THE USE OF

SELF-OBSERVATION, COVERANT CONTROL

AND COVERT SENSITIZATION

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In recent years there has been a great deal of interest in the question of obesity. Dynamic formulations (Freud, 1911) hypothesize that overeating is a result of oral fixation during infancy, and/or societally inappropriate or unfulfilled sexual impulses. Therapy involves understanding the historical etiology of the problem. A behavioral approach to the question of overeating (Ferster, 1962; Stuart, 1967; Stuart, 1971; Mahoney, Moura, Wade, 1972; Thoresen and Mahoney, 1972) suggests that the problem is due primarily to a combination of here-and-now environmental stimuli (the antecedent cues) and reinforcing variables. The purpose of this n=1 intensive research design is to apply certain behavioral techniques to a 23 year old, white, female graduate student in counseling psychology. This student found that after having written a paper (J. Shapiro, 1972) reviewing feminist literature and its implications for counseling, she had in addition put on several pounds. She decided that simultaneously with liberating herself from the restraints of a sexist society, she had also to liberate herself from the restraints of excess flesh. Thus is a research project born.

Method

Subject and setting: The subject was a 23 year old white, female counseling psychology graduate student at Stanford. The setting was her natural environment.

Procedure:

1) Defining the problem: The problem behavior was defined in two ways. First, the subject felt she was overweight and wished to lose weight. Secondly, she wished to modify poor eating behaviors which fell into two categories: a) overeating, the antecedent behavior being stimulus control rather than hunger b) eating when the antecedent behavior was either tension or a need for reward, rather than hunger.

2)Setting behavioral objectives: After baseline data was collected through the use of self-observation and an a-b-c functional analysis (see attached data), the following behavioral objectives were agreed upon: By the end of two weeks, the subject would lose 2 or more pounds. By the end of two weeks, the subject would have reduced her completed inappropriate urges to eat (see explanation of intervention) from an average of 4.7 daily (baseline) to an average of 2 or less daily.

3)Formulating an intervention strategy:

a) The initial intervention consisted of a combination of self-observation and data collection for a period of one week while gathering baseline data. Using an a-b-c format, the subject monitored urges to eat inappropriately, number of times she followed through on these urges, and the consequent behavior. In addition, because it is generally recognized (Nelson and McReynolds, 1971; Homme, 1971; Thoresen and Mahoney, 1972) that coverant control must eventually lead to some tangible, observable consequence, the subject also kept public graphs of her weight and of the number of inappropriate urges which she carried out (see accompanying graphs, p.).

b) Because the goal was to create a behavior incompatible with inappropriate eating, the subject decided to construct an incompatible covert thought process. The following dual-pronged intervention was devised:
I) In the presence of overeating or inappropriate eating stimuli, the client would use a modified form of coverant control (cf. Homme, 1971, Mahoney 1970). The antecedent stimulus would be followed by a negative coverant, either in the form of an image (Cautela, 1967) or a self-statement (Meichenbaum, 1971); this in turn would be followed by a positive coverant, again either an image or a self-statement; finally, an HPB would reward this positive coverant. For the purposes of this study, HPBs were defined not only as highly likely, but also as highly desireable behaviors (Thoresen, 1972). HPBs were both tangible (coffee, juice)

and covert, eg., some positive image that served as a covert reinforcement. In addition, several lists of positive and negative coverants and HPBs were used (see accompanying data), to prevent adaptation to aversive properties or satiation with reinforcing properties.

II) An additional intervention was also used. The subject had previously noted that she responded extremely well to the standard nausea image used in covert sensitization (Cautela, 1967, 1971). Therefore, she designed two nausea and two self-control scenes, the latter of which was actually an example of self-modeling (see accompanying data). The purpose of the covert sensitization was to build up an avoidance response to the stimulus of certain situations which normally triggered inappropriate eating behavior (a candy machine, left-over food in the kitchen). The subject covertly went through one of these scenes on an alternating basis, using as a stimulus cue entering the bathroom.. The HPB which followed completion of the covert sensitization was leaving the bathroom, which quickly become a highly desireable behavior.

Data collection proceeded both while gathering baseline and during intervention. Data collection was organized in the following manner: Subject carried around a stack of 5x7 cards. On these cards was recorded the antecedent behavior of the inappropriate urge, the actual behavior (whether the urge was executed or coverant control employed), and the consequences (either covert or overt) following that behavior. The cards were also used to keep track of the number of times the subject employed covert sensitization while in the bathroom setting. In addition, the weight chart and the graph of urges were continued.

Before initiating the second phase of intervention (b), the subject first rehearsed both coverant control and covert sensitization. She variously imagined herself feeling anxious, wanting a reward, seeing a candy machine, sitting in the bathroom. Then, in her imagination, she followed these images by the appropriate intervention response. In this way, a successive approximation of

the desired covert behavior was achieved.

Results

Although in previous studies (McFall, 1971; Mahoney, 1972) self-observation has been shown to have a reactive effect, in this case it had no impact either on weight or on eating behavior. Urges to eat inappropriately were, almost without exception, acted on. Over the week of baseline data gathering, the subject's weight had increased by one pound. This finding is consistent with the results of a comparative weight control study by Mahoney, Moura, and Wade, which indicated that of all groups being compared, the self-observation group demonstrated the least amount of weight loss (Thoresen and Mahoney, 1972). It further confirms the hypothesis that self-observation alone, without any supplementary motivational influences, cannot effectively maintain behavior change.

Results of phase b of the intervention, however, were significant. Weight decreased from 126 pounds to 123 pounds, a weight loss of 3 pounds, which satisfied behavioral objective #1. Also, while the mean number of urges to eat showed an increase ($\overline{X}$ = 4.7 tp $\overline{X}$ = 5.2),

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Insert Table One here

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both the steps between phases and the slope changes between phases were significant at the .001 level (calculations are based on Owen White's "quickie slope," 1971, and Siegel's binomial test, 1956).

Similarly, the mean number of urges acted upon decreased from $\overline{X}$ = 4.7 to $\overline{X}$ = 1.5.

Insert Table Two here

In the case of urges actually completed, both the step and the progress change were significant at the .001 level.

TABLE ONE

URGES TO EAT

	A Baseline	B Intervention
Mean $\bar{X}$	4.7	5.2
Slope	x2.14	x1.26
Intersection	6.4	4.3
Step	÷ 1.48*	
Progress Change	÷ 1.69*	

TABLE TWO

URGES ACTED UPON

	Baseline	Intervention
Mean $\bar{X}$	4.7	1.5
Slope	x2.14	x1.11
Intersection	6.4	1.6
Step	÷ 4.0*	
Progress Change	÷ 1.92*	

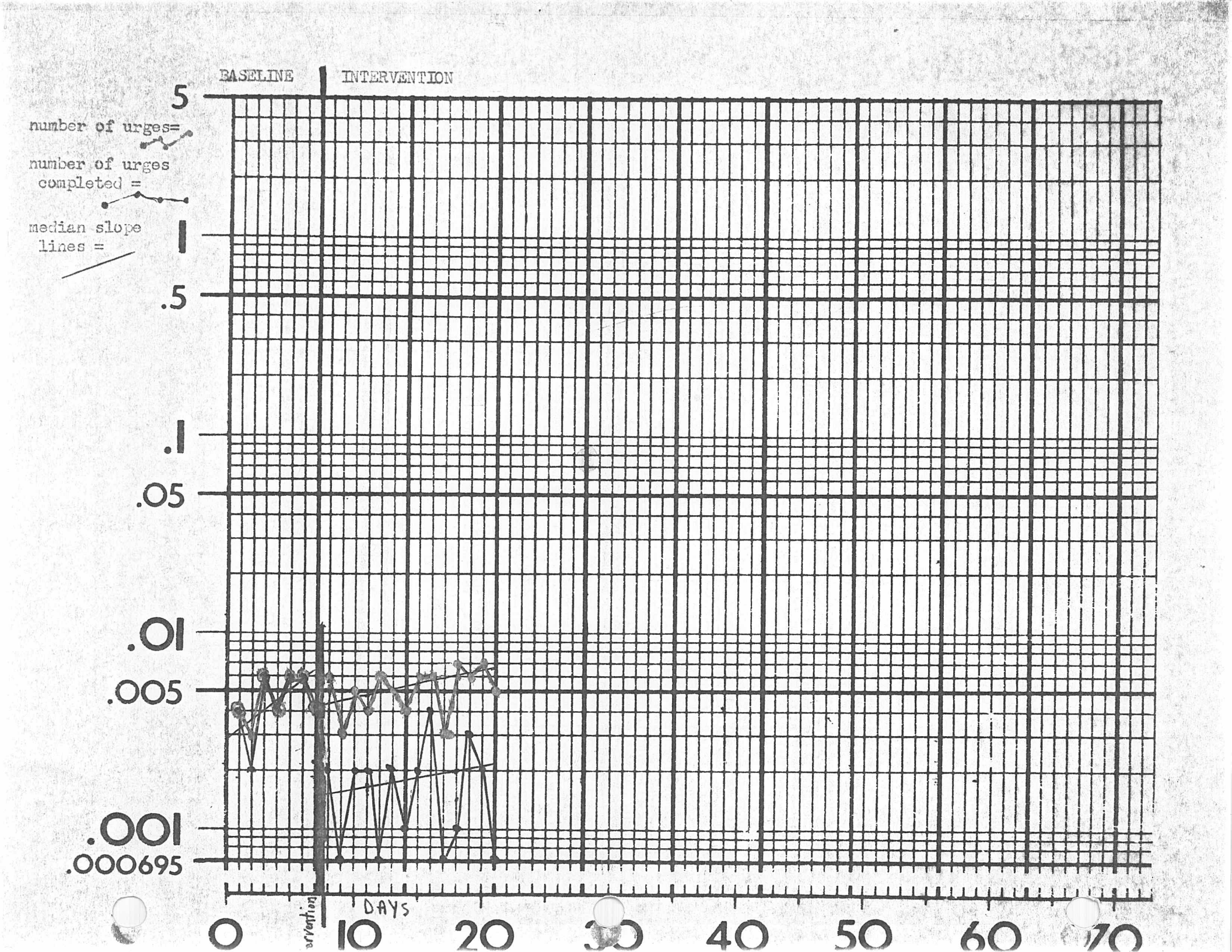
* p = .001

total maximum weight change = 3 pounds

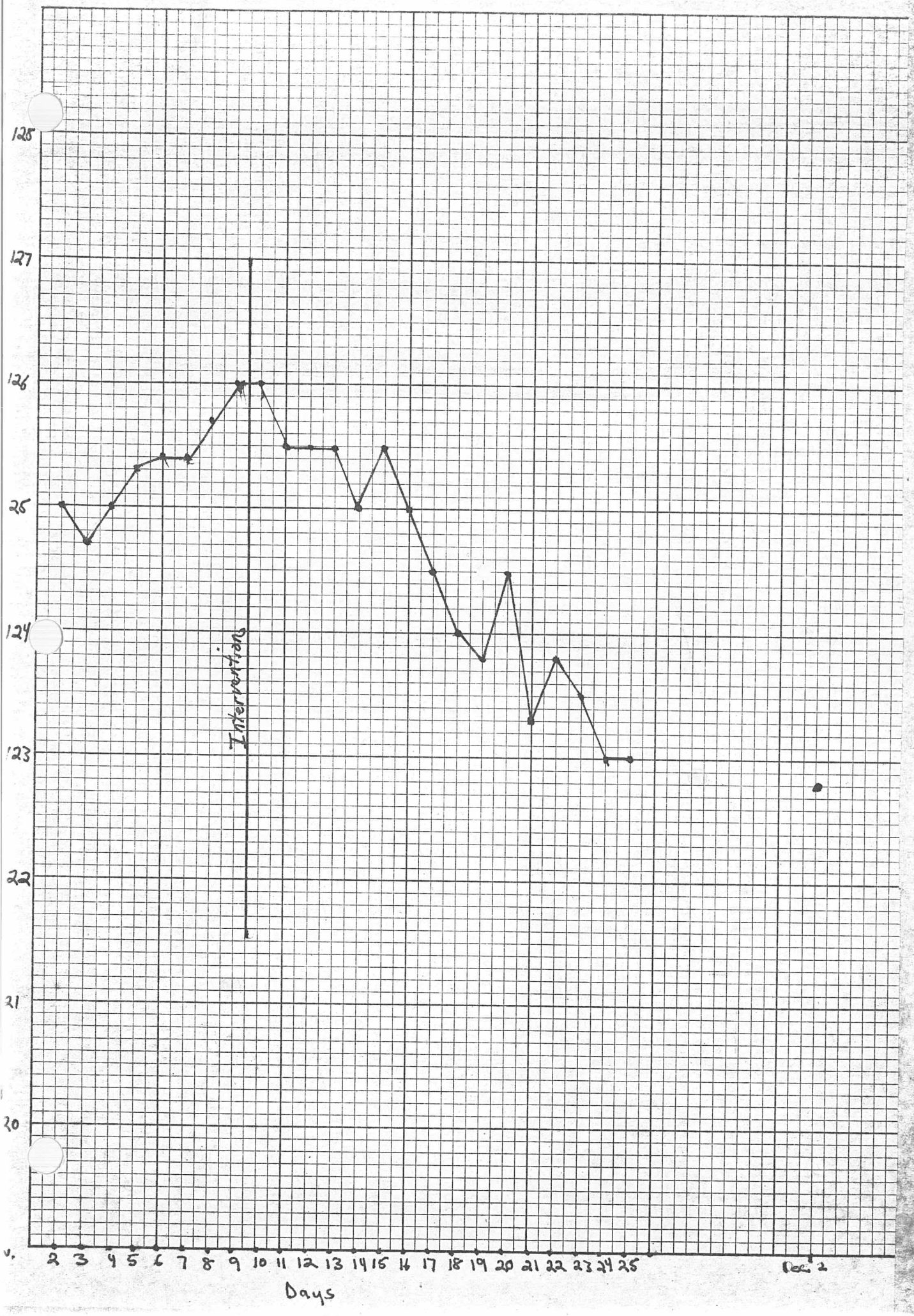
Discussion and Evaluation

While it is not possible to generalize the results of this study to other subjects and other settings, nevertheless it is possible to conclude that for this particular subject the intervention was quite successful. She achieved her behavioral objectives by losing three pounds and by reducing the number of completed inappropriate urges to $\bar{X} = 1.5$ per day. An additional benefit was that, according to self-report, her opinion of herself improved considerably. Reference to the a-b-c data cards reveals that her inappropriate eating behavior was generally followed by critical, negative self-evaluations. When her eating behavior improved, the number of positive covert self-statements she made about herself increased; consequently, her general self-image improved. A further advantage is that meeting the behavioral objectives set had the effect of modifying the natural environment: eg., the subject received much more social reinforcement for her physical appearance and for her eating habits. This development suggests the possibility of the subject maintaining the behavior change in the natural environment.

An informal follow-up one week after intervention had terminated showed that subject had maintained the reported weight loss. She still used some covert imagery in controlling her food intake, although on a more informal and sporadic basis. Self-report indicated she believed her eating habits to be improved; her general evaluation of herself remained positive.


BASELINE
INTERVENTION
5
number of urges=
number of urges completed =
median slope lines =
1
.5
.1
.05
.01
.005
.001
.000695
DAYS
0
10
20
40
50
60

WEIGHT CHART



APPENDIX

(see accompanying cards)

1. The a-b-c functional analysis
2. Intervention strategies
   - 2.1 Nausea scene
   - 2.2 Self-control scene
   - 2.3 List of aversive thoughts
   - 2.4 List of positive self-thoughts
   - 2.5 List of HPBs