

Cognitive Dissonance and Psychotherapy: The Role of Effort Justification in Inducing Weight Loss

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The role of effort justification in psychotherapy was examined. It was hypothesized that the effort involved in therapy, plus the conscious decision to undergo that effort, leads to positive therapeutic changes through the reduction of cognitive dissonance. An experiment was conducted in which overweight subjects attempted to lose weight through one of two forms of "effort therapy." These therapies were bogus in that they were based solely on the expenditure of effort on a series of cognitive tasks that were unrelated to any existing techniques or theory addressing weight loss. One of the therapies called for a high degree of effort while the degree of effort in the second therapy was low. A no-treatment control group was also included. It was predicted that greater weight loss would occur for high-effort than low-effort or control subjects, and that this weight loss would be maintained or increased over time. Results supported these predictions. Over an initial 3-week period, high-effort subjects lost slightly more weight than low-effort subjects or controls. A 6-month follow-up revealed that the effects of effort on weight loss had increased and were highly significant. Reliable differences remained even 1 year after the initial experimental sessions. Possible mechanisms mediating the dissonance effect were discussed, as were several alternative explanations. © 1985 Academic Press, Inc.

Several theorists have noted that psychotherapy is potentially a fertile arena for the application of social psychological principles (Brehm, 1976; Frank, 1961; Goldstein, Heller, & Sechrest, 1966; Strong, 1978; Weary & Mirels, 1982). Frank (1961), for example, has characterized therapy as a relationship between a sufferer and a socially sanctioned authority who attempts to produce certain changes in the emotions, attitudes, and behaviors of the sufferer. Clearly this implies the importance of social psychological processes dealing with attitude change and social influence. These would seem to have an important bearing on the interpersonal influence setting we call psychotherapy.

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Recent evidence suggests that one approach applied to the study of attitude change—the concept of effort justification derived from cognitive dissonance theory (Festinger, 1957)—might be at the base of much psychotherapeutic change (Cooper, 1980; Cooper & Axsom, 1982). Effort justification concerns the consequences of engaging in an effortful activity in order to obtain some goal. The fact that one has engaged in an effortful event is discrepant from the notion that one does not usually engage in such effort. And for what purpose? In the typical effort justification sequence, either the goal or the means of achieving that goal is not attractive initially. In the classic experiment by Aronson and Mills (1959), subjects in a high effort condition were made to undergo an event that was difficult and embarrassing. Their goal was to join a sexual discussion group which was, in reality, dull, boring, and a general waste of time. Yet, subjects who underwent the highly effortful procedure came to indicate that the group and its members were generally interesting and enjoyable. The reason given by Aronson and Mills was based upon the tension state of dissonance that was created by the voluntary expenditure of effort. “Why did I undergo such embarrassment and effort?” a subject may have questioned. “Because I really did like the discussion group,” might be the reply. In other words, the goal was elevated in attractiveness as a way of justifying the expenditure of effort.

Similarly, psychotherapy typically involves a patient volunteering for an effortful and sometimes emotionally draining process. A client may fear certain objects, find relationships with others unpleasant, or find it noxious to behave in certain socially adaptable ways. Yet, in any of the myriad of procedures generically called psychotherapy, clients often make changes in their attitudes, emotions, and behaviors. The goals—be they increased interaction with phobic objects, better interpersonal relations, or more socially adaptable behavior—become more acceptable or attractive. At least part of this change may result from an attempt to justify the expenditure of effort, just as in Aronson and Mills’s study the discussion group became more attractive.

Cooper (1980) conducted a pair of experiments to test the role of effort justification in psychotherapy. He reasoned that if generic effort influenced therapy outcomes, then any form of effort, regardless of whether it is tied to a conventional form of psychotherapy, should have the potential to be effective. He constructed a bogus therapy made up of physical exercises (jumping rope, running in place, etc.) and presented it to subjects who were either fearful of snakes (Study 1) or unassertive (Study 2). In each case the effort therapy was compared to a more conventional therapy—implosion (Stampfl & Levis, 1967) in Study 1 and behavior rehearsal (Salter, 1949) in Study 2—that had been rated in pretesting to be of equal effort as the exercise therapy. A second variable, decision freedom to engage or not engage in the studies, was also varied. According

to dissonance theory, the effort justification sequence should be invoked only under conditions of an informed choice (Linder, Cooper, & Wicklund, 1968). Results in both studies supported a dissonance interpretation. The bogus, effort therapy was as successful as the conventional therapies with which it was compared, but only when decision freedom was high; when decision freedom was low neither the effort therapy nor the conventional therapies were successful.

The conclusion from Cooper's experiments is that the voluntary expenditure of effort is at least one of the effective ingredients in psychotherapy, regardless of whether that effort forms part of a traditional therapy or whether it is improvised in a series of physical exercises. Exercise therapies or traditional therapies may be effective in promoting change, as long as they are engaged in voluntarily. However, several important questions remain unanswered. First, the notion that effort leads to positive changes in psychotherapy has yet to receive a direct test. This is because neither of Cooper's experiments used *variations* in effort as an independent variable. To the extent that effort justification is involved in psychotherapy, it should be shown that variations in the degree of effort will lead to variations in the degree of change that ensues.

Equally important is the question of duration of change that occurs as a result of effort justification. Both of Cooper's experiments involved single-session therapies with change measured immediately after the session. While this is a typical procedure in laboratory experiments involving attitude change, it is not parallel to the desired outcome of psychotherapy. Change as a result of therapy is anticipated to be more long lasting, and an assessment of the effort justification procedure should be based not so much on an immediate assessment as by its long-term consequence. There are only a few reports in the dissonance literature of cognitive changes lasting well beyond the experimental session (e.g., Freedman, 1965). So, the question of duration of consequences takes on enormous significance in assessing the appropriateness of the conceptual analysis that is based upon the psychology of effort justification.

The focus of the present experiment was weight loss. This problem offers unique advantages for an experimental study of effort justification procedures. First, there are objective and nonreactive measurements available for body weight that can be easily and repeatedly sampled. Second, the dependent measure thoroughly defines the criterion of a successful therapy, since weight loss represents the specific goal of treatment (Wollersheim, 1970). It was predicted that subjects freely choosing to undergo highly effortful sessions would produce the greatest weight loss, relative to those in a lower effort therapy and a control group. In addition, weight loss resulting from highly effortful sessions was expected to be maintained or even increased over time. This is because effort justification is assumed to enhance the goal of therapy (i.e., increase the

attractiveness of the goal of weight loss), a change which should endure beyond the initial sessions and continue to influence weight change.

METHOD

Subjects

Subjects were recruited via newspaper advertisements for an "Experiment concerning possible methods of weight reduction." They were contacted by phone for scheduling and were assured that the procedure would be safe and would not include any medication. Because initial response to the advertisements was overwhelmingly by women, only females formed the final subject pool. Also to increase subjects' homogeneity, only those 18 and older who were between 10 and 20% above "desirable body weight" according to the Metropolitan Life Insurance Company statistics (1959) were solicited. No one receiving therapy or medication for their weight was included. Finally, only subjects who lived within 20 min traveling time to the laboratory were included, since extraordinary distances could affect the manipulation of effort.

Sixty-eight subjects who fulfilled the above requirements began the experiment. They were randomly assigned to conditions. Each was paid at the rate of \$1 per session. Fifteen subjects were lost through attrition. Chi-square analyses failed to reveal any relationship between experimental conditions and the decision to terminate ($\chi^2(4) = 1.64, n.s.$).¹ In addition, data from one subject were omitted when she arrived at two consecutive sessions too late to complete the full procedure. Fifty-two subjects comprised the final sample.

Procedure

General overview. A 2 (Level of Effort) \times 2 (Level of Choice) between-subjects design with an external control group was utilized. Subjects attended five sessions over a 3-week period. They attended two sessions during each of the first 2 weeks and one during the final week. To minimize extraneous influences on weight change, sessions for each subject were scheduled at the same time of day and the same days of the week throughout. Six months after the experimental sessions were completed, a final weighing session was conducted.

The choice variable. Subjects in the four experimental conditions were met by a female first experimenter who measured and recorded their weight.² She then administered the choice variable. Subjects in the high-choice conditions were told: "I have been instructed to advise you that although the procedures you will follow are perfectly safe and harmless, they may also be effortful and anxiety producing. If you like, you can stop the experiment now and you will be paid for this session. Would like to continue?"

A Princeton University Informed Consent form was then given to be read and signed. This stated, in part, "I may withdraw my consent and discontinue participation in the project at any time." As the form was being read, the weigher emphasized, "As you notice on the form, you may withdraw your consent and stop at any time . . . you still have the prerogative to stop participation later."

Subjects in the low choice condition were not asked whether they wanted to continue. Subjects were merely warned about the potential effort and anxiety, then told, "We'll go ahead and begin."

¹ Reported reasons for dropping included loss of interest, outside interference such as sudden job changes, and unexpected transportation problems which prevented participation. Attrition rate by condition: high effort, high choice (HEHC) = 29%; high effort, low choice (HELHC) = 27%; LEHC = 27%; LELC = 23%; control = 9%.

² Subjects were weighed in indoor clothing and without shoes.

The second experimenter introduced himself and administered a "Life Pattern Questionnaire" concerning everyday eating and exercising patterns and other activities that might be useful in interpreting weight change data. It was also administered to increase the perceived legitimacy of the procedure. All subjects were then given a small booklet in which to monitor their eating over the 3-week period. This, too, was partly to increase the perceived legitimacy of the procedure.

The second experimenter explained the rationale for the study by noting that psychologists have frequently found strong correlations between heightened neurophysiological arousal and increased emotional sensitivity. The present researchers, he added, had been able to take advantage of this by presenting subjects with various tasks designed specifically to increase this neurophysiological arousal and thereby to enhance emotional sensitivity in a way that helped lead to weight reduction. He then explained that although the procedure had been very successful in the preliminary investigations, the precise reasons for the weight loss obtained were still uncertain and that the present study was to make the process clearer.

The tasks were described as requiring much concentration and consequently as being neurophysiologically arousing and sometimes stressful. The subject was assured that this arousal and stress would be brief and not last beyond any session. In keeping with the cover story, all subjects were attached to a galvanic skin response (GSR) apparatus (*ostensibly* to measure their level of arousal) while performing the tasks described below.

The effort variable. Effort in the present experiment was manipulated by varying the difficulty and duration of a variety of cognitive tasks, the tasks and parameters chosen being established through pretesting. Subjects in the high-effort conditions worked for 20 min at a three-channel tachistoscope. Their task was to discriminate which of several near-vertical lines presented sequentially was most vertical. Each line was visible for only 350 ms. Those in the low-effort condition worked for 3 min and were given a full 1s to view each line.

Subjects then moved to a delayed auditory feedback (DAF) apparatus. High-effort subjects were given 30 min of recitation in which they attempted to recite nursery rhymes, read a short story, and recite the U.S. Pledge of Allegiance with their own voice reflected back to them via earphones at a delay of 316 ms. The delay was similar to that used by Zimbardo (1965) in his manipulation of high effort. In addition, the voice of a woman attempting similar tasks during pretesting was overlaid onto the recorder so that the subject not only had to contend with the delay, but also with yet another voice. Low-effort subjects worked for only 10 min and the auditory delay was cut in half (158 ms). This reduced delay, accomplished by increasing tape speed, also rendered the voice distraction incomprehensible and therefore less disruptive (Mackworth, 1970).

To avoid the potential confounding of session length with level of effort, subjects in the low-effort condition, after completing the T-scope task, returned to the waiting room to relax for 40 min before finishing the session. This procedure, which is similar to that used by Wicklund, Cooper, and Linder (1967), was explained to low-effort subjects as being necessary to allow the arousal due to the T-scope task to dissipate before beginning the next task.

Upon finishing the final task, the subject completed a brief questionnaire concerning her impression of the session. Most importantly, she was asked, "In general, how effortful would you describe the hour as a whole?" This was followed by a 7-point response scale labeled *very little* and *very much* at the end points. The subject then returned to the weighing room for the final choice manipulation. For high-choice subjects, the first experimenter stated, "I'll remind you again that you can still stop the experiment and be paid for what you've done so far. Would you like to continue?" When the subject acknowledged that she wished to continue, she was given an appointment card containing the time and date of the next session. Low-choice subjects were merely given the appointment card without any mention of a new decision.

Sessions 2-4. The following three sessions were similar to the first. The Life Pattern Questionnaire was not administered during these sessions and the cover story was not repeated. The sessions contained T-scope and DAF tasks that were of the same durations as those of Session 1, although the content of the visual discriminations and DAF reading tasks were altered to relieve possible boredom. High-choice subjects resigned the consent form and were reminded of their choice at the end of each session.

The final experimental session. Session 5 contained the final assessment of weight change during the experimental period. The effort tasks were not given. The second experimenter, still unaware of the subject's choice condition, weighed the subject and then informed her that her participation in the study was completed. He asked the subject to fill out a questionnaire that covered various weight-related topics and the subject's perceptions of the study. Crucial were two final manipulation checks: "How effortful would you describe the experiment as a whole?" (1 = *very little*; 9 = *very much*); and "How free did you feel *not* to continue with the experiment at any time?" (1 = *not free to choose*; 9 = *very free to choose*). Next the Life Patterns Questionnaire was readministered. Finally, the subject was carefully questioned about any suspicions she may have had about the purpose of the study, fully debriefed, and paid for her participation. The need for deception and the importance and possible implications of the study were discussed at length.

Control group. To provide a baseline indication of normal weight fluctuation among subjects in our sample, 10 subjects from those who responded to the advertisement were randomly assigned to a control condition. When contacted to begin, they were told that they would be unable to participate as originally planned due to a change in the procedure that meant using fewer participants. They were then asked to engage in a project "to determine normal female weight fluctuation over time." Control subjects also participated in five sessions, scheduled in a similar fashion as the experimental subjects. They were simply greeted and weighed during each session. The Life Patterns Questionnaire was administered at the first and fifth sessions. A shortened version of the final questionnaire was also administered at the fifth session. It was emphasized that this was not a weight reduction study, and that subjects should therefore simply carry on their normal daily activities. Dieting was left to their discretion.

The final assessment. Six months after the fifth session was completed, participants were contacted for a follow-up weighing. The subjects were unaware that they would be recontacted. Forty-two of the 52 subjects were able to return; 9 had since moved from the area or were unable to be reached; 1 had become pregnant. At this follow-up, subjects were given a copy of the results from the original experiment.

RESULTS

Checks on the manipulations. The amount of effort involved in the subjects' participation was assessed in two ways. First, at the end of each of the first four experimental sessions, subjects were asked to rate the effortfulness of the preceding hour (1 = *very little*; 7 = *very much*).³ A 2 (Choice) \times 2 (Effort) \times 4 (Sessions) repeated measures analysis of variance showed a significant main effect for effort (M high = 4.31 vs M low = 3.14), $F(1, 37) = 10.21, p < .005$. In addition, during the final session all subjects, including the control group, rated the effortfulness of the experiment as a whole (1 = *very little*; 9 = *very much*).⁴ This also indicated a main effect for effort, with high-effort subjects (M =

³ One subject provided effort ratings at only 3 of 4 sessions.

⁴ Two subjects left this question blank.

5.00) rating the study as more effortful than low-effort subjects ($M = 3.62$) or controls ($M = 2.78$), $F(1, 45) = 7.99$, $p < .01$.

Results from the perceived choice manipulation checks revealed that, because of an apparent ceiling effect, the manipulation of this variable was not effective. For example, at the final session, the subject was asked how free she felt not to continue with the experiment at any time. Of the 41 subjects in the experimental groups who responded to this question, 56% marked the highest level of choice. In fact, even 40% of the low-choice subjects responded this way. In retrospect, the problem with the manipulation of choice could have been expected. Subjects came to the university from various locations in the community. They returned for several sessions. Attempting to convince low-choice subjects that they were not at all free to discontinue the experiment would have strained ethical considerations as well as credibility. Rather, we remained silent about choice considerations to low-choice subjects and instead emphasized the high degree of decision freedom to those subjects assigned to the high-choice conditions. Since freedom was apparently already assumed to be high by the participants, our manipulation had little differential impact. Because perceived choice was high in all conditions, subsequent analyses are collapsed over the choice variable.

Weight loss: Data from session 5.^{5,6} Since perceived choice was high in all groups, the effort justification hypothesis predicts that subjects in the high-effort condition would lose more weight than those in the low-effort or control conditions. Weight change at the immediate conclusion of the experimental sessions can be seen in the first column of Table 1.⁷ Consistent with dissonance predictions, high-effort subjects produced the greatest weight loss. A contrast of this condition with low-effort and control subjects was statistically reliable, $F(1, 49) = 5.96$, $p < .02$. Also, t tests, adjusted for the number of possible comparisons, revealed that only in the high-effort condition was weight deviation significantly different from zero, $t(20) = 4.11$, $p < .02$. While the pattern of these results is

⁵ Subjects' initial weight did not differ by experimental conditions (in pounds: high effort = 149.85, low effort = 149.30, control = 148.90; $F < 1$).

⁶ Since the duration of this portion of the experiment was short and weight changes were expected to be small, data on each subject's menstrual cycle were also collected (during the fifth session). This was to ensure against any spurious weight change effects resulting from water retention (congestive dysmenorrhea) coinciding with menstruation. Analyses of the menstrual data showed that only a small number of subjects had either started or finished their sessions around menstruation and that these subjects were equally distributed across conditions.

⁷ For clarity of presentation, weight change analyses reported are based on difference scores. The crucial assumptions behind the use of difference scores, namely that within-group regression coefficients relating initial to final weight are homogeneous and equal to 1.00, are both satisfied (b 's for high effort, low effort, and the control were, respectively, .97, 1.01, and 1.01).

TABLE 1
MEAN WEIGHT CHANGE (IN POUNDS)

Effort condition	Time of measurement		
	After 3 weeks	After 6 months	After 1 year
High	-1.76 (21)	-8.55 (16)	-6.78 (20)
Low	-.82 (21)	-.07 (18)	-.44 (21)
Control	+.18 (10)	+.94 (8)	-1.86 (9)

Note. N's per cell are in parentheses.

statistically reliable and in the predicted direction, it is obvious from examining the means that a dramatic shift in weight did not occur over the five sessions. An important question, then, concerns the magnitude and duration of weight change over a longer period.

Weight loss: The final measure. Encouraged by the direction if not the magnitude of the results, we proceeded with the final dependent measure: the 6-month follow-up. As Table 1 indicates, dramatic differences

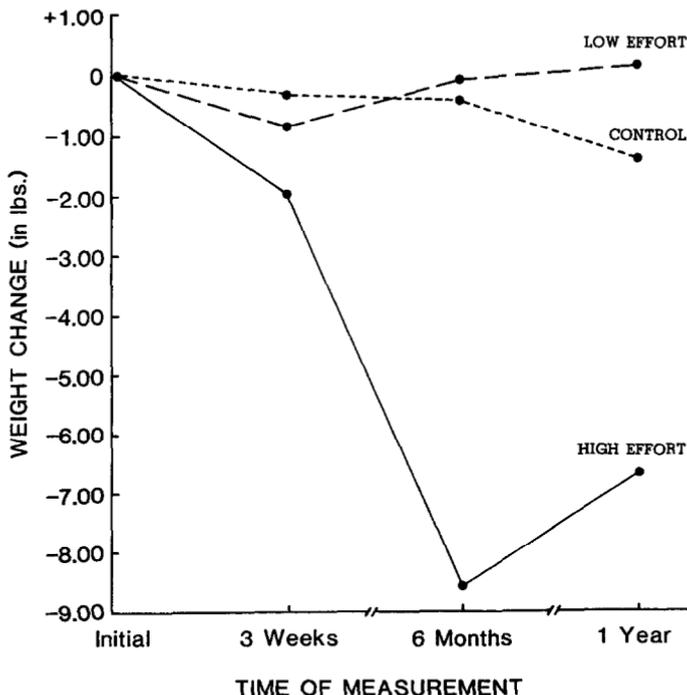


FIG. 1. Weight change for subjects providing data at all four measurement points. Note: N's for high effort, low effort, and control are 16, 18, and 7, respectively.

had developed over the 6-month period. High-effort subjects were now over 8 pounds lighter than their initial weight, whereas low-effort and control subjects had changed little. A contrast of high-effort with low-effort and control conditions was highly significant, $F(1, 39) = 25.56$, $p < .001$. Fifteen of the 16 high-effort subjects who reported for the final measure had lost weight, compared to only 7 of 18 low-effort and 4 of 8 control subjects, $\chi^2(2) = 12.74$, $p < .01$.

Weight loss: One more time. One year from the date of the initial experimental session, subjects were contacted once again. By this time, many had either moved or otherwise changed situations so that they could no longer return in person for the weighing. These subjects weighed themselves at home and reported their weight by phone. As a result, data were obtained for 50 of the 52 original subjects. Analyses using only those subjects who returned to be weighed in person were similar to findings based on the full subject pool, so only the latter are reported. As Table 1 indicates, weight loss remained largest in the high-effort condition, and a contrast of this group with low-effort and control subjects was highly significant, $F(1, 47) = 6.67$, $p < .02$. One full year after participating in the experimental sessions, 90% of high-effort subjects were below their initial weight, versus only 48% of low-effort and 56% of control subjects.

Trend analysis. Another way of examining weight change over time is to focus only on those 41 subjects for whom data are available at all measurement points: initially, after 3 weeks (end of five sessions), after 6 months, and after 1 year. A 3 (Effort) \times 4 (Time) repeated measures analysis of variance revealed a significant Effort \times Time interaction, $F(6, 114) = 4.29$, $p < .001$. This interaction can be partitioned into several orthogonal components. The effort justification hypothesis would predict that high-effort subjects would lose weight at a faster rate than subjects in the remaining groups. The specific test of this prediction—that the contrast between high effort and the remaining two conditions will interact with the linear component of time—is significant, $F(1, 114) = 8.16$, $p < .01$.⁸ The pattern of weight change indicated by this interaction is shown graphically in Fig. 1.

DISCUSSION

The weight loss observed in the high-effort cells was both substantial and consistent. Since subjects were initially an average of 17 pounds overweight, high-effort subjects—who lost an average of 8.55 pounds over the first follow-up—were able to achieve a 50% reduction in excess

⁸ Also reliable, largely because the high-effort group gains slightly from the first to second follow-up, is the high effort versus low effort/control contrast and the cubic component of Time, $F(1, 114) = 13.60$, $p < .001$.

weight. The chief issue to be addressed, then, is not whether positive therapeutic change occurred, but rather whether effort justification processes can account for this change.

The results offer clear support for the role of effort in instigating the weight reduction. But the weakness of the choice manipulation makes a final interpretation less clear than would be desired. The notion of effort justification predicts weight loss for participants who engaged in a high degree of effort and who perceived their freedom to participate to be high. Since an overwhelming proportion of subjects perceived their freedom to be high, the effects found for the effort variable are consistent with the effort justification approach.

The dramatic amount of weight change that occurred during the 6-month period following the experimental session stands in marked contrast to the marginal degree of weight change that occurred immediately after the experiment. Of course, weight change takes time and it is not surprising that only a few pounds could be changed during the 3 weeks of the sessions. But this weight loss was not only maintained over the half-year period, it was markedly increased by those subjects in the high-effort conditions. Why should this have happened? Long-term changes as a function of laboratory intervention are not commonplace in the literature.

Our supposition, based upon the concept of effort justification, is that dissonance processes operated to increase the attractiveness of the goal of weight loss. Just as Aronson and Mills' (1959) subjects who underwent effort viewed the goal of belonging to the discussion group with greater attractiveness, so too do we believe our subjects came to view the goal of losing weight with more zeal and fervor. As a result, subjects in the high-effort conditions pursued that goal regardless of how successful they might have been during the five experimental sessions.

It is always difficult to gain direct evidence of dissonance processes, but it may be possible to examine some alternative explanations of the results. For example, it could be argued that subjects who saw they were able to lose a little weight at the end of five sessions gained a feeling of mastery which, in turn enabled them to accelerate their weight loss after 6 months. The data are not consistent with this explanation, however. The data show little relationship between weight loss during the initial experimental sessions and weight loss over the first follow-up (for the high-effort group, $r(14) = .07$). High-effort subjects showed consistent weight loss after 6 months *regardless* of whether they had lost weight by the end of the experimental sessions. Similarly, low-effort subjects' weight loss could not be predicted from their weight loss at the end of the five sessions.

A related alternative explanation for the data is that high-effort subjects

may have formed differentially higher expectations about the therapy's potential outcome. These high expectations may have led to stricter adherence to some self-prescribed regimen that resulted in weight loss. Those who initially lost weight might have formed what Ross, Lepper, and Hubbard (1975) have referred to as antecedent-consequent explanations for why they were losing weight. However, it is difficult for an expectation-based hypothesis to explain why those initially showing little or no weight loss would later lose. As we have already mentioned, the data reveal that high-effort subjects lost weight during the 6-month period regardless of whether they had initially lost or gained. This factor is more consistent with the effort justification hypothesis for it appears to be the goal of weight loss which becomes more attractive.

An additional consideration revolves around the initial debriefing. Of course, ethical considerations demanded that subjects be debriefed after the initial experimental sessions. Otherwise, subjects unable to be contacted 6 months later would never have been debriefed. Moreover, all subjects would have gone 6 months without knowing the essential features of the experiment. However, because subjects were partially debriefed (they were not informed that a follow-up was to occur), if subjects in the two effort conditions were treated differently at that session, then later weight changes might have reflected this. It might be argued that subjects in the high-effort conditions, having found themselves in a condition in which weight loss was expected, proceeded to lose weight via some self-fulfilling prophecy. Though possible, this explanation seems unlikely when the debriefing is examined more closely. If subjects lost more weight over the follow-up only after having learned that they had been expected to lose, then only high-effort-high-choice subjects should have continued to lose. High-effort-low-choice subjects would realize that they had not been expected to lose weight. At the time of the debriefing, we were not aware that subjects assigned to the low-choice condition had perceived high decision freedom. Nonetheless, high-effort subjects in *both* choice conditions lost weight over the follow-up period, an effect which is inconsistent with a self-fulfilling prophecy explanation.

Of course, one direction for future research will be to collect more direct evidence on the presumed attitudinal and behavioral mediators of therapeutic change. The present experiment, however, in conjunction with the two experiments reported by Cooper (1980), adds to the confidence with which the concept of effort justification can be applied to psychotherapy. In the present experiment, the concept of effort was expanded to include cognitive tasks and the data showed that variations in this type of effort led to systematic differences in the amount of weight which participants lost. Although the findings were of a small magnitude at the conclusion of the five experimental sessions, the amount of weight lost after a 6-month period by subjects who had undergone a highly effortful

procedure was considerable. The extension over time adds important new dimensions to research in effort justification, particularly as it pertains to research on psychotherapeutic outcomes.

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