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How Can Obese Weight Controllers Minimize Weight Gain During the High Risk Holiday Season? By Self-Monitoring Very Consistently

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This study examined the efficacy of augmenting standard weekly cognitive–behavioral treatment for obesity with a self-monitoring intervention during the high risk holiday season. Fifty-seven participants in a long-term cognitive–behavioral treatment program were randomly assigned to self-monitoring intervention or comparison groups. During 2 holiday weeks (Christmas–New Years), the intervention group's treatment was supplemented with additional phone calls and daily mailings, all focused on self-monitoring. As hypothesized, the intervention group self-monitored more consistently and managed their weight better than the comparison group during the holidays. However, both groups struggled with weight management throughout the holidays. These findings support the critical role of self-monitoring in weight control and demonstrate the benefits of a low-cost intervention for assisting weight controllers during the holidays.

Key words: obesity, treatment, self-monitoring, weight control, holidays

According to self-regulatory theories (e.g., Baumeister, Heatherton, & Tice, 1994; Carver & Scheier, 1990; Kanfer & Karoly, 1972; Kirschenbaum, 1987), self-monitoring should play a vital role in effective weight control. For example, self-monitoring (the systematic observation and recording of target behaviors) should lead to sustained efforts to match behaviors to goals if attributions, evaluations, and expectations are positive enough to support such efforts. In accord with these predictions, consistency of self-monitoring often correlates with weight loss (e.g., Guare et al., 1989; Sperduto, Thompson, & O'Brien, 1986; Stalonas & Kirschenbaum, 1985).

Despite compelling empirical evidence and persuasive theoretical arguments, self-monitoring remains a secondary focus in treatments of obesity (Baker & Kirschenbaum, 1993). Treatment protocols almost always include self-monitoring, but consistency of self-monitoring is rarely assessed. The term *consistency of self-monitoring* reflects not only the frequency of self-monitoring but the completeness and quality of self-monitoring. Methods of improving the consistency of self-monitoring for weight controllers have not as yet been tested. Therefore, this study investigated the degree to which an intervention focused on improving consistency of self-monitoring would help weight controllers during a high risk holiday season.

Research on problematic situations for weight controllers supports the anecdotal perception that the holidays serve as a protracted challenge (e.g., Drapkin, Wing, & Shiffman, 1995; Klesges, Klem, & Bene, 1989; Schlundt, Sbrocco, & Bell, 1989). Thirty-five percent of Drapkin et al.'s (1995) 93 weight controllers identified family celebrations as their most difficult high risk situation. Head and Brookhart's (1996) 250 weight controllers noted that the most frequently encountered high risk situations involved the classic holiday setting: away from home, changes in normal routines, socializing and entertaining, and food temptations. In accord with these studies, Thanksgiving produced the expected problems for overweight restrained eaters in a study by Klesges et al. (1989). These participants responded to Thanksgiving by eating 32% more during the 4 days of that weekend compared with the 2 days before and after the holiday.

One way to encourage weight controllers to maintain the consistency of their self-monitoring during such high risk periods may be to increase therapist contact. Amount of

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therapist contact has emerged as a significant factor in weight control on the basis of correlational analyses within treatment programs (e.g., Beliard, Kirschenbaum, & Fitzgibbon, 1992), meta-analyses (e.g., Bennett, 1986), and experiments that directly compared treatments of varying lengths (Baum, Clark, & Sandler, 1991; Perri, Nezu, Patti, & McCann, 1989). The content or components of the contact seem far less critical than the amount and frequency of the contact in both weight control (Perri, Nezu, & Viegener, 1992) and other related contexts (e.g., Lombard, Lombard, & Winett, 1995). Therapeutic contact may increase self-focused attention (see Carver & Scheier, 1990), self-monitoring, and related processes that promote more effective self-regulation (see Baumeister et al., 1994; Kanfer & Karoly, 1972; Kirschenbaum, 1987). Increased therapeutic contact during high risk situations may be particularly useful if it focuses very explicitly on maintaining self-monitoring (Baumeister et al., 1994; Kirschenbaum, 1987).

It would be especially notable if experienced participants in an intensive long-term weight-control program showed evidence of the beneficial effects of increased therapeutic contact focused on self-monitoring. These participants generally report more depression and other problems that can interfere with effective weight control compared with overweight individuals who are not in such programs (Fitzgibbon, Stolley, & Kirschenbaum, 1993). If more consistent self-monitoring seems to help these experienced weight controllers cope more effectively during the holidays, then the vital role of self-monitoring in weight control should be strongly reinforced. Therefore, this study examined the usefulness of increasing therapist contact through phone calls and mailings to promote self-monitoring and improve weight control during the high risk Christmas-to-New-Year holiday season.

Method

Participants

Fifty-seven people (41 women, 16 men) from two long-term cognitive–behavioral treatment programs for obesity volunteered to serve as participants. The participants had participated in the treatment programs for an average of 17.1 (range = 1 to 120) months. Participants met the following criteria: (a) involved in the cognitive–behavioral treatment program for at least 1 month, (b) identified by their therapists as self-monitoring less than 100% of the time during the last 6 months, (c) available to be reached by phone during the 2-week intervention period, and (d) not currently on an Optifast regimen (liquid protein sparing fast). Eight participants who met criteria were excluded because they were unreachable for part of the time. Although this study was conducted partly on the same site as related prior research (Baker & Kirschenbaum, 1993, 1998), none of the participants overlapped.

Participants' mean weight at the beginning of this study was 223.2 lbs. (SD = 55.6) with an average Body Mass Index (BMI) of 35.5 (SD = 7.3). These participants had lost an average of 33.2 lbs. (SD = 27.3, range = −.6 to −122.0 lbs.) in the program when this study began. Fifty-three of the participants were Caucasian (93%), 3 were African American (5.3%), and 1 was Hispanic (1.8%). Participants' mean age was 44.5 (SD = 10.0). Thirty-five percent of the sample were single; 53% were married; and 12% were separated, divorced, or widowed. In addition, the sample was well educated (9% completed only high school; 14% had attended some college; 35% had a college degree; 39% had a graduate degree; and 4% reported their education as "other").

Group Assignment

Prior to randomization into intervention and comparison groups, participants were stratified by gender. Intervention and comparison groups were compared on demographic variables (age, gender, weight, BMI, age first became overweight, months in the program, weight lost in the program, education, and marital status) with a multivariate analysis of variance (MANOVA) and appropriate nonparametric tests. Those analyses revealed that the intervention and comparison groups did not differ significantly on any of the variables. Correlational analyses also showed that none of these variables was significantly related to weight loss during this study (e.g., weight change prior to the study and weight loss, r = .014).

Procedures

Participants were provided with 4 in. × 6 in. self-monitoring booklets (30 pages each) that included columns for describing food intake, counting fat and calories, and exercise. Participants were already using a similar self-monitoring booklet in their treatment. Participants were encouraged to self-monitor as soon as possible after consumption.

Participants monitored for a total of 8 weeks: 3 weeks before the holiday period (preholiday), 2 weeks during the holiday period (1 week before Christmas through New Years), and 3 weeks after the holiday period (postholiday). Three weeks before and after the intervention was chosen to maximize data collection without encompassing the Thanksgiving holidays.

All participants continued participating in a weekly cognitive–behavioral treatment program throughout the study (see Beliard et al., 1992; Kirschenbaum, 1994). Therapy was provided by 3 experienced Ph.D. psychologists, 1 experienced social worker, and 1 advanced graduate student (M years of experience using cognitive–behavioral therapy to treat obesity = 11.8; range = 2–23). All participants were strongly and consistently encouraged to self-monitor their food intake daily, and their weights were recorded weekly. However, participants in the intervention group also received daily mailings and 1–2 phone calls per week during the holiday weeks. The mailings included reminder letters and information on self-monitoring and comics about weight control. The information on self-monitoring included in the mailings was derived from literature addressing the importance of self-monitoring in self-regulation (e.g., Baker & Kirschenbaum, 1993).

Participants in the intervention group also received one to two phone calls per week reminding them to self-monitor. If the participants reported that they had stopped monitoring, the therapist asked them to review their recent eating and exercising behaviors on the phone. Although there was no script for each phone call, the participants were consistently encouraged to monitor their eating and exercising in their monitoring booklets. If an answering machine was reached, the therapist called back at least one more time before leaving a message to remind the participant to monitor. Each participant was personally reached at least one time per week during the intervention period. Therapists were encouraged to call their own clients. If the therapist was unavailable, the first author phoned the participants.

Measures

Weight. Participants were weighed at each weekly meeting by the therapist. If participants missed a meeting, weight was recorded

as the average of the two known weights (before and after the missed meeting).

Self-monitoring. The dependent measure was consistency of self-monitoring; defined as the average weekly percentage of days during which self-monitoring was complete. Each participant was urged to turn in all of their monitoring booklets. The monitoring booklets were rated in accordance with their level of monitoring. The monitoring booklets were rated on recording "any" food and "every" food. Any food meant that the participant recorded at least one food during the day. Every food was identified by three clearly separate entries of foods during the day (following Baker & Kirschenbaum, 1993). Ten percent of the monitoring booklets were rated by 2 raters; reliability was calculated by counting the number of agreements/(agreements + disagreements) (Repp, Deitz, Boles, Deitz, & Repp, 1976). Interrater agreement was 97%.

We obtained a second evaluation of monitoring quality by using the therapists' ratings of how many days the clients monitored all foods during the week. Therapists rated participants' monitoring on a 8-point scale, with 0 representing *0 days monitored* and 7 representing *monitored every day.* For participants who monitored something each week, therapists' ratings were correlated with the independent raters' evaluations of participants' monitoring of any foods and every food ($ps < .0001$). In an effort to evaluate the most complete rating of self-monitoring, we decided that neither any nor every ratings were sufficient. Recall that the latter judgment required raters to determine if three distinct food entries occurred, something that did not occur sometimes. Yet, when the therapists inquired about completeness of self-monitoring, they were able to have participants show them whether or not they self-monitored completely. Therefore, we used therapist ratings to determine completeness or consistency of self-monitoring because those ratings seemed more veridical than judgments made by the raters.

Results

Weight Change

We assessed change in weight by evaluating weekly weight changes in pounds and changes in BMI. Because of concerns about the reliability of weight-change scores (see Cook & Campbell, 1979), the same variables were evaluated with weight in pounds as the dependent variable. Analyses showed very similar results for weight in pounds and BMI.

The cumulative pattern of weight change was of primary interest. A repeated-measures analysis of variance (ANOVA) was computed with one between-subjects factor (group-intervention, comparison) and one within-subjects factor (time). The dependent variable was weekly weight change, with Week 1 as a baseline. The analyses showed that the intervention group lost more weight cumulatively from Week 1, group $F(7, 48) = 4.60, p = .036$ (see Figure 1). In addition, there was a significant effect for the interaction, Group × Time, $F(7, 48) = 2.61, p = .019$. *T* tests using a Bonferroni correction for multiple comparisons evaluated this effect, critical $t(385) = 3.00, p = .007$. As hypothesized, the cumulative weight lost by the intervention group became significantly lower than the comparison group starting in the first week of the holiday phase (Week 4) and continuing throughout each subsequent week. The cumulative weight losses over the 8 weeks were intervention $M = -2.0$ ($SD = 5.4$) versus comparison $M = 2.0$ ($SD = 7.7$).

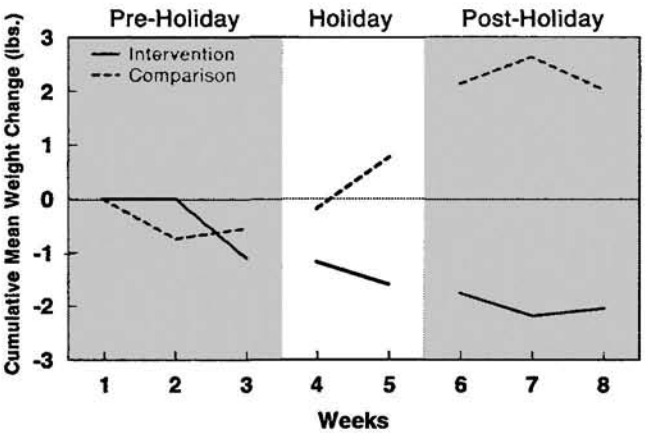

Figure 1. Mean cumulative weight change for intervention and comparison groups during preholiday, holiday, and postholiday weeks.

We computed another repeated-measures ANOVA to compare the intervention and comparison groups on average weight losses during each phase of the study (preholiday, holiday, postholiday). The Group × Phase ANOVA showed, as expected, that the intervention group ($M = -0.2$, $SD = 0.6$) averaged greater weekly weight losses compared with the comparison group ($M = 0.2$, $SD = 0.9$), group $F(1, 55) = 5.24, p = .026$. Overall, participants showed average weekly weight losses at both the preholiday ($M = 0.3$, $SD = 1.4$) and postholiday ($M = -0.1$, $SD = 1.1$) phases. In contrast, participants averaged weekly weight gains during the holidays ($M = 0.6$, $SD = 1.9$), producing a significant effect for time, $F(2, 110) = 6.95, p = .001$. Newman-Keuls multiple comparisons revealed that the participants gained more weight during the holiday period than the preholiday and postholiday phases ($p < .01$).

One interaction approached significance, Group × Time, $F(2, 110) = 2.70, p = .072$. A priori hypotheses led to follow-up analyses of the nearly significant effect using the weight-change data. These analyses showed that the intervention group managed their weight significantly better than the comparison group over the entire 8 weeks, $t(55) = 2.10, p = .04$, and during the holidays (intervention $M = 0.0$, $SD = 1.5$; comparison $M = 1.2$, $SD = 2.0$), $t(55) = 2.41, p = .019$.

Self-Monitoring

A repeated-measures ANOVA was computed with one between-subjects factor (group-intervention, comparison) and one within-subjects factor (time: preholiday, holiday, postholiday). Therapists' ratings on number of days in which all foods were recorded was the dependent variable.

The only significant effect showed that participants monitored much more consistently during the preholiday ($M = 75.7\%$, $SD = 29.5$) than during both the holiday ($M = 64.0\%$, $SD = 37.2$) and postholiday ($M = 60.9\%$, $SD = 34.9$) phases, $F(2, 110) = 9.19, p < .0001$. Post hoc evaluations showed that participants monitored more during the preholiday period than during the postholiday period,

$t(55) = 2.44$, $p = .016$. One other effect approached significance, group $F(1, 55) = 3.04$, $p = .087$. A priori hypotheses led to follow-up analyses of this nearly significant effect. These analyses showed that, as expected, the intervention group self-monitored more consistently than the comparison group only during the holidays (intervention $M = 75.5\%$, $SD = 31.0$; comparison $M = 53.0\%$, $SD = 40.0$), $t(55) = -2.38$, $p = .021$. Consistency of self-monitoring was also significantly correlated with weekly weight change, $r(55) = -.35$, $p = .007$.

Discussion

This study focused on the extent to which a self-monitoring intervention affected both self-monitoring and weight management by weight controllers during the Christmas and New Years holidays. As hypothesized, the intervention group self-monitored more consistently and managed their weight better than the comparison group throughout the holiday weeks. The intervention group also lost more weight during the 8 weeks of the study. As expected, a decrease in weight was significantly associated with an increase in monitoring. The effectiveness of the intervention was particularly noteworthy because all participants were experienced weight controllers, averaging 17 months in weekly treatment at the onset of the study (cf. Brownell, 1993).

The holidays demonstrated their high-risk qualities in this study. Both the intervention and comparison groups struggled with managing their weight over the holidays. This is demonstrated by the comparison groups' average weight gain of over a pound per week during the holidays. These results are consistent with findings from other studies that have reported weight gain among active weight controllers during the holidays (Baker & Kirschenbaum, 1998; Klesges et al., 1989).

These data provide further substantiation of the vital role of self-monitoring in weight control (Baker & Kirschenbaum, 1993, 1998; Sperduto et al., 1986). By improving the frequency of self-monitoring in weight controllers in this research, it is hypothesized that participants were better able to compare their actual behavior with a standard. The improvement of self-monitoring may have also resulted in effective self-evaluation and self-consequation, with concommitant attributions and expectations, thus maximizing self-regulation of weight (see Carver & Scheier, 1990; Kanfer & Karoly, 1972; Kirschenbaum, 1987).

It is not known which component of the intervention was responsible for improvements in self-monitoring and weight control compared with the comparison group. The phone calls from therapists, the content of the phone calls, or some aspects of the mailings (cueing change, content) all may have contributed to the beneficial effects. Interestingly, some participants stated that they received "too many [mailings] to read" or that a number of mailings were received in one day. Nine out of 26 participants indicated that they did not read all of the mailings. Perhaps the information in the mailings was less important than the therapeutic self-regulator processes stimulated by the increased contact by the therapist (cf. Perri et al., 1992). For example, the increased contact with therapists could have improved management of high-risk situations (Baum et al., 1991), increased self-monitoring through forced practice or externally prompted monitoring, or negatively reinforced self-monitoring (cf. Lombard et al., 1995).

The results from this study must be considered in the light of the inherent difficulties in this type of intervention research. The correlational nature of the relationship between self-monitoring and weight control cannot be overlooked. Although the results from this intervention suggest that self-monitoring leads to weight loss, it is possible that adherence to a low-fat, low-calorie diet and increased exercise could lead to greater self-monitoring and thus weight loss. The direction of this relationship deserves further empirical attention. Another difficulty to be considered is the self-reported nature of the data. It is possible that participants' self-monitoring was inaccurate, although such unreliable self-monitoring may still have beneficial self-regulatory effects (Baker & Kirschenbaum, 1993).

Lastly, the generalizability of this intervention must be considered. This intervention included participants who were generally experienced weight controllers. Since weight control is a difficult and refractory process, the idea of finding new weight controllers may be impractical. In addition, the honeymoon phase often experienced by new weight controllers (Kirschenbaum et al., 1992) might, if anything, enhance the effects of the present intervention's additional contact and attention.

This study also provides direction for improving weight management treatment (see also, Kirschenbaum & Fitzgibbon, 1995). Evaluation of consistency of self-monitoring may identify those clients who may benefit from additional contact, especially during high-risk periods. Of course, consistency of self-monitoring should become a routine focus in weight control treatment to implement this recommendation. Methods of improving consistency of self-monitoring could also include increasing therapist contact through additional sessions, telephone calls (see Perri et al., 1992), voicemail exchanges, faxes, and e-mails. Future research aimed at evaluating these and other methods of improving consistency of self-monitoring could prove very helpful. Efforts to understand more fully the differences between those who self-monitor consistently and those who do not monitor consistently might also have heuristic value.

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