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Hypnotic Enhancement of Cognitive–Behavioral Weight Loss Treatments—Another Meta-Reanalysis

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In a 3rd meta-analysis of the effect of adding hypnosis to cognitive–behavioral treatments for weight reduction, additional data were obtained from authors of 2 studies, and computational inaccuracies in both previous meta-analyses were corrected. Averaged across posttreatment and follow-up assessment periods, the mean weight loss was 6.00 lbs. (2.72 kg) without hypnosis and 11.83 lbs. (5.37 kg) with hypnosis. The mean effect size of this difference was 0.66 *SD*. At the last assessment period, the mean weight loss was 6.03 lbs. (2.74 kg) without hypnosis and 14.88 lbs. (6.75 kg) with hypnosis. The effect size for this difference was 0.98 *SD*. Correlational analyses indicated that the benefits of hypnosis increased substantially over time ($r = .74$).

Meta-analyses allow comparisons of outcomes among studies using different instruments to measure dependent variables. By standardizing scores, the effects of psychotherapy (Smith, Glass, & Miller, 1980) or of the addition of particular therapeutic procedures to therapy (Kirsch, Montgomery, & Sapirstein, 1995) can be assessed across a wide range of presenting problems. Even in studies assessing treatment effects on the same presenting problem (e.g., depression), the use of different measuring instruments may require the calculation of standardized effect sizes. The studies comparing weight reduction treatments with and without hypnosis present less of a problem. Weight loss in pounds or kilograms were reported in each of them. Because they used a common dependent measure, their results can be examined directly without having to decide what assumptions should be made in estimating unreported parameters.[1]

The mean weight loss in hypnotic treatments, nonhypnotic treatments, and the difference in mean weight loss between these two forms of treatment are presented in Table 1.[2] Across all assessment periods, these data indicate a mean weight loss of 6.00 lbs. (2.72 kg) without hypnosis and 11.83 lbs. (5.37 kg) with hypnosis. Thus, including hypnosis in the treatment protocol resulted in an additional loss of 5.83 lbs. (2.64 kg), a 97% increase in treatment efficacy.

The effect of treatment for many presenting problems should be readily apparent by the end of treatment. The purpose of follow-up assessments in these cases is to evaluate the durability of treatment effects. Weight loss treatments are somewhat different in this respect. Their aim is to produce a change in eating and exercise habits, the results of which are revealed gradually in weight change. Because the effects of these treatments on weight are not fully apparent at the conclusion of treatment, averaging across assessment periods may underestimate the actual effect of a weight loss treatment. Alternately, it may overestimate treatment effects if there is a return to previous eating habits. In either case, weight loss at the final assessment period is the more accurate estimate of treatment effects. As shown in Table 1, mean weight loss at the final assessment was 6.03 lbs. (2.74 kg) without hypnosis and 14.88 lbs. (2.75 kg) with hypnosis. Thus, including hypnosis in the treatment protocol resulted in an additional loss of 8.85 lbs. (4.01 kg), a 147% increase in treatment efficacy.

These means are based on simple calculations from data reported in the treatment studies and are not in dispute. The question is, how could such a large difference in weight loss produce the small effect size reported by Allison and Faith (1996)? To answer this question, I recalculated effect sizes using additional information obtained from authors of the studies. The results of these analyses are presented in Table 1.

Method

Known Standard Deviations

Posttreatment standard deviations were reported by Deyoub and Wilkie, (1980). Because follow-up standard deviations were not reported, I used the pooled posttreatment standard deviation in calculating both

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[1] To facilitate comparisons across studies, all data are reported in pounds.

[2] Like Kirsch et al. (1995), Allison and Faith (1996) found significant enhancement of treatment effects that was due to the addition of hypnosis. However, noting that there were typographical errors in one of the studies (Goldstein, 1981) and that effect size estimates in that study might be confounded because participants were allowed to come for additional treatment sessions, they characterized the study as "questionable" and recalculated the mean effect size without it. With Goldstein's (1981) study excluded, they reported a nonsignificant effect for the addition of hypnosis to treatment. To address this concern, I have excluded the Goldstein study from all analyses.

Table 1
Mean Weight Loss (in Pounds) and Effect Sizes as a Function of Hypnotic and Nonhypnotic Treatment

Study	Sample size		Mean pooled *SD*	All assessments			Final assessment		
				Weight loss		Effect size	Weight loss		Effect size
	NH	H		NH	H		NH	H	
Bornstein & Devine (1980)	9	9	8.67	7.18	10.03	0.33	7.68	13.50	0.67
Deyoub & Wilkie (1980)	18	17	6.34	4.65	3.65	−0.16	5.30	6.00	0.11
Wadden & Flaxman (1981)	10	10	5.74	7.47	5.73	−0.30	6.10	4.60	−0.28[a]
Bolocofsky et al. (1985)	52	57	9.84	6.83	16.24	0.95	6.83	21.83	1.52
Barabasz & Spiegel (1989): Standard		16	6.79		7.50	0.68		7.50	0.68
Control[b]	14			2.87			2.87		
Barabasz & Spiegel (1989): Individualized		15	8.07		14.11	1.39		14.11	1.39
Weighted mean				6.00	11.83	0.66	6.03	14.88	0.98

Note. 1 lb. = 0.4536 kg. NH = no hypnosis; H = hypnosis.
[a] The pooled *SD* for this effect was 5.38. [b] Control group data corresponding to both standard and individualized analyses of Barabasz and Spiegel (1989).

effect sizes.[3] Posttreatment and follow-up standard deviations were reported by Wadden and Flaxman (1981). Because standard deviations were not reported by Barabasz and Spiegel (1989), I contacted M. Barabasz, who supplied exact standard deviations for each group. Use of these standard deviations indicated that Kirsch et al. (1995) and Allison and Faith (1996) had underestimated the effect sizes for this study.

Estimated Standard Deviations

Exact standard deviations were unavailable for two studies (Bolocofsky, Spinler, & Coulthard-Morris, 1985; Bornstein & Devine, 1980), both of which had reported the results of two-factor analyses of variance (ANOVAs), with one between-participants factor (treatment) and one within-subjects factor (time). I obtained exact means and the original ANOVA tables for the Bornstein and Devine study from P. H. Bornstein. The mean square error for the within-subjects effects in the Bolocofsky et al. study was calculated using the methods described in Winer, Brown, and Michels (1991). I then estimated the pooled standard deviation for each of these studies as $(MS_{\text{error}}/1 - r^2)^{1/2}$; Smith et al., 1980), using Allison and Faith's (1996) estimate of the relation between measures ($r^2 = 0.45$).

As can be seen in Table 1, the standard deviations estimated in this manner are larger than any of the known standard deviations, suggesting that the resulting effect sizes are conservative estimates. Allison and Faith's (1996) effect sizes of 0.07 for the Bornstein and Devine study and 0.27 for the Bolocofsky et al. study imply standard deviations of 41 and 35 lbs. (18.60 and 15.88 kg), respectively. As these are more than four times the largest of the known standard deviations, the effect sizes they reported for these studies are likely to be substantial underestimates.

Results

From these data, I calculated mean effect sizes weighted by sample size, the variances of the population effect sizes, and confidence intervals, as described by Hunter & Schmidt (1990, pp. 285–287 and 437–438). The mean weighted effect averaged across assessments was 0.66 *SD* (variance = .20, $p < .01$) and that for the last assessment period of each study was 0.98 (variance = .36, $p < .001$).

The variance in population effect sizes indicates the presence of a moderator. One important difference between studies was the length of time between the end of treatment and the final assessment, ranging from 2 months in the Deyoub and Wilkie study to 2 years in the Bolocofsky et al. study. The original meta-analysis reported a significant correlation between effect size and time of assessment. A recalculation of that relation using differences in mean weight loss in place of effect size indicates that it is highly robust ($r = .74$, $p < .01$). Although this accounts for much of the variability in effect sizes, within-study differences (e.g., Barabasz & Spiegel, 1989) suggest that procedural differences in the hypnotic component also contribute to differential effectiveness.

Discussion

Kirsch et al. noted that the exact magnitude of the effect of adding hypnosis to weight reduction treatments "is uncertain because of the failure to report standard deviations in most of the weight reduction studies" (1995, p. 218). In this third meta-analysis of these data, I reduced the uncertainty by obtaining actual standard deviations for two of the six comparisons (Barabasz & Spiegel, 1989). These additional data, the use of different calculation methods, and the exclusion of a study deemed "questionable" by Allison and Faith (1996) resulted in

[3] Effect sizes can be calculated as the difference in means divided by either the standard deviation of the control group (Glass, 1977) or the pooled standard deviation (Hunter & Schmidt, 1990). Where actual standard deviations were reported, those of the control group were used by Kirsch et al. (1995) to calculate effect sizes. To facilitate comparison with the data as reported by Allison and Faith (1996), I used pooled standard deviations in this reanalysis.

different effect sizes from those reported in both previous meta-analyses. Nevertheless, the conclusions that can be drawn from this reanalysis are the same as those drawn by Kirsch et al. The addition of hypnosis appears to have a significant and substantial effect on the outcome of cognitive-behavioral treatment for weight reduction, and this effect increases over time.

As Allison and Faith (1996) noted, the conclusion that hypnosis substantially enhances the effects of cognitive-behavioral treatments for weight reduction is inconsistent with qualitative reviews written before many of the studies included in the meta-analyses were published (Mott & Roberts, 1979; Wadden & Anderton, 1982). However, it is entirely consistent with the most comprehensive and up-to-date qualitative review (Levitt, 1993), in which it was noted that "the recent studies appear methodologically sounder than the earlier ones" (p. 538). As can be seen in the tables, larger effects were reported in the more recent studies.

Allison and Faith (1996) are correct in noting that there is "no panacea for the treatment of obesity and that hypnosis is no exception" (p. 516). Obese people would still be obese after losing the amount of weight reported in these studies, and hypnosis appears to be effective only in conjunction with a sound, cognitive-behavioral treatment (see Levitt, 1993). Furthermore, it is unlikely that hypnosis would be helpful for all clients. Nevertheless, the mean weight loss reported in the five studies indicate that hypnosis can more than double the effects of a cognitive-behavioral treatment. Barabasz and Spiegel's (1989) data suggest that this effect can be maximized by individualizing the hypnotic component of treatment. The data also indicate that the impact of hypnosis increases over time, suggesting that it is especially useful for long-term maintenance of weight loss.

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