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Cognitive–Behavioral Therapy for Insomnia: Comparison of Individual Therapy, Group Therapy, and Telephone Consultations

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Forty-five adults with primary insomnia received cognitive–behavioral therapy (CBT) implemented in a group therapy format, in individual face-to-face therapy or through brief individual telephone consultations. The results indicate that CBT was effective in improving sleep parameters with all 3 methods of treatment implementation, and there was no significant difference across methods of implementation. All 3 treatment modalities produced improvements in sleep that were maintained for 6 months after treatment completion. These results suggest that group therapy and telephone consultations represent cost-effective alternatives to individual therapy for the management of insomnia.

About 30% of adults will suffer from sleep difficulties during the course of a year, including about one third (10% of the population) who will report chronic difficulties in falling or staying asleep (Ford & Kamerow, 1989). Insomnia is more prevalent among women, older adults, and among persons suffering from medical (Blais, Morin, Boisclair, Grenier, & Guay, 2001; Hohagen et al., 1993) or psychological conditions (Buysse et al., 1994). It is often accompanied by daytime complaints (attention–concentration problems, mood disturbances, or fatigue), which can significantly diminish one's quality of life (Chilcott & Shapiro, 1996). Hypnotics remain the most frequent treatment, despite risks of tolerance and dependence with long-term use (Hauri, 1997).

Psychological interventions have been shown to be as effective as pharmacotherapy in the short-term and more effective in the long-term (McClusky, Milby, Switzer, Williams, & Wooten, 1991; Morin, Colecchi, Stone, Sood, & Brink, 1999). Two meta-analyses have indicated that behavioral interventions produce significant improvements in 70% to 80% of patients with insomnia and that treatment gains are well maintained over time (Morin, Culbert, & Schwartz, 1994; Murtagh & Greenwood, 1995).

Despite these advantages, nonpharmacological interventions for insomnia remain underused, their use being compromised by their limited accessibility. Money, time, and effort constraints involved in psychotherapy may seem overwhelming in contrast with the apparent simplicity and accessibility of pharmacotherapy. As such, several studies have investigated cost-reducing strategies by using brief consultations, group treatments, or self-help approaches (Alperson & Biglan, 1979; Mimeault & Morin, 1999; Morawetz, 1989; Riedel, Lichstein, & Dwyer, 1995).

Group therapy represents a lower cost alternative to individual therapy. However, as in individual therapy, geographical constraints and costs for transportation remain a significant barrier to using group therapy for insomnia. A slight advantage of the individual over the group modality has been proposed (Lacks, 1991; Morin et al., 1994), but these results are insufficient to declare the superiority of individual therapy.

Self-help therapy is the least expensive and involves no transportation. Mimeault and Morin (1999) reported that a cognitive–behavioral bibliotherapy, with or without professional guidance (telephone support), was efficacious in the short term for the treatment of chronic insomnia. However, adding professional guidance to bibliotherapy produced further improvements. Thus, the presence of a therapist seems to optimize treatment response.

Telephone consultations are another cost-reducing strategy. Recently, a "sleep service line," which offers clinical advice about sleep hygiene and behavioral practices for insomnia, improved sleep in more than 25% of callers (Verbeek, Declerck, Knuistingh Neven, & Coenen, 2002). Although these recent findings suggest the feasibility of implementing insomnia treatment at a minimal cost, a direct comparison of different treatment implementation methods has not yet been carried out in insomnia research.

The objective of the present study was to determine whether cognitive–behavioral therapy (CBT) for insomnia produces different outcomes when delivered either in individual face-to-face therapy or in less costly modalities such as group therapy or brief individual therapy sessions over the phone.

Method

Participants

The participants were French-speaking individuals recruited via advertisements in local newspapers. The inclusion criteria were (a) to be 18 years of age or older, (b) sleep-onset insomnia or sleep-maintenance insomnia (defined as sleep-onset latency or time awake after sleep onset greater than 30 min per night for a minimum of three nights per week as measured on a sleep diary), (c) a duration of insomnia of at least 6 months, and (d) a complaint of at least one negative daytime effect (e.g., fatigue, impaired functioning, or mood disturbances) attributed to poor sleep. The exclusion criteria were (a) another sleep disorder as evaluated by key questions from

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the Diagnostic Interview for Insomnia (Morin, 1993); (b) another Axis I diagnosis as assessed by the Structured Clinical Interview for DSM–IV (American Psychiatric Association [APA], 1994); (c) sleep disturbances due to the physiological effect of a substance or a medical condition known to exacerbate sleep disturbances; (d) the use of an antidepressant, benzodiazepine, or hypnotic agent; and (e) current involvement in psychological treatment. These criteria represent a combination of the diagnostic criteria of the *International Classification of Sleep Disorders* (American Sleep Disorders Association [ASDA], 1997) and the *Diagnostic and Statistical Manual of Mental Disorders* (APA, 1994, 4th ed.) for chronic primary insomnia.

Procedure

After obtaining their written consent, participants underwent a multistep evaluation, including clinical interviews, questionnaires, and sleep diary completion. Of the 57 potential participants who were screened, 45 participants were accepted in the study. They were randomly assigned to one of the three treatment conditions: (a) individual ($n = 15$), (b) group ($n = 16$), and (c) telephone ($n = 14$). CBT for insomnia lasted 8 weeks, with one session per week. Individual face-to-face treatment sessions lasted 50 min, the group sessions (4–6 persons per group) lasted 90 min, and the telephone individual sessions lasted 20 min. The duration of each session was based on current practice for the individual and group modalities. For the phone intervention, the duration of individual session was based on results obtained from our previous research (Mimeault & Morin, 1999). Participants in the individual and group conditions were given the treatment material at the beginning of each session. Those in the telephone condition were mailed initial materials in the week following their inclusion in the study and subsequently received weekly booklets regarding the content of the upcoming sessions. To promote consistent self-monitoring, participants were asked to return their diaries weekly in prepaid, self-addressed envelopes.

Sleep diaries were completed daily for 2 weeks before treatment, throughout the 8-week course of treatment, for 2 additional weeks at posttreatment, and again for 2 weeks at the 3- and 6-month follow-ups. Other self-report measures were completed at pre- and posttreatment and at both follow-ups.

Measures

The Insomnia Diagnostic Interview (Morin, 1993) is conducted in a semistructured format and assesses the presence of insomnia and potential contributing factors. It is designed to identify (a) the nature of the complaint, (b) the sleep–wake schedule, (c) insomnia severity, (d) daytime consequences, (e) the natural history of insomnia, (f) environmental factors, (g) medication use, (h) sleep hygiene factors, (i) the presence of other sleep disorders, (j) the patient's medical history, and (k) a functional analysis for antecedents, consequences, precipitating and perpetuating factors.

The Sleep Diary (SD; Morin, 1993) is completed daily upon arising. Measures derived from the sleep diary were sleep-onset latency (SOL; time from initial lights-out to sleep onset), wake after sleep onset (WASO; total amount of time spent awake from initial sleep onset to the last awakening), early morning awakening (EMA; time spent awake from the last awakening until actual arising time), total wake time (TWT; summation of SOL, WASO, and EMA), time in bed (TIB; total time elapsed from initial lights-out to final arising time), total sleep time (TST; computed by subtracting TWT from TIB); and sleep efficiency (SE), obtained by dividing TST by TIB and multiplying by 100%. Means for each variable were computed on the basis of a 2-week period at each assessment phase. The sleep diary is a practical and economical tool and remains the most frequently used measure in insomnia outcome research (Lichstein & Riedel, 1994). Subjective estimates of sleep parameters yield a reliable and valid index of insomnia, although they do not reflect absolute values obtained from polysomnography (Coates et al., 1982).

The Insomnia Severity Index (ISI; Morin, 1993; translation and validation: Blais, Gendron, Mimeault, & Morin, 1997) is a seven-item measure that yields a quantitative index of sleep impairment and treatment outcome. Participants rated the following components on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*): (a) severity of sleep-onset, sleep-maintenance, and early morning awakening problems; (b) satisfaction with current sleep pattern; (c) interference with daily functioning; (d) noticeability of impairment attributed to the sleep problem; and (e) level of distress caused by the sleep problem. Total scores range from 0 to 28, with higher scores indicating greater perceived insomnia severity. The French version of the ISI has acceptable internal consistency (Cronbach's $\alpha = .88$) and appropriate test–retest reliability ($r = .65$).

The Beliefs and Attitudes About Sleep Scale (BAS; Morin, Stone, Trinkle, Mercer, & Remsberg, 1993; translation and validation: Blais et al., 1997) is a 30-item scale tapping sleep-related thoughts and beliefs about the perceived causes and consequences of insomnia, control and predictability of sleep, unrealistic sleep expectations, and beliefs about sleep-promoting practices. Participants rate their level of agreement or disagreement on a 100-mm visual analog scale ranging from 0 (*strongly disagree*) to 100 (*strongly agree*). A higher score is associated with a greater level of dysfunctional thinking. The French version of the BAS has good internal consistency (Cronbach's $\alpha = .90$) and adequate test-retest reliability ($r = .72$).

The Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988; translation: Freeston, Ladouceur, Thibodeau, Gagnon, & Rhéaume, 1994) is a 21-item state anxiety scale measuring the intensity of cognitive, affective, and somatic anxiety symptoms experienced during the last 7 days. The Beck Depression Inventory (BDI; Beck, Steer, & Garbin, 1988; translation: Gauthier, Morin, Thériault, & Lawson, 1982) is a 21-item questionnaire that assesses depressive symptoms. Both inventories' psychometric properties have been extensively studied in both English and French populations.

Therapists

The therapists (4 female and 1 male) were certified clinical psychologists or doctoral students in psychology with prior clinical experience. An experienced clinical psychologist (Charles M. Morin) supervised the treatment sessions. All therapists used a treatment manual (Morin, 1993), and each therapy session was recorded on audio tape to ensure standardization and treatment integrity.

Treatment

Although a relaxation component is often included in CBT for insomnia (Lichstein, 2000), behavioral components (stimulus control and sleep restriction), cognitive therapy, and sleep hygiene composed the CBT used in the present study.

The stimulus control instructions (Bootzin, Epstein, & Wood, 1991) are aimed at reassociating the bed, bedroom, and bedtime stimuli with sleep rather than with the frustration and anxiety associated with sleeplessness. Participants are instructed to (a) go to bed only when sleepy; (b) use the bed and bedroom for sleep and sex only; (c) leave the bed and go in to another room if unable to fall asleep or return to sleep; (d) repeat this step as often as necessary throughout the night, (e) arise at the same time each morning, regardless of the amount of sleep from the previous night; and (f) not nap during the day. The sleep restriction procedure (Spielman, Saskin, & Thorpy, 1987) consists of limiting the time spent in bed to the actual time spent sleeping. The rationale is that individuals with insomnia often spend excessive amounts of time in bed in a misguided attempt to get more sleep. Participants are instructed to determine their allowable time in bed according to their total subjective sleep time. The initial sleep window is

restricted to this estimated sleep time. Specific bedtime and rising times are predetermined, with weekly adjustments and gradual increases in time spent in bed made contingent on objective improvement in sleep efficiency. *Cognitive therapy* of insomnia consists of identifying, challenging, and altering a set of dysfunctional beliefs and attitudes about sleep (Morin, 1993). The objective of cognitive therapy is to break the vicious circle of insomnia, dysfunctional thoughts, and emotional distress that lead to further sleep disturbance. The principal beliefs and attitudes addressed are those identified in the BAS (Morin, 1993). *Sleep-hygiene education* consists of teaching individuals about the impact of certain lifestyle habits (e.g., diet, drug use, and exercise) and the influence of some environmental factors (e.g., light, noise, and temperature) on sleep (Hauri, 1991).

To maximize adherence, each behavioral procedure, as well as difficulties encountered during the previous week, were reviewed at the beginning of each session. Furthermore, to assess compliance, specific items regarding behavioral procedures were added on the sleep diary.

Results

A 3 (group) × 2 (time) mixed factorial design with repeated measures on the second factor was used. Separate analyses were conducted for the pre- to posttreatment phase and for the posttreatment to 6-month follow-up phase. Data for the main dependent variables fulfilled the parametric assumption of normality distribution and other parametric assumptions.

Preliminary Analyses

Forty-five participants completed the program (29 female and 16 male). The average age was 41.8 years (SD = 9.9). The participants were predominantly married (56%), employed (51%), and the average education level was 16.0 years (SD = 3.7). The average insomnia duration was 15.3 years (SD = 12.0). Of the participants, 8.9% suffered of sleep-onset insomnia, 4.4% suffered of sleep maintenance, and 86.7% suffered of mixed difficulties. Table 1 summarizes descriptive statistics on these demographic and clinical characteristics.

One-way analyses of variance (ANOVAs) and chi-square analyses were computed to determine whether the groups were equivalent at pretreatment on demographic and clinical variables. There were no significant differences among the three conditions regarding age, gender, education, marital status, occupation, and insomnia duration. A series of preliminary ANOVAs showed that the three groups were equivalent at baseline on almost all dependent variables, including sleep diary measures (SOL, WASO, EMA, TWT, SE, SQ), the BAS questionnaire, and psychological inventories (BAI, BDI; all $ps > .09$). A significant difference was, however, found for the ISI, $F(1, 43) = 52.01$, $p < .05$, participants assigned to the individual modality scoring higher than individuals assigned to the group modality.

Sleep–Wake Variables at Posttreatment

Because of the large number of sleep–wake measures, we selected two sets of dependent variables. The first set comprised the primary outcome measures (TST, TWT, and SE; global measures of sleep quality), and the second set included secondary measures (SOL, WASO, EMA, and SQ; composite measures of sleep quality). Repeated measures multivariate analyses of variance (MANOVAs) for each of the two sets of variables, 3 (group) × 2 (time: pretreatment vs. posttreatment) were conducted. Because participants differed at pretreatment on the ISI, its total score was used as a covariant. Significant main or interaction effects were followed by one-way ANOVAs and, when indicated, by post hoc comparisons using the Tukey honestly significant difference test. Table 2 displays the means and standard deviations of the sleep diary measures across assessment phases. Figures 1 and 2 illustrate group changes over time on the main outcome variables of sleep efficiency and total wake time.

The first MANOVA (SE, TST, and TWT) yielded a significant effect for time, $F(1, 37) = 7.9$, $p < .01$. There was no significant effect for Group or for the Group × Time interaction. Significant univariates for the time effect were obtained for two variables: total wake time, $F(1, 37) = 5.95$, $p < .01$, and sleep efficiency, $F(1, 37) = 7.998$, $p = .02$. There were no significant differences between conditions on any of the dependent sleep measures. The second MANOVA (SOL, WASO, EMA, and SQ) also yielded a significant effect for time, $F(1, 37) = 3.66$, $p < .05$, but not for group or for the interaction. Significant univariate ANOVAs were obtained for the time effect for wake after sleep onset, $F(1, 37) = 7.37$, $p < .01$, and for sleep quality, $F(1, 37) = 4.19$, $p < .01$. Again, there were no significant differences between conditions on any of the dependent sleep measures.

Table 1
Characteristics of Participants

Variable	Individual (n = 15)	Group (n = 16)	Telephone (n = 14)	Total (N = 45)
Age (years)				
M	43.80	40.00	41.64	41.78
SD	9.98	10.35	9.49	9.87
Sex				
Female	11	11	7	29
Male	4	5	7	16
Education (years)				
M	13.83	16.40	17.58	15.97
SD	3.54	3.07	3.65	3.65
Insomnia duration (years)				
M	15.64	15.35	14.71	15.25
SD	11.73	14.13	10.20	11.95

Note. Of the participants included in the study, 64.4% were female and 35.6% were male.

Table 2
Group Means and Standard Deviations for Each Condition on Sleep–Wake Variables (From Sleep Diary) at Each Assessment Period

	Pretreatment		Posttreatment		3-Month follow-up		6-Month follow-up	
Condition	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Sleep-onset latency								
Individual	40.40	11.87	14.60	6.49	21.38	7.92	18.65	6.24
Group	41.65	30.67	25.21	19.72	27.25	26.51	28.75	24.63
Telephone	62.50	51.43	26.28	20.84	29.88	15.41	31.99	18.62
Wake after sleep onset								
Individual	76.81	66.25	40.95	37.34	37.06	27.21	35.71	22.54
Group	52.94	53.38	22.37	18.76	28.50	20.44	25.92	21.99
Telephone	31.67	30.61	21.72	28.39	21.79	18.61	14.79	11.17
Early morning awakening								
Individual	45.86	31.20	17.57	11.59	18.37	8.66	19.58	12.96
Group	40.43	25.40	19.47	21.06	25.16	32.89	33.14	39.80
Telephone	67.18	43.93	24.89	12.71	34.94	23.63	29.92	17.48
Total wake time								
Individual	163.08	78.60	73.16	48.46	76.81	36.08	89.49	50.72
Group	134.40	51.37	69.78	44.41	78.34	51.68	89.49	49.57
Telephone	164.45	77.11	68.74	30.43	84.41	35.58	86.79	64.99
Total sleep time								
Individual	364.00	83.71	370.15	51.47	406.52	37.53	397.94	55.82
Group	363.83	50.60	370.82	43.30	386.32	62.45	379.15	116.61
Telephone	349.39	91.87	351.46	60.50	366.55	78.09	360.73	102.44
Time in bed								
Individual	527.08	45.79	443.29	46.83	483.33	34.15	487.43	39.97
Group	498.35	41.31	440.60	39.58	464.66	49.80	465.94	68.06
Telephone	509.56	40.84	425.23	29.17	455.36	45.55	455.99	53.20
Sleep efficiency								
Individual	69.23	15.35	83.60	10.51	84.35	6.95	81.54	9.94
Group	73.32	9.49	84.47	9.20	82.99	10.99	79.97	17.27
Telephone	67.62	17.75	82.14	10.18	79.67	9.58	77.64	14.28
Sleep quality								
Individual	2.94	0.70	3.55	0.75	3.54	0.64	3.33	0.70
Group	2.59	0.53	3.20	0.72	3.26	0.58	3.41	0.80
Telephone	2.38	0.87	3.04	0.99	3.28	1.04	3.07	0.99

Ancillary Measures

Table 3 shows the group means and standard deviations across assessment phases for the ISI, the BAS, the BAI, and the BDI. A 3 (group) × 2 (time) repeated measures MANOVA revealed a significant effect for time, $F(1, 34) = 2.74$, $p < .05$, for sleep questionnaires. Subsequent ANOVAs yielded a significant time effect on the ISI, $F(1, 28) = 69.61$, $p < .01$, and the BAS, $F(1, 34) = 200.17$, $p < .01$. Conditions did not differ significantly on these variables. A second MANOVA (the BAI and the BDI) yielded significant effects for time, $F(1, 28) = 69.61$, $p < .01$. Significant univariates for the time effect were obtained for the BAI, $F(1, 35) = 24.01$, $p < .01$, and the BDI, $F(1, 24) = 29.38$, $p < .01$. There were no significant differences between conditions.

Follow-Up Data

The data for the 3-month follow-up were available for 34 participants (individual = 14, group = 11, and telephone = 9). A series of 3 (group) × 2 (time) repeated measures MANOVAs using the same grouping of variables as for the pre- to posttreatment comparisons were used. The only significant result for the

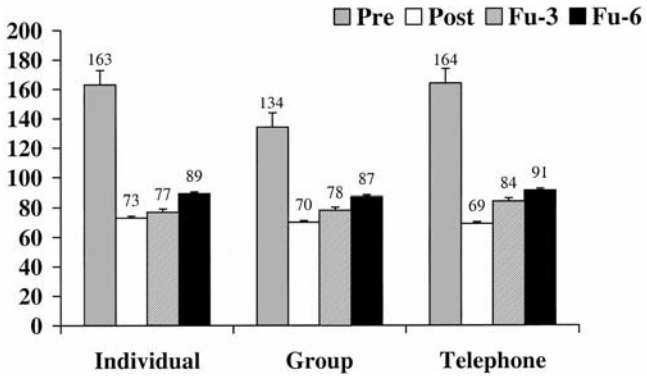

Figure 1. Changes in total wake time (measured in minutes) over assessment period. Sleep diary data were based on 2 weeks at baseline (Pre), 2 weeks following treatment (Post), and 2 weeks 3 and 6 months after treatment completion (FU-3, FU-6).

sleep variables was for total sleep time, $F(1, 30) = 12.51$, $p < .01$, which increased in all three conditions from post to 3-month follow-up. Nonparametric tests (Kruskal Wallis) were conducted at the 6-month follow-up because the number of participants in each condition was low (individual = 9, group = 11 and telephone = 7). There were no significant differences on any of the sleep variables ($p > .05$). Main reasons for attrition at both follow-up assessment phases were lack of interest (FU3 = 6 and FU6 = 3), unknown address (FU3 = 4 and FU6 = 3), and other medication interfering with sleep (FU3 = 1 and FU6 = 1).

Clinical Significance of Change

To assess the clinical significance of changes due to treatment, the proportion of individuals who returned to a normative level of functioning on the main dependent variable of interest was computed (Kendall & Grove, 1988). In this study, a sleep efficiency cut-off of 80% was used as a criterion for clinical improvement. According to this criterion ($SE > 80\%$), 11 (73%) participants in the individual condition, 9 (56%) in the group condition, and 9 (64%) in the telephone condition experienced clinically significant improvement at posttreatment. At 3-month follow-up, the number of participants who reached the clinically improved level was 9 (64%), 9 (82%), and 5 (56%), respectively.

Discussion

The results of the present study indicate that CBT, delivered in any of the three treatment modalities, produced significant changes in sleep efficiency, total wake time, wake after sleep onset and sleep quality. The efficacy of CBT did not differ significantly, whether it was delivered in an individual face-to-face format, via group therapy, or in individual brief consultations over the telephone. All three methods produced improvements in sleep that were maintained up to 6 months after treatment completion.

Insomnia severity and dysfunctional beliefs and attitudes about sleep were also improved with treatment. Furthermore, a reduction in psychological symptoms related to depression and anxiety accompanied improvements in sleep. The present results add to a large body of evidence that psychological therapies for insomnia produce significant and durable changes in sleep patterns, as well as improvements in psychological symptoms (Morin et al., 1994; Murtagh & Greenwood, 1995).

Although much research has been conducted comparing different psychological interventions for insomnia (Morin et al., 1999), only few studies have examined the relative effectiveness of different methods for delivering treatments (Mimeault & Morin, 1999; Morawetz, 1989; Riedel et al., 1995). This study thus represents the first attempt to directly compare different therapist-led treatment formats of CBT for insomnia.

From a cost-effectiveness perspective, the present results are informative. They indicate that it is possible to reduce costs, time spent in therapy, and transportation without affecting the overall efficacy of CBT. Individuals more limited financially could thus receive treatment at a lower cost, administered in group formats or via brief phone therapy consultations. Furthermore, people residing in remote areas could receive an effective treatment over the phone without having to spend the time and money incurred by transportation. A treatment format adapted to the patient's constraints and preferences could prove to be more effective in the long run by increasing adherence. Further research is needed to confirm this hypothesis.

It is possible that with increased statistical power a slight advantage of one modality over another might have been detected. However, no clear trend has emerged from our data. In the absence of a control group, it is impossible to rule out regression to the mean as an explanation for improvements over time. Nonetheless, our results suggest that the format used to deliver treatment has little effect on its efficacy as long as the different components of CBT are covered. Each modality presents with specific characteristics and idiosyncratic advantages (e.g., social support in the group sessions, opportunity to bring up personal issues in individual sessions, fostering a goal-directed attitude in the telephone sessions), which may contribute to the optimization of treatment outcome and could explain why no significant difference was found between modalities. Another reason may be that CBT for insomnia involves mainly the acquisition of self-management skills. Once the rationale and procedures have been well explained during therapy sessions, the bulk of the therapeutic process is done

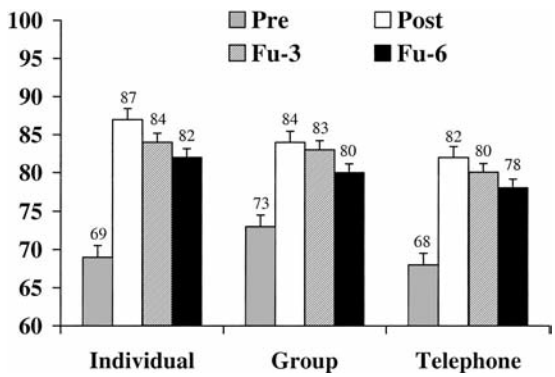

Figure 2. Changes in sleep efficiency (measured in percentage) over assessment period. Sleep diary data were based on 2 weeks at baseline (Pre), 2 weeks following treatment (Post), and 2 weeks 3 and 6 months after treatment completion (FU-3, FU-6).

Table 3
Group Means and Standard Deviations for Each Condition for Ancillary Measures at Each Assessment Period

	Pretreatment		Posttreatment		3-Month follow-up		6-Month follow-up	
Condition	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Insomnia Severity Index								
Individual	20.17[a]	3.66	7.83	4.31	11.00	7.46	11.33	6.41
Group	16.22[a]	3.19	6.22	4.27	12.22	6.65	11.22	6.83
Telephone	19.00	5.44	11.33	5.85	12.83	5.67	11.17	8.40
Beliefs and Attitudes About Sleep								
Individual	42.11	11.59	14.44	9.08	14.67	8.99	24.33	11.29
Group	42.50	12.59	16.50	8.37	13.30	7.41	14.70	8.77
Telephone	41.43	6.83	18.14	9.14	21.71	8.22	18.00	8.37
Beck Anxiety Inventory								
Individual	12.11	5.16	4.89	4.83	4.44	3.28	7.22	4.84
Group	9.73	5.92	4.00	2.76	4.27	3.47	4.45	3.93
Telephone	6.57	6.85	3.57	3.95	3.29	4.42	3.71	2.87
Beck Depression Inventory								
Individual	11.00	7.76	5.56	5.83	3.44	5.03	3.44	4.28
Group	11.64	7.38	4.45	5.37	5.45	5.61	6.27	4.47
Telephone	10.33	4.32	1.83	2.14	2.67	4.08	1.67	1.37

[a] There is a significant difference between group and individual modalities.

at home by the patient, thus masking any difference that may be due to the length of contacts with therapists.

This study has several limitations. The data collected were based solely on self-report measures with no polysomnographic data to detect other sleep disorders and to measure objective changes in sleep. Although they yield subjective estimates of sleep parameters, sleep diaries have been shown to provide reliable estimates of sleep parameters (Coates et al., 1982), which also reflect on the subjective perception of one's sleep. Besides the relatively small sample size, another limitation relates to the nature of the sample used in this study. Indeed, the present results pertain to adults suffering from insomnia but free of any other medical or psychological disorder. Results may not be generalizable to individuals with comordid conditions. Rigorous treatment integrity measures could also have added to the methodological rigor of this research. Finally, although scores on ancillary measures (BDI, BAI, ISI) were significantly reduced after treatment in all three modalities, more objective assessment of daytime functioning would be important to quantify the benefits of CBT on daytime sleepiness, fatigue, and performance (Morin, 2003).

Nevertheless, this study represents the first attempt to compare different modes of delivery of therapist-led CBT for insomnia. The results are promising in that they indicate that CBT does not lose its effectiveness when it is delivered in less costly formats such as in groups or over the phone. This is another step toward greater dissemination and accessibility of psychological interventions for insomnia. Further research must involve careful evaluations and comparisons of costs involved in pharmacotherapy and different psychotherapy formats.

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