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The Relationship between Beliefs about Sleep and Adherence to Behavioral Treatment Combined with Meditation for Insomnia

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Abstract

The present study examined beliefs about sleep, as measured by the Dysfunctional Beliefs and Attitudes about Sleep (DBAS) scale, as predictors of adherence to three specific insomnia treatment recommendations: restriction of time spent in bed, maintenance of a consistent rise time, and completion of daily meditation practice. Higher DBAS scores predicted poorer adherence to restriction of time spent in bed and to maintenance of a prescribed rise time. DBAS scores were not associated with completion of daily meditation. These preliminary findings suggest that pre-treatment beliefs about sleep may impact patient engagement with behavioral recommendations regarding time in bed and consistent rise time during treatment for insomnia.

Cognitive-behavioral therapy for insomnia (CBT-I) has emerged as an efficacious treatment, achieving status as a standard treatment in published guidelines by the American Academy of Sleep Medicine (Morgenthaler et al., 2006). CBT-I is a multicomponent treatment package that includes stimulus control therapy (Bootzin, Epstein, & Wood, 1991) and sleep restriction therapy (Spielman, Saskin, & Thorpy, 1987) as the core behavioral components along with cognitive therapy aimed at challenging maladaptive sleep-related cognitions. Given that the efficacy of CBT-I has been established (Edinger, Wohlgemuth, Radtke, Marsh, & Quillian, 2001a; Edinger et al., 2009; Morin et al., 1999; Sivertsen et al., 2006), attention is now shifting to understanding factors related to the context and delivery of CBT-I in an effort to optimize implementation in clinic settings and tailor treatment to meet specific patient needs.

Adherence to treatment is an important aspect of the context and delivery of CBT-I but there is no standard method for assessing adherence, and the identification of predictors of treatment adherence is particularly critical to the delivery of CBT-I in clinical settings. A limited number of studies have examined predictors of adherence to CBT-I in clinical trials and identified four potential predictors. First, several aspects of perceived behavioral control, including lower self-efficacy, are associated with poorer adherence to sleep hygiene instructions (Hebert, Vincent, Lewycky, & Walsh, 2010), as well as a lower composite

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CBT-I adherence score (Bouchard, Bastien, & Morin, 2003). Second, depressive or dysthymic symptoms have been identified as obstacles to adherence, when operationalized as therapist-rated adherence (Vincent & Hameed, 2003), or self-reported adherence to behavioral recommendations (Manber et al., 2011; McChargue et al., 2012) and cognitive components such as changing expectations about sleep (Manber et al., 2011). Third, some evidence suggests that less severe insomnia prior to treatment initiation, as measured by better sleep quality and more sleepiness (potentially an indication of less hyperarousal) is predictive of lower session attendance rates (Morgan, Thompson, Dixon, Tomeny, & Mathers, 2003) and sleep diary-obtained inconsistency in rise time (Vincent, Lewycky, & Finnegan, 2008), respectively. Lastly, some studies have shown those with decreased readiness or motivation for change are more likely to report poorer adherence to sleep hygiene instructions (Hebert, Vincent, Lewycky, & Walsh, 2010) and report poorer adherence to rise time and time in bed recommendations in their sleep diary (Matthews, Schmiege, Cook, Berger, & Aloia, 2012). Other predictors of adherence (e.g. age, social support, medication use, and fewer perceived barriers to treatment) have been examined, but data for these predictors are inconclusive (Hebert, Vincent, Lewycky, & Walsh, 2010; Vincent, Lewycky, & Finnegan, 2008).

Maladaptive beliefs about sleep have been associated with response to CBT-I (Edinger, Wohlgemuth, Radtke, Marsh, & Quillian, 2001b; Morin, Blais, & Savard, 2002; Tremblay, Savard, & Ivers, 2009), but the relationship between sleep-related beliefs and adherence to treatment recommendations has not been previously explored. The Dysfunctional Beliefs and Attitudes about Sleep (DBAS) scale (Morin, 1993; Morin, Stone, Trinkle, Mercer, & Remsberg, 1993) is a widely used measure of sleep-related cognitions. It assesses thoughts that may serve to maintain or perpetuate insomnia and are therefore targeted in CBT-I. Conceptually, it is possible that maladaptive beliefs might serve as barriers to engagement and adherence to a variety of treatment recommendations including both sleep-related recommendations (such as restricting time in bed and maintaining a consistent rise time) and daytime recommendations (such as reducing hyperarousal) (Carney & Edinger, 2006).

Relaxation exercises are often used to complement sleep restriction or stimulus control as part of a multicomponent behavioral treatment for insomnia. Relaxation is viewed as an acceptable treatment approach for insomnia (Epstein, Babcock-Parziale, Haynes, & Herb, 2012), and there is some evidence that adherence to relaxation exercises delivered with stimulus control is related to improvement in sleep quality (Lichstein, Wilson, & Johnson, 2000). However, there has been little research on predictors of adherence to relaxation or other non-sleep-specific recommendations to reduce arousal. In our lab, we have been developing and testing the use of mindfulness meditation as a strategy to reduce sleep-related arousal (Ong, Shapiro, & Manber, 2008). Mindfulness meditation is the practice of focusing on the present moment in a non-judgmental manner that is hypothesized to reduce sleep-related metacognitions involved in an insomnia disorder (Ong, Ulmer, & Manber, 2012). In our treatment development study (Ong, Shapiro, & Manber, 2008), the traditional cognitive therapy component of CBT-I was replaced with mindfulness meditation and combined with sleep restriction and stimulus control. Even though the practice of formal meditation is a measurable behavior, there has been very little research related to adherence to meditation practice. One prospective study examining personality factors found that

short-term (3-month) adherence to meditation was related to low levels of baseline sensitization, introversion, suggestibility, and neuroticism while long-term (6- to 24-month) adherence was related only to repression and extraversion (Delmonte, 1988). To our knowledge, no study has examined the relationship between pre-treatment cognitions and adherence to mindfulness meditation practice. It might be the case that individuals who hold very strong beliefs about the causes and consequences of health issues, such as a sleep disturbance, might not be ready or willing to engage in meditation practice.

The aim of the present study was to provide preliminary insights into the impact of maladaptive beliefs about sleep on adherence to three behavioral recommendations in the treatment of insomnia: restricting time spent in bed, maintaining a consistent rise time, and engaging in mindfulness meditation. We hypothesized that stronger endorsement of maladaptive beliefs about sleep would be predictive of poorer adherence to prescribed time in bed, prescribed rise time, and daily sessions of meditation (mindfulness meditation). This study consists of secondary analyses to examine treatment process variables from a dataset obtained from a treatment development study of a mindfulness-based treatment for insomnia (Ong, Shapiro, & Manber, 2008).

Methods

Participants

Participants were recruited via flyers and electronic advertisements posted around Stanford University and the surrounding San Francisco Bay area. Eligible participants were adults (aged 18 to 65 years) who met International Classification of Sleep Disorders – Second Edition (ICSD-2) (American Academy of Sleep Medicine, 2005) criteria for a diagnosis of psychophysiological insomnia and recommended quantitative criteria for insomnia (Lichstein, Durrence, Taylor, Bush, & Riedel, 2003) defined as: (a) difficulty initiating or maintaining sleep or non-restorative sleep at least 3 nights per week; difficulty initiating sleep was defined as sleep onset latency greater than 30 minutes and difficulty maintaining sleep was defined as reporting total time wake after sleep onset (including early morning awakenings) greater than 30 minutes, (b) a complaint of daytime impairment or distress, (c) evidence of heightened arousal (e.g. inability to shut off mind, physical tension at bedtime), and (d) symptoms lasting for at least 1 month. Participants were excluded based on the presence of a previously diagnosed sleep disorder other than insomnia, an untreated mood, anxiety, or psychotic disorder, uncontrolled medical disorders, or use of alcohol within two hours of bedtime more than twice per week reported during the screening interview.

Of the 45 potential participants who responded to flyers and electronic advertisements, five failed to meet eligibility criteria, eight withdrew prior to treatment, and two qualified but failed to attend any intervention sessions. Thus, 30 participants (18 female) completed the screening process, qualified, and received the study intervention, representing an enrollment rate of 66.7%. Of those, 27 completed the protocol for a 10% attrition rate. Racial and ethnic distribution of the sample was as follows: 63% Caucasian, 17% Asian, 10% Hispanic, 3% African-American, and 7% participants who identified themselves as an “other ethnicity.” Average age of the sample was 36.4 years (SD = 14.1 years). Participants in the sample were well educated (mean years of education 16.6. years, SD=3.1 and all participants had at least

12 years of education). 60% of the sample was single. Finally, participants in the final sample reported chronic insomnia with an average duration of insomnia of 84.8 months (range of 1 month to 40 years, SD=109.0).

Treatment Protocol

The intervention was delivered in groups of 7-8 participants; each group met for 90-120 minutes per week for 6 weeks. For a full description of the treatment protocol, see the treatment-development manuscript (Ong, Shapiro, & Manber, 2008). Table 1 provides a summary of treatment components. In brief, the multicomponent treatment combined stimulus control treatment, sleep restriction treatment, and sleep education with training in mindfulness meditation. Sleep restriction therapy is an iterative process that starts with reducing the time spent in bed to more closely match current total sleep time in order to improve sleep efficiency, and slowly expand the time in bed window as sleep efficiency increases (Spielman, Saskin, & Thorpy, 1987). In the version of sleep restriction therapy used in this study, the initial recommended time in bed was the average total sleep time at baseline plus 30 minutes. Stimulus control consists of extinguishing behaviors in bed that are incompatible with sleep and re-establishing the bed as a stimulus for sleepiness (Bootzin, Epstein, & Wood, 1991). The specific combined stimulus control and sleep restriction instructions were presented by encouraging participants to maintain a fixed rise time (i.e., prescribed rise time), to go bed only when sleepy, to avoid napping, and to use the bed for sleep and sex only. With respect to rise time, participants were instructed to set an alarm clock for the prescribed rise time. Sleep education included a lecture on sleep and wake processes, normative sleep requirements, and good sleep hygiene. Although this presentation may have indirectly addressed patient's beliefs about sleep, no formal cognitive therapy (e.g. cognitive restructuring) was included in this treatment protocol to address cognitions related to sleep restriction or stimulus control recommendations. Training in mindfulness meditation consisted of guided meditation exercises and instructions and materials for home practice. Patients were encouraged to complete at least five mindfulness meditation sessions per week, each lasting for at least 30 minutes.

Measures

Dysfunctional Beliefs and Attitudes about Sleep Scale (DBAS; Morin, Stone, Trinkle, Mercer, & Remsberg, 1993; Morin, 1993)—The DBAS is a 30-item self-report questionnaire that assesses beliefs about consequences of insomnia, perceived lack of control over sleep, expectations regarding sleep, causes of insomnia, and sleep-promoting practices. Items are answered on a 10-point scale with higher scores representing a stronger endorsement of the specific maladaptive belief or attitude. Reliability and validity of the full measure has been previously documented (Carney & Edinger, 2006; Edinger, Carney, & Wohlgemuth, 2008; Espie, Inglis, Harvey, & Tessier, 2000). DBAS scores have been shown to decrease during cognitive-behavioral treatment for insomnia (Carney & Edinger, 2006), and higher dysfunctional beliefs have been shown to predict greater improvement following treatment with CBT-I (Edinger, Carney, & Wohlgemuth, 2008). In the present study, DBAS scores were analyzed as a potential predictor of treatment adherence.

Insomnia Severity Index (ISI; Bastien, Vallieres, & Morin, 2001; Morin & Espie, 2003)—The ISI contains seven self-report items that assess nighttime and daytime symptoms of insomnia over the past week using a 5-point Likert-type scale. The ISI has been used extensively as both a screening tool and outcome measure in insomnia research. The reliability and validity of the ISI have been previously documented (Bastien, Vallieres, & Morin, 2001). In the present study, pre-treatment ISI scores were used as covariates to statistically control for the impact of insomnia severity on treatment adherence.

Operationalization of Adherence—Given the difficulty in distinguishing treatment components within a multi-component package, the goal of this paper was to examine adherence to specific behavioral recommendations rather than specific treatment components (stimulus control or sleep restriction). All measures of adherence were derived from daily diaries for sleep and meditation practice. Daily sleep diaries are considered a standard practice in the assessment and treatment of insomnia (Carskadon et al., 1976) and provide a measure of the specific behavior targets of interest. Participants completed daily sleep diaries for the duration of the six-week treatment protocol. Participants recorded time they got into bed (bedtime), minutes to sleep onset, minutes of wake after sleep onset, time they woke, time they got out of bed (rise time), and total hours of sleep. From these daily sleep diary data, total time in bed was computed as the time from bedtime to rise time. *Percent days of adherence to time in bed*, was computed as the number of days when a participant's total time in bed was no more than 30 minutes longer than prescribed (out of a total of 35 days, no recommendations regarding sleep schedule were made in session 1). *Percent days of adherence to rise time* was computed as the number of days when a participant's rise time was no more than 60 minutes later than prescribed rise time (out of a total of 35 days, again no recommendations regarding sleep scheduling were made in session 1). Adherence to mindfulness meditation was computed from daily meditation diaries which were given after meditations were introduced in session 3. Participants were asked to record time and duration of each meditation session. Thus, p*ercent days of adherence to meditation* was computed as the number of days when a participant completed any amount of meditation (out of a goal of 20 days; patients were encouraged to complete at least 5 sessions per week for 4 weeks). There is no standard measure of adherence to meditation, but previous studies have computed adherence in a similar way, using the number of days when any amount of meditation was completed (Delmonte, 1984; Delmonte, 1988).

Results

Preliminary Analyses

Overall, participants demonstrated moderate adherence to behavioral recommendations. On average, participants were in bed 22.0 minutes (SD=38.3 minutes) longer than prescribed, stayed in bed 30.5 minutes (SD=36.4 minutes) past the recommended rise time, and practiced mindfulness meditation on 17.7 days (SD = 7.9 days; out of a total of 28 possible days and a total of 20 recommended days). Participants were adherent with total time in bed recommendations 61.6% of days (SD = 27.4, range = 0 – 96.4%), adherent with rise time recommendations 72.4% of days (SD = 24.8, range = 17.1 – 100%), and adherent with

meditation on 63.4% of days (SD = 28.1, range = 0 – 100%). Weekly rates of adherence for each measure are presented in Table 2. There were no significant differences in rates of adherence across weeks. Pre-treatment DBAS scores were significantly negatively correlated with both percent days of adherence to total time in bed (r = -.45, p = .02) and percent days of adherence to rise time (r = -.64, p = .00) indicating that higher scores on the DBAS were associated with poorer adherence. Pre-treatment DBAS scores were not significantly correlated with percent days with meditation (r = .14, p = .48). Means, standard deviations, and bivariate correlations among total DBAS scores and the three measures of adherence were computed are presented in Table 3.

Preliminary regression analyses were performed to examine the association between each of the three measures of adherence to treatment (percent days of adherence to time in bed, percent days of adherence to rise time, and percent days with meditation) and each of the following participant characteristics: age, gender, ethnicity, years of education, duration of insomnia, and self-reported severity of insomnia (ISI scores). As there were no *a priori* hypotheses about these demographic and clinical variables, forward-entry selection (p <.05 for entry) was used in the regression analyses. No demographic or clinical characteristics emerged as significant predictors of percent days of adherence to time in bed or percent days with meditation. However, insomnia severity emerged as a significant predictor of percent days of adherence to rise time (standardized β= -.40, t = -2.09, p = .05); demonstrating that those with more severe insomnia were less adherent to this recommendation. Insomnia severity was entered as a covariate in the first step of all subsequent regression analyses in which percent days of adherence to rise time was the dependent variable. Means, standard deviations, and bivariate correlations among ISI scores and the three measures of adherence are presented in Table 3.

Beliefs about Sleep and Adherence

To test the hypotheses that greater baseline (e.g. prior to treatment) maladaptive beliefs about sleep at bedtime would predict poorer adherence to time in bed, rise time, and meditation practice, hierarchical linear regression analyses were performed separately for (a) percent days of adherence to time in bed, (b) percent days of adherence to rise time, and (c) percent days with meditation as the dependent variable. The analyses for percent days adherence to time in bed and percent days with meditation included only total DBAS score as a predictor, as no demographic or baseline clinical characteristics (e.g. insomnia severity) emerged as significant correlates in the preliminary analyses. For the analysis for adherence to rise time, ISI scores were entered in the first step of a hierarchical linear regression analyses, and total DBAS score were entered on the second step, using forward-entry selection (p <.05 for entry). At each step of the model, the significance of the increment in R^2 was tested. Significance level for all analyses was set at p <.05.

Total DBAS score (standardized β = -.45, t = -2.48. p = .02) was a significant predictor of percent days of adherence to time in bed. Specifically, higher DBAS scores were associated with lower adherence to time in bed recommendations, with participants spending more time in bed than prescribed. Total DBAS score (standardized β = -.60, t = -2.79, p = .01) was also a significant predictor of percent days of adherence to prescribed rise time after controlling

for insomnia severity. Specifically, higher DBAS scores were associated with lower adherence to rise time, with participants staying in bed later than prescribed (poorer adherence) regardless of insomnia severity. Total DBAS score (standardized $\beta = .14$, $t = .71$. $p = .49$) was not a significant predictor of percent days of meditation.

Discussion

In the present study, participants were adherent to the time in bed recommendation on 62% of the days, to the rise time on 72% of days, and to meditation practice on 63% of the days. Adherence was also relatively stable across weeks during the treatment study. These rates fall within the range of 42-90% reported in the literature using other operational definitions of adherence (Epstein, Sidani, Bootzin, & Belyea, 2012; Matthews, Schmiege, Cook, Berger, & Aloia, 2012; McChargue et al., 2012; Schoicket, Bertelson, & Lacks, 1988; Tremblay, Savard, & Ivers, 2009; Waters et al., 2003). While these findings suggest that participants were adherent to the treatment recommendations on the majority of days, it also suggests that adherence is suboptimal on approximately 30-40% of days during treatment, or about 2 to 3 days per week. When examining predictors of non-adherence, we found that greater maladaptive beliefs about sleep were associated with spending more time in bed than prescribed and rising later than prescribed. Beliefs about sleep were not associated with adherence meditation practice.

There are several possible explanations for the relationship between maladaptive beliefs about sleep and adherence to time in bed and rise time. One explanation is that a strong endorsement of maladaptive beliefs may decrease perceived efficacy and credibility of the treatments. For example, if patients are fused to the belief that they “need eight hours of sleep to feel refreshed and function during the day,” they may not perceive restriction of time in bed to less than eight hours as potentially effective and will therefore be reluctant to adhere. Similarly, if patients believe that if they “have difficulty getting to sleep, they should stay in bed and try harder,” it may be counter intuitive and very difficult for them to accept the rationale of using an alarm clock to maintain a consistent rise time.

A second explanation stems from literature examining Brehm's reactance theory (Brehm, 1966) as an explanation for poor adherence. Reactance theory states that when an individual feels that behavioral freedoms are restricted and perceives limited control over behavior, he or she may engage in the restricted behaviors in order to reestablish a sense of control. It has been hypothesized that some patients engage in non-adherent behaviors (e.g. do the opposite of what they are prescribed to do) as an effort to reestablish as sense of control in the face of perceived loss of control (Cvengros, Christensen, & Lawton, 2004). During the course of treatment for insomnia, a patient may endorse perceived lack of control over sleep (e.g. a belief of that “I can't ever predict whether I will have a good or poor night's sleep”) and feel that behavioral freedom related to sleep is restricted (e.g. a therapist is dictating bedtime and rise times for the participant). As a result, a patient may resist treatment recommendations, such as staying in bed as late as they would like, as a way to reassert personal control over their sleep. Notably, scores on a measure of sleep-related locus of control (i.e. beliefs about ability to personally affect sleep and insomnia), perceptions of decreased control are associated with poorer treatment outcome (Vincent, Sande, Read, & Giannuzzi, 2004;

Vincent, Walsh, & Lewycky, 2010). However, it is important to consider the role of the therapeutic alliance with respect to reactance, as previous work has suggested that a positive patient-provider is associated with better adherence to treatment (Cvengros, Christensen, Cunningham, Hillis, & Kaboli, 2009). Perhaps a strong patient-therapist relationship may help a patient to "override" the urge to react with maladaptive behaviors in the face of perceived loss of control.

We did not find a relationship between sleep-related cognitions and adherence to meditation practice. One potential explanation for this finding is that even when negative beliefs about sleep are present, they are not directly related to the practice of meditation and therefore not likely to promote reactance or interfere with adherence to this treatment component. Another possibility for the non-significant finding is that meditation practice is not a sleep-related behavior per se and therefore might not have shared variance with the DBAS. It might be the case that metacognitions, rather than beliefs and attitudes about sleep, would yield a stronger relationship with the practice of mindfulness meditation.

The findings from this study should be considered preliminary and interpreted within the context of some limitations. First, this study was conducted as a secondary analysis of data from a treatment development study which included mindfulness meditation, a novel treatment component for insomnia. Although mindfulness meditation is not directed at changing sleep-related cognitions, it is possible that behavioral treatment components delivered in conjunction with mindfulness meditation may be perceived differently than behavioral treatment components delivered alone. Thus, the impact of maladaptive beliefs about sleep on adherence to treatment may not generalize to patients receiving standard CBT-I. Second, the generalizability of these findings is limited by the size and selection of the sample (e.g. small sample of highly educated patients). Third, this study used only self-reported measures of adherence which may not accurately reflect patient behavior.

The above limitations not with standing, the results from this preliminary study suggest that pre-treatment beliefs about sleep may be related to patient adherence and patient engagement in non-pharmacological treatments for insomnia. Furthermore, the findings suggest the need for additional research that examines individual characteristics that may impact the course of treatment for insomnia. For example, future studies may examine the importance of directly addressing maladaptive beliefs about sleep, through formal cognitive restructuring, early in treatment for insomnia, perhaps even before the presentation of sleep restriction of stimulus control strategies. Correction of maladaptive beliefs may increase a patient's ability and self-efficacy to participate in behavioral components. Alternatively, future studies may examine the role of treatment matching (assigning patients to different treatments based on individual difference characteristics), treatment tailoring (modifying a single treatment based on specific beliefs), and adaptive treatments (providing additional treatment based on initial response to treatment) based on maladaptive beliefs about sleep.

In summary, to the best of our knowledge, this study is the first to directly examine the relationship between maladaptive beliefs about sleep and adherence to restricting time in bed, maintaining a consistent rise time, and practicing mindfulness meditation for insomnia. Despite the limitations, the results from this study highlight the interactive effects of the

cognitive and behavioral components in CBT-I and demonstrate the need for additional work examining potential predictors of adherence to insomnia treatment.

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Table 1

Treatment Components by Session

Session	Treatment Components	Adherence Target
1	Introduction and education and sleep and sleep hygiene	No specific recommendations for sleep or meditation
2	Stimulus Control and Sleep Restriction	Begin adherence to prescribed sleep schedules (time in bed and rise time)
3	Mindfulness and arousal	Begin adherence to formal meditation practice at home; continue with prescribed sleep schedule
4	Adjusting sleep schedules, mindfulness practices	Continue adherence to prescribed sleep schedules and meditation practice
5	Discuss sleep schedules, mindfulness practices, daytime functioning	Continue adherence to prescribed sleep schedules and meditation practice
6	Discuss relapse prevention, managing sleep schedule and maintaining home meditation practice	Continue adherence to prescribed sleep schedules and meditation practice

Table 2

Adherence to Treatment by Week (Starting with Week 2)

	Week 2	Week 3	Week 4	Week 5	Week 6	Total
Mean (SD) Days Adherent with TIB	4.00[a] (2.28)	5.13 (1.70)	4.48 (2.22)	5.29 (1.73)	4.81 (1.99)	24.70[b] (5.50)
Mean (SD) Days Adherent with RT	5.10[a] (1.76)	5.50 (1.47)	5.32 (2.01)	6.17 (1.09)	5.95 (1.56)	27.70[b] (4.77)
Mean (SD) Days with Meditation	----	4.78 (2.12)	4.32 (2.57)	4.31 (2.25)	3.59 (2.38)	17.74[c] (7.87)
Mean (SD) Minutes of Meditation per Day	----	23.26 (13.26)	21.21 (12.48)	19.37 (11.99)	21.00 (11.70)	21.26 (12.49)

[a] Excludes data for 7 participants who were not given time in bed or rise time recommendations until week 3.

[b] Out of a total of 35 days.

[c] Out of a recommended 28 days.

Table 3

Means, Standard Deviations, and Correlations of Key Study Variables

	ISI	DBAS	% TIB	% RT	% MD
ISI	M = 14.90 SD = 4.72	r = .64* p = .00	r = -.32 p = .11	r = -.43* p = .03	r = -.13 p = .54
DBAS	----	M = 113.27 SD = 31.79	r = -.45* p = .02	r = -.64* p = .00	r = .14 p = .49
% Days Adherence with Time in Bed (% TIB)	----	----	M = 61.59 SD = 27.37	r = .84* p = .00	r = .29 p = .15
% Days Adherence with Rise Time (% RT)	----	----	----	M = 72.43 SD = 24.79	r = .22 p = .28
% Days Adherence with Meditation (% MD)	----	----	----	----	M = 63.36 SD = 28.10

ISI = Insomnia Severity Index, DBAS = Dysfunctional Beliefs & Attitude Scale, M = mean, SD = standard deviation,

*p< .05.