

# The Role of Acceptance and Mindfulness in the Treatment of Insomnia

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The present article explores possible reasons why acceptance and mindfulness techniques may be beneficial in the treatment of insomnia. First, it is argued that sleep is facilitated by cognitive deactivation, with less controlled information processing as compared with daytime functioning, and correspondingly more acceptance of spontaneously occurring physiological and mental processes. Second, it is argued that mindfulness practice, in the form of nonjudgmental observation of spontaneously occurring physical and psychological processes, may be an effective way of training the skills of cognitive deactivation. As a complement, psychoeducational methods are advocated to help the client develop a more functional schematic model of sleep and sleeplessness.

**Keywords:** insomnia; mindfulness; acceptance; controlled information processing

According to a theoretical model described by Lundh and Broman (2000), there are two broad categories of processes that are involved in the development and maintenance of insomnia: *sleep-interfering processes*, that is, various kinds of arousal-producing processes that interfere with sleep; and *dysfunctional sleep-interpreting processes*, that is, misperceptions of sleep, as well as dysfunctional beliefs, expectations and attributions concerning sleep and the causes and consequences of poor sleep. According to this model, primary insomnia is the result of an interaction between these two kinds of processes, as manifested in various kinds of “vicious cycles of sleeplessness” (Broman & Lundh, 2003; Lundh, Lundqvist, Broman, & Hetta, 1991), whereby sleep-interfering and sleep-interpreting processes mutually reinforce each other. For example, if a person has certain kinds of beliefs (e.g., catastrophic beliefs about the disastrous consequences of insufficient sleep) he or she is more likely to respond with negative emotional arousal to temporary sleep difficulties, and this emotional arousal will then interfere further with sleep, which will in turn reinforce negative beliefs about one’s self-efficacy with regard to sleep.

The implications for treatment are that we need methods that explicitly address these kinds of vicious cycles. Such methods may focus either on sleep-interpreting processes (e.g., by means of Socratic questioning or other forms of reality testing of sleep-related beliefs) or on sleep-interfering arousal processes (e.g., by means of physiological or cognitive arousal-reducing methods)—the important thing is not *where* in the vicious cycle the intervention is made, but that the intervention is sufficiently powerful to break this cycle. In order to develop such methods, we need a detailed understanding of these processes and their interaction. Important new

research on physiological aspects of sleep-interfering arousal processes has been carried out by Bonnet and Arand (1995, 1998) and by Perlis and his coworkers (e.g., Perlis, Merica, Smith, & Giles, 2001), and similarly important research on the cognitive aspects of such sleep-interfering processes has recently been carried out by Harvey and her coworkers (e.g., Harvey, 2000, 2001, 2003; Harvey & Greenall, 2003; Nelson & Harvey, 2002, 2003a, 2003b). With regard to dysfunctional sleep-interpreting processes, Morin (1993) and Harvey and her coworkers (Harvey, 2002a, 2002b; Tang & Harvey, 2004) have contributed important new knowledge concerning the role of distorted perceptions of sleep, unrealistic sleep expectations, misattributions or amplifications of the consequences of insomnia and faulty beliefs about sleep promoting practices.

Despite this growth of research on cognitive processes and arousal processes in insomnia, however, relatively little has happened in the field of insomnia treatment. The best validated treatment is still the stimulus control procedure that was introduced by Bootzin (1972) more than 30 years ago. The introduction of so-called sleep restriction treatment (Spielmann, Caruso, & Glovinsky, 1987), as well as cognitive methods (Morin, 1993), represent important additional developments in the treatment of insomnia, but has not so far demonstrated any increase in the effectiveness of treatment. And as pointed out by Harvey and Tang (2003), the effect size for the treatment of insomnia is lower than the effect size reported for cognitive-behavioral treatment of a range of other psychological disorders.

One recent development within cognitive-behavior therapy (e.g., Hayes, Strosahl & Wilson, 1999; Linehan, 1993; Marlatt, 1994; Segal, Williams, & Teasdale, 2002) that may be of potential value in the development of better treatment methods in insomnia is the use of so-called "acceptance" and "mindfulness" techniques (for a conceptual and empirical review, see Baer, 2003). Attempts to apply this kind of approach to insomnia have already begun to emerge (Heidenreich, 2003; Lundh & Hindmarsh, 2002; Shapiro, Bootzin, Figueredo, Lopez, & Schwartz, 2003). The main purpose of the present article is to explore possible reasons why acceptance and mindfulness techniques might be beneficial in the treatment of insomnia, and to develop a rationale for using such techniques in this kind of treatment. This is done in two steps. First, it is argued that sleep is facilitated by a cognitive deactivation, which involves less of verbal regulation and control as compared with daytime functioning, and correspondingly more of acceptance of spontaneously occurring physiological and mental processes. Second, it is argued that a combination of mindfulness practice and psychoeducational methods may promote cognitive deactivation and acceptance, and better sleep.

## FUNCTIONAL AND DYSFUNCTIONAL PROCESSES IN THE PRESLEEP SITUATION

The description of *dysfunctional* presleep processes requires a clear understanding of what constitutes *functional* presleep processes. In this first section, it is argued that healthy presleep processes (i.e., processes that are conducive to falling asleep either during the initial sleep-onset period or after awakening) involve a *cognitive deactivation*, in the sense of a decrease in the person's controlled, strategic information processing, paralleling a corresponding physiological deactivation (e.g., a decrease in muscle tone, a slowing of the heart and respiration rates, and a reduction in blood pressure). This cognitive deactivation is assumed to involve (a) *less of verbal regulation* and control, as compared with daytime functioning, and (b) correspondingly *more of acceptance* of spontaneously occurring physiological and mental processes (e.g., mental imagery). To the extent that this cognitive deactivation does not occur, but the individual's mental processes remain dominated by verbal thinking and controlled information processing, this will interfere with sleep.

## Controlled Information Processing—Functional and Dysfunctional

People's activity level shows considerable diurnal fluctuations, not only with regard to physical activity but also in terms of purposive goal-directed cognitive activity (i.e., controlled strategic information processing). While awake, most people engage in controlled information processing more or less continuously, as part of various kinds of purposive activities, like problem solving and decision making—although the degree of controlled processing may recede during relatively more restful moments during the day (e.g., when traveling to or from work at the bus or subway, during coffee breaks, or when taking a nap).

Functional presleep processes are characterized by cognitive and physiological *dearousal* (Espie, 2002). In terms of cognitive processes, this means a disengagement from daily concerns, where the person lets go of purposive, problem-solving thinking, and other kinds of controlled information processing. It may be, for example, that hypnagogic imagery (e.g., Foulkes & Vogel, 1965; Rechtschaffen, 1994; Schacter, 1976) has evolved as a sleep-conducive phenomenon that is characterized by a loss of volitional control over mentation and a reduction in reality testing. If some people are less able to disengage from their daily concerns, and to let go of controlled information processing, this will inhibit their sleep-promoting dearousal processes (Espie, 2002).

Further, it may be expected that these individuals will be less able to deactivate their controlled information processing also in other situations of rest. Some evidence that is consistent with this hypothesis can be found in research with the Multiple Sleep Latency Test (MSLT), which is used in sleep disorders clinics to test for the patients' degree of sleepiness. At the MSLT, patients are offered five 20-minute naps at 2-hour intervals throughout the day, and the speed with which they fall asleep provides an objective measure of sleepiness. Patients with insomnia are typically not very sleepy at the MSLT, and even show evidence of longer MSLT latencies than normal sleepers (e.g., Bonnet & Arand, 1995). That is, the difficulties falling asleep that characterize many insomniacs at night are quite likely to also characterize them during the day—which is what should be expected if the inability to disengage from daily concerns, or to let go of controlled information processing more generally, is a core mechanism in insomnia.

### The Cognitive-Emotional Self-Observation Task (CEST)

There is evidence that people's cognitive-emotional processes at restful moments during the day are representative of their presleep processes. This finding makes it possible to study the relevant cognitive-emotional processes by having the individual lie down on a bed for short periods in the laboratory during the day. This may prove to be important for insomnia research, because it means that we do not have to rely on observation of these processes at nighttime before sleep onset. One example of such a study was carried out by Lundh and Hindmarsh (2002) by means of a Cognitive-Emotional Self-observation Task (CEST), which was partly modeled after the MSLT.

In the daytime version of this task (the CEST-d) the participants are asked to lie down in a dark room and observe their own thoughts, feelings and body sensations, without trying to change these in any way. After 5 minutes they are asked to sit up and respond to a questionnaire, where they are instructed to name in a few words the kinds of thoughts that had occurred to them during the past 5 minutes, and to make a number of ratings on a scale from 0 to 3 of (a) how easy or difficult it was to remember these thoughts (metacognitive awareness), (b) the degree to which he/she had tried to control these thoughts (metacognitive control), and (c) their actual emotional state (seven ratings: degree of alertness/arousal, happiness, tension/worry, anger/annoyance, sadness/depression, tiredness/sleepiness, and pleasant/relaxed bodily feelings).

In this study, the CEST-d showed high criterion validity by predicting the corresponding cognitive and emotional measures at nighttime before sleep onset, as measured by a nighttime version of the same task (CEST-n). In other words, the CEST measures of metacognitive control,

metacognitive awareness, negative affect, and alertness seem to be relatively stable aspects of individual functioning, which do not differ in any radical fashion from the daytime rest situation to the nighttime presleep situation. Furthermore, it means that we do not have to rely on observation of these processes at nighttime before sleep onset, but can study them under better controlled conditions in the laboratory. It may also be worth exploring if other aspects of presleep functioning can also be studied in this way, that is, by administering various kinds of daytime tasks in restful states.

## Acceptance of Spontaneously Occurring Processes Versus Verbal Regulation and Control

During the last decade, acceptance has become a central concept in several new forms of cognitive-behavioral therapy, the most important of which are Acceptance and Commitment Therapy (ACT; Hayes et al., 1999) and Dialectical Behaviour Therapy (DBT; Linehan, 1993). A main theme in these therapies is that, whereas strategies for controlling events and achieving change are functional in many areas of dysfunctional behavior, *acceptance* is the most functional approach in others—as for example when the dysfunctional process consists of thoughts, emotions, or memories. “Experiential avoidance” (i.e., avoidance of thoughts, feelings, memories, etc.), in fact, is regarded by Hayes and colleagues (1999) as one of the main causes of human psychopathology. According to Hayes and colleagues, experiential avoidance is an example of the *verbal overregulation* of psychological processes. Verbal regulation of behavior clearly is an example of controlled information processing.

Research on thought suppression, worrying, and rumination seems consistent with the claim that some kinds of psychopathology may involve a verbal overregulation of psychological processes. For example, experimental research indicates that deliberate thought suppression—a prime example of verbal regulation of thought processes—tends to produce an increase in the suppressed thoughts (Wenzlaff & Wegner, 2000). Borkovec’s (1994) research on generalized anxiety disorder similarly implies that the chronic worries that are typical of GAD patients represent an overreliance on a verbal thinking, and a suppression of imagery, affect, and emotional processing. Another example that strongly points in the same direction is Nolen-Hoeksema’s (2000) research on the role of verbal rumination for the development and maintenance of depression, and of mixed depression/anxiety states.

With regard to insomnia, this raises the following questions:

1. To what extent is insomnia due to a *verbal overregulation of processes of sleep*, which is futile and even counterproductive because sleep is not subject to this kind of control?
2. To what extent is insomnia due to a *verbal overregulation of cognitive and emotional processes*, for example in the form of worry, rumination, thought suppression, etc?

There is accruing evidence that verbal overregulation and avoidance may be important maintaining processes in insomnia. In a questionnaire study, Harvey (2001) documented that people with insomnia generally report more of metacognitive thought control strategies, in particular thought suppression, reappraisal, and worrying than good sleepers. In a second experimental study, Harvey (2003) let the participants select the thought most likely to dominate their presleep cognitive activity, and randomly allocated them to either a thought-suppression condition or a nonsuppression condition. The former group were instructed to suppress the self-selected thought during the presleep period, whereas the latter group were instructed not to control their thoughts. The results showed that participants who were instructed to suppress their thoughts reported longer sleep latencies and poorer sleep quality than participants given nonsuppression instructions. She therefore concluded that active control strategies in the presleep situation may be maladaptive and that the process of falling asleep should involve minimal

effort. Lundh and Hindmarsh (2002) similarly found that the degree of metacognitive control, as measured by the daytime CEST, correlated with longer sleep latency, shorter sleep time, and lower sleep satisfaction. This corroborates the hypothesis that controlled information processing, at least when it takes the form of metacognitive control, is associated with sleep problems.

Higher degrees of rumination also seem to be associated with longer sleep latencies and poorer sleep quality, even when controlling for negative mood (Thomsen, Mehlsen, Christensen, & Zachariae, 2003). Further evidence that people with insomnia are involved in excessive verbal thinking that is counterproductive both with regard to sleep and daytime functioning was contributed by Nelson and Harvey (2002, 2003). In one study, they found that verbal thinking about stressful matters during the presleep period was associated with longer sleep latencies and more anxiety and discomfort the next morning, as compared with thinking about the same stressful matters in terms of mental images (Nelson & Harvey, 2002), and in a second study they found that patients with insomnia showed less presleep imagery than good sleepers (Nelson & Harvey, 2003).

Attempts at verbal regulation of cognitive processes whilst trying to get to sleep seem clearly dysfunctional. It is difficult to fall asleep by telling oneself to do so, and all kinds of strategies for falling asleep have the potential of backfiring if the efforts involved lead to an increased arousal. The research reviewed above adds to this picture by strongly indicating that attempts at verbal regulation of cognitive and emotional processes in the presleep situation are also likely to be dysfunctional. What would seem to be functional in the presleep situation is an increased reliance on spontaneous (i.e., not verbally regulated) processes of physical and mental relaxation and mental imagery.

## ACCEPTANCE AND MINDFULNESS IN THE TREATMENT OF INSOMNIA

A main argument of this second section of the article is that techniques from acceptance-focused therapies and mindfulness training should be tested as possible ways of improving the efficacy of cognitive-behavioral treatment for insomnia. It is interesting to note that these kinds of techniques have been advocated by both behaviorists (e.g., Hayes et al., 1999; Linehan, 1993) and cognitive therapists (e.g., Segal et al., 2002), and with regard to a number of different psychological disorders, including borderline personality disorder (Linehan, 1993), substance abuse (Breslin, Zack, & McMain, 2002), depression (Segal et al., 2002), and generalized anxiety disorder (Roemer & Orsillo, 2002). Basic research indicates that mindfulness is associated with both psychological well-being and self-regulation (Brown & Ryan, 2003).

The concept of "mindfulness" refers to a specific way of disengaging from daily concerns and strivings, namely by "paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally" (Kabat-Zinn, 1994, p. 4), thereby fostering "a decentered relationship to mental contents" (Segal et al., 2002, p. 41), or what Hayes and colleagues (1999) refer to as "cognitive defusion." Hayes and colleagues argue that, as we go on constantly describing, categorizing, and evaluating events in terms of verbal language, we tend to become "fused" with our cognitions. That is, we tend to see the world *from* our thoughts, and to identify our thoughts with reality, rather than seeing them *as thoughts*. Mindfulness means to become "decentered" or "defused" and to see one's thoughts as what they are—just thoughts. In other words, mindfulness may be defined as a metacognitive activity of observing one's own cognitive and emotional processes, without trying to change or control these processes.

Why should practice in mindfulness be associated with better sleep? If one of the causal factors behind insomnia is an overreliance on controlled strategic verbal information processing in the presleep situation, and a corresponding inability to accept spontaneously occurring physical and psychological processes—an inhibition of cognitive and physiological dearousal processes,

in Espie's (2002) terms—then mindfulness practice should have a beneficial effect on sleep precisely because it means to train one's ability to observe spontaneously occurring physical and psychological processes in a noncontrolling way. Mindfulness practice could even be seen as a method for training the ability to deactivate controlled information processing.

### **Mindfulness in the Treatment of Insomnia**

The current mindfulness literature describes numerous meditation exercises designed to develop mindfulness skills (e.g., Kabat-Zinn, 1994; Linehan, 1993; Marlatt, 1994; Segal et al., 2002). Although these exercises differ in various ways, they all suggest that mindfulness should be practiced with an attitude of nonjudgmental *acceptance*. That is, perceptions, cognitions, emotions or sensations that enter the individual's awareness during mindfulness practice are observed carefully but are not evaluated as good or bad, true or false, healthy or sick, or important or trivial. Hayes (1994), for example, suggests that acceptance involves "experiencing events fully and without defense, as they are" (p. 30), and points out that many clinicians have overemphasized the importance of changing all unpleasant symptoms, without recognizing the importance of acceptance. Applied to insomnia, an increased mindfulness would mean a nonjudgmental observation and acceptance of both (a) fluctuations in the ability to fall asleep, and (b) thoughts, images, feelings and memories that appear in the presleep situation. The basic idea would be that mindfulness skills would be practiced during the day, and only applied at night when competence during the day has been achieved.

Shapiro and colleagues (2003) applied Kabat-Zinn's model for mindfulness-based stress reduction (MBSR) to sleep problems in a group of women with breast cancer. Although there was no significant difference between the mindfulness group and a control group on sleep measures, the results showed that participants who reported greater mindfulness practice reported significantly improving sleep quality. It should be noted, however, that this treatment was not adapted for sleep problems but involved a general training focused especially on mindful breathing. In an uncontrolled study, Heidenreich (2003) used a mindfulness approach that was more specifically adapted for insomnia patients, and which combined Kabat-Zinn's model for mindfulness training with a cognitive model for insomnia, along the same lines as described by Segal and colleagues (2002) in the treatment of depression. The results showed significant decreases in problematic cognitive activity, as well as a significant increase of total sleep time and a decrease in sleep latency in a group of 14 insomnia patients. Because there was no control group, however, no firm conclusions about the effectiveness of this treatment model can, as yet, be drawn.

Lundh and Hindmarsh's (2002) CEST study also produced some promising data in this regard, by showing that the administering of a nighttime version of the CEST during 1 week was associated with decreased sleep latencies, longer sleep time, and better sleep satisfaction, as compared with a baseline week. Although the CEST does not represent a clearcut mindfulness intervention, it involves a similar kind of cognitive activity (mindful observation of one's own cognitive and emotional processes in the presleep situation) that is likely to interrupt worrying, rumination, and other kinds of sleep-interfering cognitive processes. It is important to note that the CEST task in this study was in no way presented as a treatment that might lead to improved sleep but only as a method for observing one's presleep processes; to guard against implicit suggestions of this kind, the experimenter was blind to this hypothesis. Nevertheless, the lack of a control group (i.e., a group who recorded their sleep without CEST recordings during both weeks) precludes any definite conclusion with regard to the effects of the CEST recordings. Still, these results clearly indicate that it may be worth carrying out more research with the CEST as a possible treatment component, designed to counteract sleep-interfering cognitive and emotional arousal.

## What Can Insomnia Treatment Learn From Acceptance and Commitment Therapy?

In Hayes and colleagues' (1999) Acceptance and Commitment Therapy (ACT), the therapist begins the process by focusing on three primary questions:

1. What does the client want?
2. What has the client tried? and
3. How has that worked?

That is, one of the first goals in the initial assessment phase is to enumerate all of the various methods that the client has used and how they have worked. According to Hayes's model, this often leads to the identification of a class of futile control strategies that have not worked—an “unworkable change agenda.” The next goal is then to introduce an alternative to these control strategies, which Hayes refers to in terms of “acceptance.” This kind of approach may be suitable in the treatment of insomnia, because sleep problems represent a paradigm example of a problem where control strategies are bound to fail. This means that the assessment of insomnia should include a detailed review of all kinds of techniques that the client has tried in order to improve his or her sleep. This will most probably lead to an identification of a class of goal-directed control strategies that have not worked very well, and which can be the starting point for looking at alternatives that involve more of acceptance.

Another concept from ACT that may be relevant to insomnia is “cognitive defusion,” or “deliteralization,” which means becoming aware of one's thoughts as thoughts, and is seen as a key intervention in ACT. As Hayes and colleagues argue, “eliciting difficult experiences allows them to be observed and studied experientially” in a stance of “nonjudgmental detachment.” A basic point here is that dysfunctional beliefs and negative automatic thoughts are not evaluated as something negative to get rid of. One reason for this is that evaluations of this kind risk fueling vicious cycles of having negative automatic thoughts about one's negative automatic thoughts. As the authors formulate it: “ACT undermines evaluation in an interesting way: by reducing the dominance of language itself. ACT does not evaluate evaluation. It does not say, ‘You shouldn't say should’ or ‘It is bad to say bad.’ Instead, ACT tries to open the window and let a little (nonverbal) air in” (Hayes et al., 1999, p. 76). A pilot study of an ACT-inspired group treatment of insomnia has recently been carried out with promising results (Åkerlund, Bolanowski, & Lundh, 2004).

It is important to note that all methods for the treatment of insomnia, including mindfulness exercises and acceptance techniques, may be drawn into potentially self-defeating attempts to fall asleep by means of controlled efforts—that is, they may all be used as *techniques* for the explicit purpose of falling asleep more or less instantly. One way of counteracting counterproductive efforts of this kind in the treatment of insomnia is to use “counter-demand instructions” (Steinmark & Borkovec, 1974) as part of the rationale, that is, to instruct the patient that no improvement is to be expected during the first weeks of treatment. Most importantly, however, the patient may be instructed that treatment is a matter of *learning new skills*—which is a process that takes time—and not a matter of finding techniques that can be used instantly to fall asleep. For example, if the CEST procedure is included in treatment packages for insomnia, care should be taken that the procedure is *not* used as a technique in order to fall asleep instantly.

## Helping the Client Construct a New “Schematic Model” of Sleep and Sleeplessness

If acceptance and mindfulness techniques are applied to patients' presleep processes, this may also contribute to a relearning about sleep and the contingencies of falling asleep. For example,

mindful observation of these processes may be assumed to lead to the perception that presleep processes and sleep fluctuates naturally as the result of various kinds of external and internal events (stressful events, emotional concerns, etc.), and to a more elaborated belief that sleep is not under voluntary control and that these fluctuations must therefore be accepted. The use of acceptance and mindfulness techniques may thereby also help to change dysfunctional sleep-interpreting processes that are common in insomnia. In addition, it may also be useful to help make these perceptions more explicit with the help of Socratic questioning, behavioral experiments, and other psychoeducational methods.

One psychoeducational demonstration that can be used is based on a graphical model of goal-directed activities and be depicted on a blackboard. In this model, goal-directed activities are depicted as mobilizing the person's efforts toward achieving a certain goal, and as thereby creating a tension between the person's present state and a desired goal-state—a tension that is released when the goal-state is reached. A main point to be made is that such goal-directed activities are adequate in many different contexts, when an individual is faced with problems that have to be solved. But if the goal that is to be reached requires a relaxed state, then these kinds of efforts and this kind of tension are counterproductive and may even make it more difficult to reach the goal. Paradoxically, therefore, if a person tries to relax in order to fall asleep, or tries to fall asleep by means of carrying out mindfulness exercises, this may in fact create a tension or arousal that makes it more difficult to fall asleep. Moreover, if a person fails to reach the desired goal, he or she may become frustrated in a way that increases tension and arousal even more. To help the patient get a label on this process, this phenomenon may be referred to as "trying too hard to fall asleep."

To borrow a term from Teasdale (1999), the kind of cognitive change that may be accomplished in this way can be described in terms of the creation of a new "schematic model" of sleep and sleep problems. Some main themes in such a new schematic model of insomnia are illustrated in Table 1.

## SUMMARY

The present article has argued for the inclusion of acceptance and mindfulness techniques in the treatment of insomnia. It has been argued that insomnia is often maintained by vicious cycles of sleep-interfering arousal processes and dysfunctional sleep-interpreting processes that mutually reinforce each other. To the extent that this is the case, and the person's sleep-interfering processes involve an excessive reliance on controlled information processing and verbal thinking in general, acceptance- and mindfulness-based interventions may be indicated. The rationale for this is that these techniques may help foster a more accepting approach to spontaneously occurring physical and psychological processes, which may help to promote sleep.

**TABLE 1. MAIN THEMES IN A FUNCTIONAL SCHEMATIC MODEL OF SLEEP AND SLEEP PROBLEMS**

- (1) Sleep fluctuates as the result of various kinds of external and internal events (stressful events, emotional concerns, etc.).
- (2) Sleep is not under voluntary control, and there are no techniques that can be used efficiently in order to fall asleep, so these fluctuations have to be accepted.
- (3) A sleepless night is no catastrophe. "Even if I will get no sleep at all tonight, I will still manage tomorrow."
- (4) A poor night's sleep is generally compensated for by deeper and more refreshing sleep (i.e., increased delta sleep) the coming nights.
- (5) Sleep may be improved by learning new skills and habits, but this is a process that leads to effects over time, and is not a matter of using techniques in order to fall asleep.

It should be remembered, however, that insomnia patients present with a large variety of different clinical pictures, and that treatment should always rest on a functional analysis of the specific person's sleep problems (Lundh, 1998, 2000). What is argued for here is not that acceptance- and mindfulness-based techniques represent some kind of panacea in the treatment of insomnia, but rather that they be *included* in the armamentarium of methods that is needed in the treatment of insomnia, and that this may be one of several ways of increasing the efficacy of insomnia treatment. To test this hypothesis, the suggestion is that (a) a number of pilot studies are carried out involving various combinations of mindfulness- and acceptance-focused interventions, until a highly credible treatment model is crystallized, and then (b) to test this new treatment model in randomized controlled studies, comparing it to empirically validated CBT treatments like stimulus control and sleep restriction.

Another, possibly complementary approach to the development of improved treatment methods is Harvey's (2002b) recent cognitive model of insomnia. Whereas her model focuses on *sleep-interpreting* cognitive processes (perceptions of sleep, beliefs about sleep, sleep expectations, etc.), an acceptance/mindfulness approach focuses on *sleep-interfering* cognitive processes (i.e., an excessive reliance on verbal regulation of behavior, controlled information processing, etc., *independently of cognitive content*). If insomnia is an interaction between sleep-interfering and sleep-interpreting processes, as argued by Lundh and Broman (2000), then Harvey's approach and the acceptance/mindfulness approach clearly focus on different parts of this interaction, and may therefore represent two complementary approaches to the development of better methods for the treatment of insomnia.

## REFERENCES

- Åkerlund, R., Bolanowski, I., & Lundh, L. G. (2004). *A pilot study of an ACT-inspired approach to the treatment of insomnia*. Unpublished data.
- Baer, R. A. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice, 10*, 125–143.
- Bonnet, M. H., & Arand, D. L. (1995). 24-hour metabolic rate in insomniacs and matched normal sleepers. *Sleep, 18*, 581–588.
- Bonnet, M. H., & Arand, D. L. (1998). The consequences of a week of insomnia. II. Patients with insomnia. *Sleep, 21*, 359–368.
- Bootzin, R. R. (1972). Stimulus control treatment for insomnia. *Proceedings of the American Psychological Association, 7*, 395–396.
- Borkovec, T. D. (1994). The nature, function, and origins of worry. In G. Davey & F. Tallis (Eds.), *Worrying. Perspectives on theory, assessment and treatment* (pp. 5–33). New York: Wiley.
- Breslin, F. C., Zack, M., & McMains, S. (2002). An information-processing analysis of mindfulness: Implications for relapse prevention in the treatment of substance abuse. *Clinical Psychology: Science and Practice, 9*, 275–299.
- Broman, J. E., & Lundh, L. G. (2003). Vicious cycles of sleeplessness: A new scale for insomnia. *Sleep, 26*, A298.
- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*, 822–848.
- Espie, C. A. (2002). Insomnia: Conceptual issues in the development, persistence, and treatment of sleep disorders in adults. *Annual Review of Psychology, 53*, 215–243.
- Foulkes, D., & Vogel G. (1965). Mental activity at sleep onset. *Journal of Abnormal Psychology, 70*, 231–243.
- Harvey, A. G. (2000). Pre-sleep cognitive activity: A comparison of sleep-onset insomniacs and good sleepers. *British Journal of Clinical Psychology, 39*, 275–286.
- Harvey, A. G. (2001). I can't sleep, my mind is racing! An investigation of strategies of thought control in insomnia. *Behavioural and Cognitive Psychotherapy, 29*, 3–11.

- Harvey, A. G. (2002a). Identifying safety behaviours in insomnia. *Journal of Nervous and Mental Disease*, 190, 16–21.
- Harvey, A. G. (2002b). A cognitive model of insomnia. *Behaviour Research and Therapy*, 40, 869–893.
- Harvey, A. G. (2003). The attempted thought suppression of pre-sleep cognitive activity in insomnia. *Cognitive Therapy and Research*, 27, 593–602.
- Harvey, A. G., & Greenall, E. (2003). Catastrophic worry in primary insomnia. *Journal of Behavior Therapy and Experimental Psychiatry*, 34, 11–23.
- Harvey, A. G., & Tang, N. K. Y. (2003). Cognitive behaviour therapy for primary insomnia: Can we rest yet? *Sleep Medicine Reviews*, 7, 237–262.
- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and commitment therapy*. New York: Guilford Press.
- Heidenreich, T. (2003). *Mindfulness-based cognitive therapy for insomnia: A pilot study*. Poster presented at the EABCT conference, Prague, Czechoslovakia.
- Kabat-Zinn, J. (1994). *Wherever you go there you are*. New York: Hyperion.
- Linehan, M. M. (1993). *Cognitive-behavioral treatment of borderline personality disorder*. New York: Guilford Press.
- Lundh, L. G. (1998). Cognitive-behavioural analysis and treatment of insomnia. *Scandinavian Journal of Behaviour Therapy*, 27, 10–29.
- Lundh, L. G. (2000). An integrative model for the analysis and treatment of insomnia. *Scandinavian Journal of Behaviour Therapy*, 29, 118–126.
- Lundh, L. G., & Broman, J. E. (2000). Insomnia as an interaction between sleep-interfering and sleep-interpreting processes. *Journal of Psychosomatic Research*, 49, 1–12.
- Lundh, L. G., & Hindmarsh, H. (2002). Can meta-cognitive observation be used in the treatment of insomnia? A pilot study of a cognitive-emotional self-observation task. *Behavioural and Cognitive Psychotherapy*, 30, 239–242. (This is a brief summary of an extended report that is available from the first author.)
- Lundh, L. G., Lundqvist, K., Broman, J. E., & Hetta, J. (1991). Vicious cycles of sleeplessness, sleep phobia, and sleep-incompatible behaviours in patients with persistent insomnia. *Scandinavian Journal of Behaviour Therapy*, 20, 101–114.
- Marlatt, G. A. (1994). Addiction, mindfulness, and acceptance. In S. C. Hayes, N. S. Jacobson, V. M. Follette, & M. J. Dougher (Eds.), *Acceptance and change: Content and context in psychotherapy* (pp. 175–197). Reno, NV: Context Press.
- Morin, C. M. (1993). *Insomnia. Psychological assessment and management*. New York: Guilford.
- Nelson, J., & Harvey, A. G. (2002). The differential functions of imagery and verbal thought in insomnia. *Journal of Abnormal Psychology*, 111, 665–669.
- Nelson, J., & Harvey, A. G. (2003). Pre-sleep imagery under the microscope: A comparison of patients with insomnia and good sleepers. *Behaviour Research and Therapy*, 41, 273–284.
- Nelson, J., & Harvey, A. G. (2003b). An exploration of pre-sleep cognitive activity in insomnia. Imagery and verbal thought. *British Journal of Clinical Psychology*, 42, 271–288.
- Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *Journal of Abnormal Psychology*, 109, 504–511.
- Perlis, M. L., Merica, H., Smith, M. T., & Giles, D. E. (2001). Beta EEG activity and insomnia. *Sleep Medicine Reviews*, 5, 365–376.
- Rechtschaffen, A. (1994). Sleep onset: Conceptual issues. In R. D. Ogilvie & J. R. Harsh (Eds.), *Sleep onset: Normal and abnormal processes* (pp. 3–18). Washington, DC: American Psychological Association.
- Roemer, L., & Orsillo, S. M. (2002). Extending our conceptualization of and treatment for generalized anxiety disorder: Integrating mindfulness/acceptance-based approaches with existing cognitive-behavioral models. *Clinical Psychology: Science and Practice*, 9, 54–68.
- Schacter, D. L. (1976). The hypnagogic state: A critical review of the literature. *Psychological Bulletin*, 83, 452–481.

- Segal, Z., Williams, M., & Teasdale, J. (2002). *Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse*. New York: Guilford.
- Shapiro, S. L., Bootzin, R. R., Figueredo, A. J., Lopez, A. M., & Schwartz, G. E. (2003). The efficacy of mindfulness-based stress reduction in the treatment of sleep disturbance in women with breast cancer. An exploratory study. *Journal of Psychosomatic Research*, *54*, 85–91.
- Spielman, A. J., Caruso, L. S., & Glovinsky, P. B. (1987). A behavioral perspective on insomnia treatment. *Psychiatric Clinics of North America*, *10*, 541–553.
- Steinmark, S. W., & Borkovec, T. D. (1974). Active and placebo treatment effects on moderate insomnia under counterdemand and positive demand instructions. *Journal of Abnormal Psychology*, *83*, 157–163.
- Tang, N. K. Y., & Harvey, A. G. (2004). Correcting distorted perception of sleep in insomnia: A novel behavioural experiment? *Behaviour Research and Therapy*, *42*, 27–39.
- Teasdale, J. D. (1999). Metacognition, mindfulness, and the modification of mood disorders. *Clinical Psychology and Psychotherapy*, *6*, 146–155.
- Thomsen, D. K., Mehlsen, M. Y., Christensen, S., & Zachariae, R. (2003). Rumination—Relationship with negative mood and sleep quality. *Personality and Individual Differences*, *34*, 1293–1301.
- Wenzlaff, R. M., & Wegner, D. M. (2000). Thought suppression. *Annual Review of Psychology*, *51*, 59–91.

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