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REVIEW ARTICLE

Insomnia in College Students: Specificities Regarding Psychological Treatment

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ABSTRACT
Cognitive and behavioral techniques for insomnia´s treatment have solid empirical evidence. Generally, when psychologists treat insomniac college students they face important challenges in the implementation of standard techniques. This paper aims to present a script of cognitive-behavioral therapy for insomnia (CBT-I) adapted to college students based on our clinical experience. We discuss the most frequently strategies recommended for the treatment of insomnia in adults taking into account the adjustments that might be necessary to do in order to maximize its effectiveness and efficiency for a college student population. In the end, we highlight the main points that should be explored in future empirical studies. CBT-I seems to be relevant for treating insomnia in college settings, however, the study of adaptation of the well-known techniques seems necessary to maximize its therapeutic effect.
Keywords: Insomnia, college students, CBT-I, sleep, psychotherapy

INTRODUCTION

Insomnia, characterized by difficulty falling asleep, waking up in the middle of the night or too early in the morning for at least 3 months (Diagnostic and Statistical Manual of Mental Disorders, 5th edition, 2013), is one of the most common problems in the context of sleep disturbances (ICSD-2, AASM, 2005). It is estimated that 30% of adults report symptoms of insomnia and between 6% and 10% meet diagnostic criteria for the disorder (Roth, 2007).

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There is a considerable percentage of university students who complain of insomnia being the most prevalent sleep disorder among this population (Buboltz et al., 2009; Buboltz, Soper, Brown, & Jenkins, 2002; Taylor et al., 2011). In a recent study, it was found that 9.5% of college students met DSM-5 criteria for insomnia (Taylor, Bramoweth, Grieser, Tatum, & Roane, 2013). These students reported increased levels of depression, anxiety, stress, fatigue, and worse quality of life compared to students without insomnia. Many negative consequences of insomnia in college students have been documented including low grade point average (Gaultney, 2010), risky sexual and aggressive behaviors (Vail-Smith et al., 2009), and suicidal ideations (Nardorff, Nazem, & Fiske, 2011). For these reasons, it seems particularly important to discuss some of the central tenets of the assessment and treatment of insomnia associated with this population.

Cognitive-behavioral therapy is the gold standard

treatment for insomnia (Morgenthaler et al., 2006; Morin et al., 2006). It comprises a set of procedures aimed at modifying behaviors and cognitions related to sleep. The "standard" techniques (i.e., the ones with the best available evidence) are stimulus control, relaxation training and multi-modal cognitive-behavioral therapy (CBT-I); this latter comprises a combination of the above approaches and cognitive–oriented techniques, including sleep hygiene education as well. Sleep restriction and cognitive therapy represent the strategies whose efficacy levels are more modest (cf. Morgenthaler et al., 2006) though a recent review suggests that there seems to be evidence to upgrade the "status" of sleep restriction therapy (Miller et al., 2014). Sleep hygiene education, which involves recommendations to help individuals change behaviors associated with insomnia, remains inconclusive as a single therapy for insomnia (Morgenthaler et al., 2006) though valuable as a first step into treatment. It must be stressed that multi-modal CBT-I is indeed the method frequently used in clinical and research settings. This is due to the diversity of patients whose clinical symptomatology demands particular strategies to favor. There are other techniques that have been developed over the years that are worth mentioning such as mindfulness-based CBT-I (Lundh, 2005; Ong & Scholtz, 2010) and cognitive refocusing therapy (Gellis, Arigo, & Elliot, 2013), among others.

The college experience involves specific challenges to maintaining a good night's sleep which, if considered in clinical formulations, may increase the likelihood of therapeutic success (Kloss et al., 2011). Accordingly, we think it is important to reflect on the application of psychological treatment of insomnia in context of the college population. We found only one article in the literature by Buboltz et al. (2002) that addresses this issue - which apart from being generic (not specific to insomnia) focuses more on the description of the strategies for treating insomnia and less on how to adapt these strategies to this population.

In this article, we describe the most common strategies used in the psychotherapeutic treatment of insomnia, but also propose to introduce some adaptations of these same techniques in intervention with college students.

Challenging the conventional techniques

Insomnia is one of the disorders for which the treatment is relatively well-established (Buysse, 2010, 2011; Edinger & Carney, 2008; Morgenthaler et al., 2006; Morin, 1993; Morin & Espie, 2003; Perlis, Benson-Jungquist, Smith, & Posner, 2005). This helps the selection of the best strategies for each patient (from the list of evidence-based strategies for insomnia). In this section, we will provide information about the current strategies – which together are known as multimodal CBT-I – used in clinical management of insomnia in adults considering the challenges when these strategies are applied to college students. The age and the changes in personal life that college students experience are two points that should be highlighted. Although most students attending higher education are young adults, it is important to note that older people are returning to college at an increasing rate (Richardson & Estelle, 1998). Furthermore, it is important to be aware that students, as a rule, get housing in the city where they will study. Thus, in these settings it is usual to meet students living in rented rooms, in university residence halls and apartments, among others. The place where they live and sleep consequently, is thus crucial for planning appropriate therapeutic interventions. Several studies have found that the time of transition from high school to college is particularly important to the precipitation of sleep problems (Buboltz et al., 2002; Buboltz, et al., 2009; Espie, Broomfield, MacMahon, Macphee, & Taylor, 2006; Taylor et al., 2011). This might occur regardless of the student having to move to another geographical area, although it may be more likely to happen in the latter case (cf. Gomes, Tavares, & Azevedo, 2009). We must emphasize that the first randomized controlled trial (RCT) about the CBT-I for insomnia in college settings was published in 2014. This study found that the traditional techniques used in other contexts (sleep medicine centers, hospitals centers and hospitals) were effective, and the majority of students improved in several measures. A 3-month follow-up measure was included as well (Taylor et al., 2014). According to these exploratory data, we can now simultaneously try to improve our standard techniques to better fit the college experience of the students, although always conforming to the theoretical principles of the clinical strategies.

Technique 1: Sleep Education/Sleep Hygiene

Rational and procedures

Hauri (1991) was the first author who proposed the term "sleep hygiene" in 1977. Sleep education/sleep hygiene is usually the first step in any clinical intervention concerning sleep behavior. Briefly, we can say that sleep hygiene represents a set of guidelines on aspects related to sleep (e.g., sleep architecture, changes in sleep patterns associated with the development, among many others) and general health practices that may interfere with sleep behavior (Perlis et al., 2005).

Sleep Hygiene Education involves recommendations to engage in the following behaviors: 1 – Always wake up at the same time every day – Maintaining a regular waking time is important to regulate the morning light exposure which is an important factor to adjust the biological clock and prevent sleep phase delay, and help individuals to sleep at the time that is maximally promoted (Troxel, 2012); 2 – Engage in regular physical exercise, but not close to bedtime (e.g., up to 3 hours before) - this regular activity decreases sleep latency and enhances sleep depth; 3 – Promote an optimal sleep environment (i.e., quality mattress and pillows, minimal noise, no exposure to light, and cool temperature); 4 – Practice regular meal schedules and avoid going to sleep hungry - when feeling hungry the individual's attention tends to focus on physiological sensations, causing discomfort and by extension disturbing sleep-onset); 5 – Avoid drinking large amounts of liquids late in the day/early evening (the rationale is that if there is less intake of fluids, the kidneys will not produce so much urine which leads to bladder filling and indicating to the brain the need to urinate at night, and therefore the need to wake up); 6 – Avoid stimulants such as products with caffeine (coffee, chocolate and some types of tea after noon) and avoid nicotine products close to the bedtime. Stimulants contribute to the increase of the level of excitability of central nervous system; On the other hand, taking tryptophan-rich foods may improve sleeping; 7 – Avoid alcoholic beverages in the evening (it must be explained to the patient that although alcohol facilitates sleep-onset, it leads to sleep fragmentation and contributes to poor quality of sleep, making it superficial); 8 – Put the clock out of sight and not look at it during the night, because that will signal the hours that have passed, during which the patient was unable to fall asleep or slept little time (Tang, Schmidt, & Harvey, 2007); 9 – Avoid naps (in patients with insomnia this is a cardinal rule - not napping will create pressure to sleep that will lead to homeostatic equilibrium), and 10 – Avoid sleeping with pets (since frequent movements of pets can cause interruptions of sleep). As may be seen, the prescriptions concerning sleep hygiene are related to other techniques such as sleep restriction in bed or control stimulus (Morin & Espie, 2003), and sometimes it becomes a complex task to discriminate and distinguish between the different strategies.

Challenges in College Students

Some students have only the chance to practice exercise at the end of the day/evening. This practice has a high probability to interfere with sleep-onset, leading to complains of insomnia. They try then to compensate by extending the time in bed the next morning.

The university environment is also known by the propensity to consume alcoholic beverages (Bewick, Mulhern, Barkham, Trusler, Hill, & Stiles, 2008). In this particular population, this is a critical assessment topic. A common practice is the consumption of foods or drinks containing caffeine including coffee and energetic drinks (Brache & Stockwell, 2011). Although many students do not make frequent use of substances containing caffeine, when faced with specific stress situations or tasks requiring focused attention (e.g., studying for exams, oral presentations) there is a potential for abuse of these substances (Means, Lichstein, Epperson, & Johnson, 2000).

Many students live in rented rooms or shared apartments (at least on weekdays) and it is likely that environmental issues can disturb their sleep, especially noise from roommates, poor ventilation, too high or too low temperature, among others. Since it is usual for many young people working on the computer in the evening, this may lead to the delay of sleep-onset. This may be due in part to the brightness and blue light emanating from the computer monitor (Santhi et al., 2012). This

leads to the inhibition of the melatonin hormone production by the pineal gland, and it will delay the perception of drowsiness. The same applies to the case of television.

The importance of chronotype – A brief note

In the assessment of insomnia among college students, the clinician must be aware of the chronotype "profile" the student has. Put simply, chronotype refers to the variations in diurnal preferences for activity and sleep or a way of describing someone's habitual activity-rest cycle (Goel, Dongen, & Dinges, 2011). The college student, a typical old-adolescent or young-adult, has a developmental tendency to become more owlish (Zimmerman, 2011). They prefer getting to bed later and getting-up later as well. This condition may disturb the social and academic behavior since the adjustment to the standard schedules of lessons may be hard to perform (Gomes et al., 2011). In evening types, there is a tendency to report more sleep disturbances and other psychological symptomatology (Ong, Huang, Kuo, & Manber, 2007). Many students have stringent evening chronotypes. It is possible that they come to the sleep consultation with insomnia complaints, even though this is due to a failed attempt to try to sleep at a time when biologically the individuals are not ready to sleep. Likewise, there is a significant impairment in daytime function, as when the student has to wake-up to go to the college, that provokes disturbance with the sleep phase peak. Besides, according to Terman and McMahan (2012) there are other environmental variables that can influence the sleep behavior of the college student: (1) there are fewer parental control; (2) the majority of roommates with whom the student may share her/his bedroom are owlish; (3) the implicit assumption that early bedtimes is a sign of infancy; (4) social life more pronounced at night; (5) more time devoted to work with a computer, texting messages, and watching TV in the bedroom; (6) irregular meals schedules; among many others. Thus, the assessment of chronotype is of utmost importance to correctly evaluate and manage insomnia complaints or insomnia disorder in college.

Suggestions

To overcome the challenge of the evening exercise, it is important that clinician and student discuss the benefits of exercise as well as consequences of exercising close to bedtime. It must be agreed with the student to avoid making exercise three hours before bedtime as well, and if possible, trying to move exercise time to the morning. By conducting behavioral experiments, it should be discussed the benefits and harms of alcohol / caffeine consumption and its influence on sleep patterns (Ree & Harvey, 2004). It is recommended that computer use also be discussed, as well as the possibility of decreasing the light and brightness on their computers and TVs at night. The reinforcement strategies based in operant conditioning such as positive reinforcement or differential reinforcement of alternative behaviors may help in this process.

Technique 2: Stimulus Control Therapy

Rational and procedures

Stimulus control therapy (SCT) represents a set of instructions that are provided to the patient in order to re-associate specific stimuli such as the bed or the bedroom with sleep, and it aims also to re-establish a consistent and regular sleep schedule (Bootzin et al., 2010; Morgenthaler et al., 2006; Morin & Espie, 2003; Perlis et al., 2005). This technique involves five core requirements: (1) going to bed only when the patient feels sleepy; (2) getting out of bed if he/she doesn´t fall asleep within 10 minutes (Harvey & Tang, 2003) or 20 minutes (Morin et al., 2006), going to another room, occupying himself/herself with a monotonous activity and returning to bed only when he/she feels sleepy again; (3) use the bed/bedroom only for sleeping or sexual activity (i.e., not activities such as reading, eating or watching television); (4) waking up in the morning, about the same time regardless of the amount of sleep obtained the night before; and (5) avoid napping during the day or during wakefulness. The rationale that is behind this procedure is that there is a negative conditioning or maladaptive behavior between stimuli associated with sleep and behaviors incompatible with sleep, such as the worry for not being able to sleep.

Challenges in College Students

Given that many students live in rented rooms with roommates (and this is where they spend much of their time and do a diversity of activities, from eating to studying), the SCT involves significant challenges. When the student receives the instruction to leave the bedroom if he/she cannot fall asleep within 15 minutes, this may involve going to another room - in which other people are engaging in stimulating activities - not allowing the student to perform monotonous tasks. On the other hand, the student may need to move to another area of the house while avoiding the exposition to noises. Often, these students say to the clinician that they intuitively stood up from the bed and left the room to go do another task. However, this behavior did not follow a strategy or a judicious planning. Additionally, they report that they take the time to advance work or study for an exam, for example. It is essential that clinician explains to the student that this is an activity which is prohibited as it is intensifying her/his insomnia. An additional aspect to be noted which is relevant to consider in some countries (e.g., Portugal), is the weak thermal insulation of houses that makes the procedure of getting out of bed painful because of the cold that is felt, especially in winter time.

Suggestions

Without losing sight of the stimulus control principle, one of the interesting adaptations that can be done is to suggest the student acquire a folding screen that allows it to differentiate "sections" in their own bedroom. In practice, it concerns to create a "small house" inside its own bedroom so that the bed will be used exclusively only to sleep. This way, the student will be allowed to stay only in the "desktop study division" and just go to the "bedroom" (bed) when feeling drowsy and in order to sleep. Watching TV or working on the computer can be associated with the "living room" or "office". If the bedroom is spacious enough (which, unfortunately, is not always the case), there may be a division dedicated to eating. In the case that it is difficult or even impossible for the student not to eat in a different room, then he/she should do it in his/her work area (inside the real bedroom). Another hypothesis relates to the direct modification of the environment in which the student sleeps. That is, it must be changed the arrangement of the furniture, bedding, ornaments, eventually change the color of the walls, among much more creative tips. This strategy will allow simulating a new bedroom and therefore it will create new environmental and visual cues that are not associated with previous insomnia complaints. In this case, conditioning arousal is one of the insomnia hubs, and sometimes a change in bedroom ´s appearance can have surprising results.

Technique 3: Sleep Restriction

Rational and procedures

The sleep restriction therapy is a method suited to reduce the time in bed in order to bring it to the current amount (average) of sleeping time of the patient plus 30 minutes (Glovinsky & Spielman, 1991). The authors refer add additional 30 minutes to encompass the average latency time of sleep onset and also possible nocturnal awakenings. The central aim is to maximize the sleep efficiency and bed-sleep association. Note, however, that a minimum number of hours should be "prescribed" for the patient to remain in bed even if he/she is not sleeping. According to Spielman, Yang and Glovinsky (2011) the individuals must remain in bed (i.e., total time in bed) at least 4 hours and 30 minutes. In the literature, we may also find other suggestions such as 5 hours (Morin & Espie, 2003) and 6 hours (Troxel et al., 2012). This process is important since patients normally spend many hours a day in bed trying to fall asleep, and the actual hours of sleep are lower, so there is a significant gap.

A student (e.g. usually going to bed at 23h30 and raising at 7h30, with difficulties initiating sleep), is instructed to record a sleep diary for 2 weeks, and thereafter average nightly sleep duration is determined (e.g., 5 hours 45 minutes [rounded to nearest 15 minutes' interval]). This acts as the designated sleep window. The clinician, in collaboration with patient, sets a morning "rising time" (e.g., 7 am); A "threshold time" is then calculated by subtracting average nightly sleep duration from the specified morning rising time (e.g., 7 am–5 hours

45 minutes = threshold time 1:15 am). Individuals are instructed neither to enter bed prior to their designated "threshold time" nor to exit bed on, or prior to, set "rising time". The student must follow this prescribed schedule every night, including weekends. Then make weekly modifications to the sleep window which are based on sleep efficiency results (total time asleep/total time in bed x 100). If sleep efficiency is 90%, the clinician can increase sleep window by 15 minutes; If sleep efficiency is less than 85%, the clinician must decrease the sleep window by 15 minutes (Espie & Kyle, 2012).

Challenges in College Students

The strategy of restricting time in bed is stressful for many students because it involves (initially) some sleep deprivation which is perceived as catastrophic (Glovinsky & Spielman, 1991; Spielman et al., 2011). There are other challenges which are common to the ones involved in the stimulus control technique described above, deriving from the fact that most students live in rented rooms.

Suggestions

The clinician should take particular care with the purpose of this intervention. It should be planned for a time when the student does not have exams or significant evaluations periods or tasks where demanding cognitive skills are particularly required. Therefore, space usage should be carefully programed for those periods where the student will do waking activities inside the room.

Technique 4: Relaxation training

Rational and procedures

The relaxation training refers to a diverse set of procedures aimed at reducing tension or somatic and cognitive anxiety (i.e., psychophysiological arousal) before sleep onset or after the nocturnal awakenings (Bonnet, 1997; Harvey & Tang, 2003). It may include methods as diverse as progressive muscle relaxation (e.g., Jacobson procedure), Schultz autogenic training, yoga, hypnosis and biofeedback (the latter procedure has been the subject of some studies indicating that it can be an effective strategy for insomnia, i.e., guideline according Morgenthaler et al., 2006), and it is a strategy derived from psychophysiology which gives individuals the opportunity to receive and transform information [feedback] about their own biophysiological functions [bio] through visual or auditory stimuli), allowing patients to control functions related to the autonomic nervous system, one of the prototypical arousals in insomnia. Although there are many relaxation procedures, the most known and studied one in the field of insomnia has been Jacobson´s progressive muscle relaxation. As insomnia complaints are often associated with anxiety symptoms, relaxation training can be a strategy that can ameliorate both anxiety and insomnia symptoms. We identified two studies in the literature that applied relaxation techniques specifically to college students (Jia-li, Hui-qin, & Yan-mei, 2012; Means, et al., 2000).

Challenges in College Students

Students often complain that the relaxation training they learned is not working. Many times, this is due to a biased expectation that the relaxation technique should be effective immediately. Furthermore, some students are reluctant to the using of the procedure because they think it might be something related to mysticism or even directly related to hypnotic induction (more common when the clinician suggests relaxation training based in imagery skills). According to the only study done on the subject (Means et al., 2000), it seems that relaxation therapy (i.e., progressive muscle relaxation) does not improve the significantly diurnal dysfunction in insomnia – at least in the short-term, thus the clinician should complement this intervention with other techniques.

Suggestions

Relaxation is a skill that needs practice. The aim of the relaxation is not to induce sleep (at least directly). If that were the intention, then the technique would be harmful as it would foster the sleep effort. The clinician should explain to the student that the relaxation should be practiced during the day – to strengthen the skill – in order to cope with the cognitive and physiological arousal which frequently occurs at bedtime.

Technique 5: Cognitive Therapy

Rational and procedures

Cognitive therapy refers to a psychological or psychotherapeutic method aiming to identify, challenge and modify dysfunctional beliefs and attitudes. Although cognitive therapy as single component of treatment for insomnia is not recommended as a priority option, recent studies have found that cognitive therapy alone seems to produce satisfactory results (Morin, Bélanger, & Harvey, 2011). Still, there are authors who argue that cognitive restructuring, for example, is inherent to the process of implementing behavioral techniques (Cougle, 2012). Basically, cognitive therapy relates to the identification, evaluation and modification of cognitions related to excessive concerns of not being able to fall asleep/sleep and/or about daytime consequences derived from sleepless nights (Carney et al, 2010). As the empirical testing or behavioral experiments associated with challenging those cognitions often involve voluntary sleep deprivation in the short-term, this procedure is contraindicated for patients with certain professions such as machinists, truck drivers, seafaring or aviation pilots. Although cognitive therapy does not constitute a recommended single therapy for insomnia, there is evidence suggesting an improved efficiency when it is integrated into a treatment consisting of multiple components (Harvey & Eidelman, 2011). Cognitive therapies rely heavily on the cognitive restructuring paradigm, which includes, in a simplified manner, the identification of dysfunctional automatic thoughts, the classification of these cognitions in terms of information processing errors or cognitive distortions, and changing those cognitions or generating more realistic alternatives (Morin & Espie, 2003). Table 1 shows the typical record of self-monitoring as is generally used.

The strategies associated with cognitive therapy (in particular with the cognitive restructuring paradigm) which are fundamental to discuss and challenge core beliefs about sleep, involve the following questions: "What is the evidence that supports this idea?"; "What is the evidence against this idea?"; "Is there any alternative explanation?"; "What is the worst that can happen? Could I live through it?"; "What is the best that could happen?"; "What is the most realist outcome?"; "What would I tell _____ (a friend) if he or she were in the same situation?"; "How would someone else interpret the same situation?" (Beck, 1995; Harvey & Eidelman, 2011; Morin & Espie, 2003).

Challenges in College Students

Procedures derived from standard cognitive therapy (especially the method of cognitive restructuring) are very useful for identifying and evaluating negative automatic thoughts, cognitive distortions, and mental core schemes related to sleep behavior. In the context of higher education, it is expected that students have a level of intellectual development that allow effective implementation of cognitive techniques. However, according to our clinical practice, we verify that some students prefer more "practical procedures". This feature is related to the urge for immediate results that students normally have.

Suggestions

A useful alternative for the students who want "practical exercises" ab initio and that complements the cognitive restructuring training which is carried-out at the psychologist´s office is the implementation of behavioral experiments (Ree & Harvey, 2004). That is, the clinician

Table 1. Self-monitoring worksheet of cognitive restructuring technique

Situation	Automatic thoughts	Emotions (0-100%)	Alternative thoughts	Emotions (0-100%)
[4 p.m.] Lying in bed trying really hard to fall asleep.	*"If I cannot fall asleep right now, tomorrow it will be a disaster!"*	Anxiety (90%) Guilty (35%) Sadness (70%)	*"This has happened to me sometimes and I always attend-ed to classes, even if I was more tired."*	Anxiety (35%) Guilty (5%) Sadness (15%)

Note. These are fictitious data for purposes of illustration (though based in our clinical practice).

and the student make predictions about what they expect to achieve with behavioral-based strategies. Upon completion of a single behavioral experience, they discuss together the results, evaluate the (mis)match between observed results and prior expectations or plans, and if appropriate, they planned a new behavioral experiment. Thus, it is possible to work on the cognitive aspects of real life experiences of students, going beyond the cognitive exercise of imagination (i.e., traditional identification and discussion of cognitive contents). One of the most typical cognitions we found in our students is "If I study all night long, my study will yield more" (based on our clinical experience).

Technique 6: Other cognitive therapies

Rational and procedures

The recommendations of the international associations of sleep medicine, specifies in addition to the classic techniques derived from cognitive therapy two specific techniques that can be used, although addressed to very particular cases: thought stopping (e.g., patient identify dysfunctional cognitions and contingently should exclaim "STOP!" to break the chain of thoughts and divert attention from this obsessive task) and paradoxical intention. Basically, it is a technique that aims to reduce performance anxiety associated with bedtime and sleep through the instruction to go to bed and try not to fall asleep, having the disadvantage of being only for specific problems with sleep-onset and not sleep maintenance. Beyond these strategies, Espie and Lindsey (1987) proposed the "cognitive control technique" which consists in writing before go to asleep. It is, in essence, an extension of SCT, but more focused on the cognitive contents, with the focus of reducing the likelihood of activating mental activity in the usual environment of the patient's sleep. The instructions are (1) to provide 20 minutes every day for this activity using a notepad and a pen; (2) reflect on the day's events as well as plans for following day(s); (3) list the cognitions (e.g., ruminations, worries) and outline possible solutions to each one; (4) these 20 minutes will help to organize activating cognitions of the patient; (5) if the patient is already in bed for initiating sleep and dysfunctional thoughts occur, the patient should remember that he/she already "dealt with the subject", and (6) if he/she has new images or thoughts that prevent him/her from falling asleep, the person shall register these new cognitions in a paper to that effect (e.g., bedside table, for example). In a similar fashion, there is also an adaptation of the Pennebaker´s technique called opening-up (Pennebaker, 1997) which consists for 3-5 days writing strong emotional situations that prevent the process of sleep. Individuals should be honest and explore thoughts and emotions that upset them at the moment (not only in relation to complaints of sleep/insomnia). This is a strategy to help reorganize cognitive contents and processes with a strong emotional and dysfunctional valence with the backdrop of decreasing the intensity and frequency of cognitive activity before sleep (Harvey & Farrell, 2003). Finally, Levey, Aldaz, Watts and Coyle (1991) suggest a strategy derived from classic studies of cognitive psychology of memory (in particular Baddeley´s studies). Based on the idea that working memory (sometimes called short-term memory) has a limited and temporary storage capacity, the authors point out that if one takes the short-term storage with meaningless phonemes, the activating dysfunctional chief cognitions loses intensity. This technique was called articulatory suppression and is based on the following instructions: (1) the patient should lay in bed and close his/her eyes, (2) one must repeat a word without any significant meaning every 1-2 seconds (3) should whisper or utter this word covertly, and (4) shall remain in this task for 5 minutes or until he/she feels drowsy (Morin & Espie, 2003).

A more recent development in the psychosocial treatment of insomnia is the application of mindfulness and acceptance approaches. These integrate empirically validated procedures derived from behavioral and cognitive strategies but with the background of mindfulness principles. The main point is that getting good sleep is necessary to have an attitude of non-judgment and acceptance in relation to their own mental events such as negative automatic thoughts NATs) and mental images. This attitude helps the process of falling asleep. In a simple way, it can be said that mindfulness

training "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" (Lundh, 2005, p. 34). An interesting component of this type of approach is a structured intervention that proposes a brief protocol (approximately 8 weeks) and includes group sessions consisting of 6-8 participants (Ong & Manber, 2011). The patients must change the relationship that they have with their sleep instead of trying explicit modification of the amount of sleep obtained per night (Ong & Scholts, 2010). Although there are few systematic studies on the application of this methodology in the field of insomnia, some investigations have pointed to positive results in terms of patient satisfaction regarding mindfulness intervention techniques (Ong & Manber, 2011). A brief intervention (i.e., 3 sessions) based on mindfulness, particularly in acceptance and commitment therapy (ACT) suggested to be of importance for the reduction of insomnia symptoms and improved self-reported quality of life (Peters, Junge, Cunnington, Ong, & Greenwood, 2012). There is already some evidence suggesting that the addition of mindfulness strategies to the standard cognitive-behavioral intervention increase clinical effectiveness (Ong, Shapiro, & Manber, 2008).

In this context it should be emphasized a new procedure called cognitive refocusing treatment. In summary, this strategy is brief, as it can be discussed only in a single session. The patient with the help of the clinician should identify three different categories of thoughts (contents) strong enough to hold the attention of the patient at bedtime. These categories must comply with two features: the thoughts should not be emotional or physiological activators, and should be catchy enough to keep the attention of the patient. For example, one may think about new recipes or an excerpt from a favorite TV program. Following this, the patient is instructed to focus attention on these pre-selected categories of thoughts at bedtime, or when experiencing nighttime awakenings. If other thoughts (i.e., intrusive thoughts) arise, individuals are instructed not to attach particular importance and focus their attention on the cognitive contents previously listed. The ultimate goal of the strategy is to encourage the learning of the association between a specific category of thoughts and sleep. In preliminary studies, the recommended duration for this procedure is around 30 minutes (Gellis, Arigo, & Elliot, 2013).

Challenges in College Students

According to the idea that it may be potentially more harmful to health when individuals try to change the content of their thoughts, acceptance and mindfulness approaches seek that person to experience, in a non-judgment way, their dysfunctional thoughts, but without any change intent. The main objective of these theories is to change the relationship that individuals have with their own thoughts instead of trying to change their thoughts directly. In the treatment of insomnia, approaches and models related to mindfulness has gained consistency in effectiveness studies suggesting that it appears to enhance treatment in association with CBT-I in conventional frames (Ong et al., 2008). We should recognize that the rational supporting mindfulness and acceptance approaches, albeit easily understood by the majority of the college students, might bring some caveats when certain techniques are suggested.

Suggestions

One technique that is usually used in the first consultations and which students seem to accept very well is the "white bear experiment", that is a behavioral experiment designed to show people that it is impossible to control the stream of thought, and that the more he/she tries to do it, the more he/she does not have successful (Ree & Harvey, 2004). Generally, in a first stage, we use the example of the "white bear" and then we find helpful to adapt the metaphor or image to any of the common student experiences, as an exercise, to see if the student understood the idea that underlies these exercises. This simple strategy is very useful when the clinician wants to show to students, in practice, the power of sleep effort and how it compromises sleep quality (Espie et al., 2006).

We have verified in clinical practice that the writing activities can be very helpful in university students. Theoretically, it is possible to fit these strategies into the SCT rational. When students report that they do not like to write, one alternative is to speak aloud or to talk with some of his/her friends.

College students, in general, are young-adults so when the well-established techniques do not have clinical efficacy, we can work with some of these new cognitive techniques. The cognitive development level of the students should allow that.

Withdrawal of psychotropic medication

Although university students are not the group of people who consumes more hypnotic medication, it is certain that some who come to sleep psychology consultation have already taken or are taking any medication (medically prescribed or off-label drugs). Often, students feel that the medication they are taking is no longer having any effect but still feel obliged to take it. The behavioral dependence is a key aspect that must be worked clinically. Morin and Espie (2003), in one of the most important handbooks on assessment and intervention in insomnia, describe a protocol for discontinuation of psychotropic drugs, which can serve as an inspiration to work with students who come for a sleep psychology consultation.

Challenges to the therapeutic relationship and motivation for treatment

Dealing with mental health problems, particularly insomnia, in college raises important questions. As main advantages we point out: (1) the proximity of the service - which may encourage help-seeking behavior; (2) less waiting time between the appointments and consultation itself; and (3) the fact that scheduling a sleep psychology consultation is not as stigmatizing as an appointment of general psychology or clinical psychology consultations. Complaints of sleep problems, as a rule, are discussed more frequently and with fewer inhibitions, compared with depressive or anxiety problems. However, it should be noted that there are some obstacles or roadblocks that can arise from sleep psychology consultations (as well as the other psychology consultations) in academic context. In this regard it should be noted that the regime of free consultations may eventually compromise consistency of treatment - here it probably applies the behavioral principle that if something is free then its value decreases; and the effects of unrealistic expectations about the consultation (e.g., "magical thinking", expectation of super-fast clinical results). One of the strategies that can be very important to students from the beginning of therapeutic process is motivational interviewing. Many college students are still considered teenagers and as such they may prove resistant to intervention and behavioral change (Gold & Dahl, 2011). We consider the techniques derived from motivational interviewing should be privileged, obviously taking into account the assessment of stage of change that the student is experiencing.

What paths for the future?

It should be noted that there are handbooks organized in a systematic manner which propose treatment programs based on strategies that research has concluded to be effective (Carney & Edinger, 2008). However, if on the one hand it is useful to have these manuals, on the other hand the clinician or researcher should bear in mind that each individual is unique and that each case deserves the necessary adjustments in terms of adaptation of therapeutic techniques. It should also be noted that, contrarily to the usual, there have been the concern of including bed partners of patients with insomnia in treatment (Rogojanski, Carney & Monson, 2013). It is worth mentioning the effect of expectations and demanding characteristics of patients with insomnia which, in a conscious or unconscious way, may influence positively or negatively the treatment process (Perlis, Giles, Mendelson, Bootzin, & Wyatt, 1997). Since the patient expectations are a key variable to be taken into account in the process of treatment, Moul and colleagues (2007) acknowledge that "some patients expect a cure or in its absence, no benefit whatsoever. Realistic optimism will help the patient benefit as much as possible" (p. 614).

In the last years, several studies have shown evidence that sleep problems in college students are frequent,

particularly insomnia. Additionally, studies have also shown that psychotherapeutic strategies, particularly behavioral ones, constitute the first-line treatment for this disorder. In this work, we sought to explore particular aspects for the operationalization of assessment and psychological intervention for insomnia in college students. Based on the promising results that CBT-I has achieved in terms of effectiveness in several RCTs with different populations across the life-span, we think that in addition to continuing to invest in this path, it is also important to start studying the adaptations needed in this treatment to broader application contexts that go beyond the hospital settings, for example. Thus, the implementation of specific sleep psychology consultations, and the promotion of empirical research in order to improve and adjust current techniques to apply better to the college environment, is one of the possibilities that we propose in this line. Besides, there is a need for sleep education in psychologist's undergraduate and postgraduate courses (Ellis, 2012; Stepanski & Perlis, 2000).

In the future, we think it is important to study the application of cognitive-behavioral strategies (based on RCTs) in the college settings. It would be important to conduct a comparison of evidence-based techniques for insomnia as they are usually described in the literature with the same techniques adapted to the experience in college. Moreover, it is essential to conduct longitudinal studies that may assess the maintenance of gains over time.

We would like to end this article with the words of a female patient with whom we have worked that illustrates the success of a psychological intervention for insomnia: "When I realized it was coming the day of the session it was weird because I concluded that I had nothing to say to you ... Now, I no longer think of my sleep!"

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References

American Academy of Sleep Medicine (2005). *International Classification of Sleep Disorders: Diagnostic and Coding Manual*. 2nd ed. Westchester, IL: American Academy of Sleep Medicine.

American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders*. 5th ed. Washington, DC: American Psychiatric Association.

Beck, J. (1995). *Cognitive therapy: Basics and beyond*. New York: Guilford Press.

Bewick, B., Mulhern, B., Barkham, M., Trusler, K., Hill, A., & Stiles, W. (2008). Changes in undergraduate student alcohol consumption as they progress through university. *Bio Med Central Public Health*, *8*, 163. doi:10.1186/1471-2458-8-163

Brache, K., & Stockwell, T. (2011). Drinking patterns and risk behaviors associated with combined alcohol and energy drink consumption in college drinkers. *Addictive Behaviors*, *36*(12), 1133-1140. doi:10.1016/j.addbeh.2011.07.003.

Bootzin, R., Smith, L., Franzen, P., & Shapiro, S. (2010). Stimulus control therapy. In M. Sateia & D. Buysse (Eds.), *Insomnia: Diagnosis and treatment* (pp. 268-276). UK: Informa Health Care.

Buboltz, W., Jenkins, S., Soper, B., Woller, K., Johnson, P., & Faes, T. (2009). Sleep habits and patterns of college students: An expanded study. *Journal of College Counselling*, *12*(2), 113-124. doi:10.1002/j.2161-1882.2009.tb00109.x

Buboltz, W. C., Soper, B., Brown, F., & Jenkins, S. (2002). Treatment approaches for sleep difficulties in college students. *Counselling Psychology Quarterly*, *15*(3), 229-237. doi: 10.1080/09515070210151788

Buysse, D. (2010). Overview of treatment considerations. In M. Sateia & D. Buysse (Eds.), *Insomnia: Diagnosis and treatment* (pp. 256-259). UK: Informa Health Care.

Buysse, D. (2011). Insomnia: Recent developments and future directions. In M. Kryger, T. Roth & W. Dement (Eds.), *Principles and Practice of Sleep Medicine* (5ed.), (pp. 822-826), Missouri: Elsevier Saunders.

Carney, C., Edinger, J., Morin, C., Manber, R., Rybarczyk, B., Stepanski, E., ... Lack, L. (2010). Examining maladaptive beliefs about sleep across insomnia patient groups. *Journal of Psychosomatic Research*, *68*(1), 57-65. doi:10.1016/j.jpsychores.2009.08.007

Cougle, J. (2012). What makes a quality therapy? A consideration of parsimony, ease and efficiency. *Behavior Therapy*, *43*(3), 468–481. doi:10.1016/j.beth.2010.12.007

Edinger, J., & Carney, C. (2008). *Overcoming insomnia: A cognitive-behavioral therapy approach (Therapist Guide)*. New York: Oxford University Press.

Ellis, J. (2012). Sleep and psychology curriculum. In C. Morin, & C. Espie (Eds.), *The Oxford handbook of sleep and sleep disorders* (pp. 289-300). Oxford: Oxford University Press.

Espie, C., & Kyle, S. (2012). Cognitive behavioral and psychological therapies for chronic insomnia. In T. Barkoukis, J. Matheson, R. Ferber, K. Doghramji (Eds.), *Therapy in sleep medicine* (pp. 161-171). Philadelphia: Elsevier.

Espie, C., & Lindsay, W. (1987). Cognitive strategies for the management of severe sleep-maintenance insomnia: A preliminary investigation. *Behavioural Psychotherapy*, *15*(4), 388–395. http://dx.doi.org/10.1017/S0141347300012763

Espie, C., Broomfield, N., MacMahon, K., Macphee, L., & Taylor, L. (2006). The attention–intention–effort pathway in the development of psychophysiologic insomnia: A theoretical review. *Sleep Medicine Reviews*, *10*(21), 5–45. doi:10.1016/j.smrv.2006.03.002

Gaultney, J. F. (2010). The prevalence of sleep disorders in college students: Impact on academic performance. *Journal of American College Health*, *59*(2), 91-97. doi:10.1080/07448481.2010.483708.

Gellis, L., Arigo, D., & Elliott, J. (2013). Cognitive refocusing treatment for insomnia: A randomized controlled trial in university students. *Behavior Therapy*, *44*(1), 100-110. doi:10.1016/j.beth.2012.07.004

Glovinsky, P., & Spielman, A. (1991). Sleep restriction therapy. In P. Hauri (Ed.), *Case studies in insomnia* (pp. 29-47). New York: Plenum Medical Book Company.

Goel, N., Dongen, H. van, & Dinges, D. (2011). Circadian rhythms in sleepiness, alertness, and performance. In M. Kryger, T. Roth & W. Dement (Eds.), *Principles and Practice of Sleep Medicine* (5 ed.) (pp. 445-455), Missouri: Elsevier Saunders.

Gold, M., & Dahl, R. (2011). Using motivational interviewing to facilitate healthier sleep-related behaviors in adolescents. In M. Perlis, M. Aloia & B. Kuhn (Eds.), *Behavioral treatment for sleep disorders: A comprehensive primer of behavioral sleep medicine treatment protocols* (pp. 367-381). New York: Elseviewer. doi:10.1016/B978-0-12-381522-4.00038-9

Gomes, A. A., Tavares, J., & Azevedo, M. H. P. (2009). Padrões de sono em estudantes universitários portugueses [Sleep-wake patterns in portuguese undergraduates]. *Acta Médica Portuguesa*, *22*, 545-552.

Gomes, A. A., Tavares, J., & Azevedo, M. H. P. (2011). Sleep and academic performance in undergraduates: a multi-measure, multi-predictor approach. *Chronobiology International*, *28*(9), 786-801. doi:10.3109/07420528.2011.606518

Harvey, A., & Eidelman, P. (2011). Intervention to reduce unhelpful beliefs about sleep. In M. Perlis, M. Aloia & B. Kuhn (Eds.), *Behavioral treatment for sleep disorders: A comprehensive primer of behavioral sleep medicine treatment protocols* (pp. 79-89). New York: Elseviewer. doi:10.1016/B978-0-12-381522-4.00008-0

Harvey, A., & Farrell, C. (2003). The efficacy of a Pennebaker-like writing intervention for poor sleepers. *Behavioral Sleep Medicine*, *1*(2), 115–124. http://dx.doi.org/10.1207/S15402010BSM0102_4

Harvey, A., & Tang, N. (2003). Cognitive behavior therapy for primary insomnia: Can we rest yet? *Sleep Medicine*, *7*(3), 237-262. doi:10.1053/smrv.2002.0266

Harvey, K., & Espie, C. (2004). Development and preliminary validation of the Glasgow Content of Thoughts Inventory (GCTI): A new measure for the assessment of pre-sleep cognitive activity. *British Journal of Clinical Psychology*, *43*(4), 409-420. doi:10.1348/0144665042388900

Hauri, P. (1991). Sleep hygiene, relaxation therapy and cognitive interventions. In P. Hauri (Ed.), *Case studies in insomnia* (pp. 65-84). New York: Plenum Medical Book Company.

Jia-li, T., Hui-qin, Z., & Yan-mei, X. (2012). Progressive relaxation training assisted cognitive therapy of insomnia. In C. Liu, L. Wang & A. Yang (Eds.), *Information computing and applications* (pp. 596-603). New York: Springer. doi:10.1007/978-3-642-34041-3_83

Kloss, J., Nash, C., Horsey, S., & Taylor, D. (2011). The delivery of behavioral sleep medicine to college students. *Journal of Adolescent Health*, *48*(6), 553-561. doi:10.1016/j.jadohealth.2010.09.023

Levey, A., Aldaz, J., Watts, F., & Coyle, K. (1991). Articulatory suppression and the treatment of insomnia. *Behaviour Research and Therapy*, *29*(1), 85–89. doi:10.1016/S0005-7967(09)80010-7

Lundth, L. (2005). The role of acceptance and mindfulness in the treatment of insomnia. *Journal of Cognitive Psychotherapy: An International Quarterly*, *19*(1), 29-39. http://dx.doi.org/10.1891/jcop.19.1.29.66331

Means, M., Lichstein, K., Epperson, M., & Johnson, C. (2000). Relaxation therapy for insomnia: Nighttime and day time effects. *Behaviour Research and Therapy*, *38*(7), 665-678. http://dx.doi.org/10.1016/S0005-7967(99)00091-1

Miller, C., Espie, C., Epstein, D., Friedman, L., Morin, C., Pigeon, W., ... Kyle, S. (2014). The evidence base of sleep restriction therapy for treating insomnia disorder. *Sleep Medicine Reviews*, *18*(5), 415-424. doi:10.1016/j.smrv.2014.01.006. Morgenthaler, T., Kramer, M., Alessi, C., Friedman, L., Boehlecke, B., Brown, T., ... AASM. (2006). Practice parameters for the psychological and behavioral treatment of insomnia: An update. *Sleep*, *29*(11), 1415-1419.

Morin, C. (1993). *Insomnia: Psychological assessment and management*. New York, London: The Guilford Press.

Morin, C. (2011). Psychological and behavioral treatment for insomnia I: Approaches and efficacy. In M. Kryger, T. Roth & W. Dement (Eds.), *Principles and Practice of Sleep Medicine* (5 ed.) (pp. 866-883), Missouri: Elsevier Saunders.

Morin, C., & Bélanger, L. (2011). Cognitive therapy for dysfunctional beliefs about sleep and insomnia. In M. Perlis, M. Aloia & B. Kuhn (Eds.), *Behavioral treatment for sleep disorders: A comprehensive primer of behavioral sleep medicine treatment protocols* (pp. 107-118). New York: Elseviewer. doi:10.1016/B978-0-12-381522-4.00011-0

Morin, C., Bootzin, R., Buysse, D., Edinger, J., Espie, C., & Lichstein, K. (2006). Psychological and behavioral treatment of insomnia: Update Of the recent evidence (1998-2004). *Sleep*, *29*(11), 1398-1414.

Morin, C., & Espie, C. (2003). *Insomnia: A clinical guide to assessment and treatment*. New York: Kluwer Academic/Plenum Publications.

Moul, D., Morin, C., Buysse, D., Reynolds III, C., & Kupfer, D. (2007). Treatments for insomnia and restless legs syndrome. In P. Nathan & J. Gorman (Eds.), *Treatments that work* (3 ed.) (pp. 611-640), Oxford: Oxford University Press.

Nadorff, M. R., Nazem, S., & Fiske, A. (2011). Insomnia symptoms, nightmares, and suicidal ideation in a college student sample. *Sleep*, *34*(1), 93-98.

National Institutes of Health. (2005). National Institutes of Health State of the Science Conference statement on Manifestations and Management of Chronic Insomnia in Adults, June 13–15, 2005. *Sleep*, *28*, 1049–1057.

Ong, J., Huang, J., Kuo, T., & Manber, R. (2007). Characteristics of insomniacs with self-reported morning and evening chronotypes. *Journal of Clinical Sleep Medicine*, *3*(3), 289-294.

Ong, J., Shapiro, S., & Manber, R. (2008). Combining mindfulness meditation with cognitive-behavior therapy for insomnia: A treatment-development study. *Behavior Therapy*, *39*(2), 171-182. doi:10.1016/j.beth.2007.07.002

Ong, J., & Sholts, D. (2010). A mindfulness-based approach to the treatment of insomnia. *Journal of Clinical Psychology: In Session*, *66*(11), 1175-1184. doi:10.1016/j.beth.2007.07.002

Ong, J., Ulmer, C., & Manber, R. (2012). Improving sleep with mindfulness and acceptance: A metacognitive model of insomnia. *Behaviour Research and Therapy*, *50*(11), 651-660. doi:10.1016/j.brat.2012.08.001

Pennebaker, J. (1997). Writing about emotional experiences as a therapeutic process. *Psychological Science*, *8*(3), 162–166. doi:10.1111/j.1467-9280.1997.tb00403.x

Perlis, M., Benson-Jungquist, C., Smith, M., & Posner, D. (2005). *Cognitive behavioural treatment of insomnia: A session-by-session guide*. New York: Springer.

Perlis, M., Giles, D., Mendelson, W., Bootzin, R., & Wyatt, J. (1997). Psychophysiological insomnia: The behavioural model and a neurocognitive perspective. *Journal of Sleep Research*, *6*(3), 179-188. doi:10.1046/j.1365-2869.1997.00045.x

Peters, A., Junge, M., Cunnington, D., Ong, J., & Greenwood, K. (2012). Mindfulness-based therapy for insomnia in an Australian population. *Journal of Sleep Research*, *21*(S1), 95.

Ree, M., & Harvey, A. (2004). Insomnia. In J. Bennett-Levy, G. Butler, M. Fennell, A. Hackman, M. Mueller, & D. Westbrook (Eds.), *Oxford guide behavioural experiments in cognitive therapy* (pp. 287-305). Oxford: Oxford Medical Publications.

Richardson, J., & Estelle, K. (1998). Adult students in higher education: Burden or boon? *Journal of Higher Education*, *69*(1), 65-88.

Rogojanski, J., Carney, C., & Monson, C. (2013). Interpersonal factors in insomnia: A model for integrating bed partners into cognitive behavioral therapy for insomnia. *Sleep Medicine Reviews*, *17*(1), 55-64. doi:10.1016/j.smrv.2012.02.003

Roth, T. (2007). Insomnia: Definition, prevalence, etiology, and consequences. *Journal of Clinical Sleep Medicine*, *3*(S5), S7–S10.

Santhi, N., Thorne, H., van der Veen, D., Johnsen, S., Mills, S., Schlangen, L., ... Dijk, D. (2012). The spectral composition of evening light and individual differences in the suppression of melatonin and delay of sleep in humans. *Journal of Pineal Research*, *53*(1), 47-59. doi:10.1111/j.1600-079X.2011.00970.x.

Shekleton, J., Rogers, N., & Rajaratnam, S. (2010). Searching for the daytime impairments of primary insomnia. *Sleep Medicine Reviews*, *14*(1), 47-60. doi:10.1016/j.smrv.2009.06.001

Spielman, A., Yang, C.-M., & Glovinsky, P. (2011). Sleep restriction therapy. In M. Perlis, M. Aloia & B. Kuhn (Eds.), *Behavioral treatment for sleep disorders: A comprehensive primer of behavioral sleep medicine treatment protocols* (pp. 9-19). New York: Elseviewer. doi:10.1016/B978-0-12-381522-4.00001-8

Stepanski, E., & Perlis, M. (2000). Behavioral sleep medicine: An emerging subspecialty in health psychology and sleep medicine. *Journal of Psychosomatic Research*, *49*(5), 343-347. doi: 10.1016/S0022-3999(00)00171-9

Tang, N., Schmidt, A., & Harvey, A. (2007). Sleeping with the enemy: Clock monitoring in the maintenance of insomnia. *Journal of Behavior Therapy and Experimental Psychiatry*, *38*(1), 40-55. doi:10.1016/j.jbtep.2005.07.004

Taylor, D., Bramoweth, A., Grieser, E., Tatum, J., & Roane, B. (2013). Epidemiology of insomnia in college students: Relationship with mental health, quality of life, and substance use difficulties. *Behavior Therapy*, *44*, 339-348. doi:10.1016/j.beth.2012.12.001

Taylor, D., Gardner, C., Bramoweth, A., Williams, J., Roane, B., Grieser, E., ... Tatum, J. (2011). Insomnia and mental health in college students. *Behavioral Sleep Medicine*, *9*(2), 107-116. doi: 10.1080/15402002.2011.557992

Taylor, D., Zimmerman, M., Gardner, C., Williams, J., Grieser, E., Tatum, J., ... Ruggero, C. (2014). A pilot randomized controlled trial of the effects of cognitive-behavioral therapy for insomnia on sleep and daytime functioning in college students. Behavior Therapy, 45(3), 376–389. doi:10.1016/j.beth.2013.12.010

Terman, M., & McMahan, I. (2012). *Chronotherapy: Resetting your inner clock to boost mood. alertness, and quality sleep*. New York: Avery.

Troxel, W., Germain, A., & Buysse, D. (2012). Clinical management of insomnia with brief behavioral treatment (BBTI). *Behavioral Sleep Medicine*, *10*(4), 266–279. doi: 10.1080/15402002.2011.607200

Vail-Smith, K., Felts, W. M., & Becker, C. M. (2009). Relationship between sleep quality and health risk behaviors in undergraduate college students. *College Student Journal*, *43*(3), 924-930.

Wickwire, E., Schumacher, J., & Clarke, E. (2009). Patient-reported benefits from the pre-sleep routine approach to treating insomnia: Findings from a treatment development trial. *Sleep and Biological Rhythms*, *7*(2), 71–77. doi:10.1111/j.1479-8425.2009.00389.x

Zimmermann, L. (2011). Chronotype and the transition to college life. *Chronobiology International*, *28*(10), 904-910. doi:10.3109/07420528.2011.618959