

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

**Group treatment of anxiety-related insomnia
using cognitive-behavioural therapy**

A thesis presented in partial fulfilment of the requirements for the degree
of

Doctor of Clinical Psychology

at Massey University, Wellington, New Zealand.

Fernanda de Lacerda Mottin

2013

Preface

Before undertaking this project my knowledge of insomnia was quite limited; difficulties with sleep were just that. Little did I know how fascinating the fields of sleep and insomnia were. The timing of the Massey University Psychology Clinic's interest in offering a treatment for people "who can't sleep and worry too much" coincided with a shift in the research literature about insomnia. Incidentally, anxiety appears to play a major role in the development and maintenance of insomnia complaints. This project also brought me close to the participants' experience of insomnia. I understood that sleep difficulties were never just that. They affected a person's relationships, work, mental health, and quality of life.

The current project would not have been possible without the support of my supervisors Dr Duncan Babbage and Prof. Janet Leathem. I would also like to thank Prof Philippa Gander for her comments and encouragement along the way. My beautiful family, who had to share me with my work and studies for so many years, it has been a long journey, and now I look forward to being a mum and wife-to-be (and only share you with my work). I also would like to acknowledge John Rutledge, who was like a father to me. I know you would be proud of this moment, John. My dearest family in Brazil, far away from the daily working-on-a-doctorate-life, but nonetheless were always part of this journey. I love you and I miss you. Finally, thank you to all the participants in this study. In receiving help for yourselves, you also helped many others.

This study has received approval from the Central Regional Ethics Committee.

Abstract

Insomnia affects 25% of the New Zealand population and up to 33% of the population worldwide. Untreated it incurs high economical costs to society and takes its toll on the people's mental health, physical health, and quality of life. Psychological treatments for insomnia have developed over the decades to reflect the scientific literature's knowledge about the causal and maintaining factors of insomnia (i.e., maladaptive behaviours and cognitions about sleep and the consequences of insomnia and physiological and cognitive arousal).

The critical review found that although physiological and cognitive arousal play a significant role in the development and maintenance of insomnia and there is some evidence that anxiety disorders predict the development of insomnia, few published treatment programmes targeted all causal and maintaining factors as described in the literature. The current main clinical study investigated the effectiveness of a group therapy programme that targeted all the main factors described in the literature. Twenty-eight participants suffering chronic insomnia and at least subclinical anxiety or stress were randomly assigned to one of two treatment interventions, administered through five treatment groups. Each group had 5-6 participants. Two groups received the *insomnia first* intervention ($n = 11$) and three groups received the *anxiety first* intervention ($n = 17$). Within- and between-subjects analyses were performed. Follow-up assessment took place about three months after the end of each treatment group.

The main study found that targeting anxiety (i.e., physiological and cognitive arousal) directly improved participants' insomnia, $t(1708) = 3.574$, p

$<.001$, $d = .86$. At three months post-treatment, both treatment conditions had large effect sizes on measures of insomnia severity (*insomnia first* $d = 3.35$; *anxiety first* $d = 1.17$) and sleep efficiency (*insomnia first* $d = 1.09$; *anxiety first* $d = 1.17$). However, in examining the outcome trajectories, the anxiety first intervention produced more consistent improvement across the course of the therapy sessions, which might be more desirable for both clients and clinicians.

This study provided evidence that a cost-effective group intervention is beneficial for symptoms of insomnia and anxiety, and it also significantly improves participants' quality of life. While some findings need replication (e.g., order of interventions), this study showed not only that insomnia can and should be treated, but also that its assessment and treatment must address anxiety as well as sleep. Given the high occurrence and co-morbidity of insomnia, and its detrimental effects for the individual and the society, psychological interventions for insomnia should be more readily available in New Zealand.

Table of Contents

Preface	iii
Abstract	v
List of Tables	ix
List of Figures	xi
Introduction	1
Rationale	1
Research questions	2
Research overview	3
Paper One Insomnia treatments: Do existing psychological treatments match current models of insomnia?	7
Abstract	11
Insomnia	14
Insomnia as symptom or disorder	15
Insomnia Models	16
Method	24
Results	24
Behavioural Treatments	24
Cognitive or Cognitive-Behavioural Treatments	25
Coverage of model components	26
Conclusions	28
References	31
Supplemental Material	41
References	65
Paper Two Cognitive-behavioural group therapy for anxiety-related insomnia	77
Abstract	81
Study aims and hypotheses	86
Method	87
Study Design	87
Participants	87
Measures and Materials	90
Procedure	92
Statistical analysis	97
Results	100
Baseline.....	107
Assumptions of normality	107
Hypothesis 1.....	108
Hypothesis 2	113
Hypothesis 3	114
Hypothesis 4	114
Hypothesis 5	115

Clinical significance	116
Discussion	119
References	128
Paper Three: Experiences of a group treatment for anxiety- related insomnia: A series of $n = 1$ case studies	141
Abstract	145
Method	150
Design	150
Participants	150
Measures and materials	151
Procedure	153
Planned analyses	154
Results	154
Quantitative change	154
Qualitative themes	161
Discussion	165
References	171
Discussion	181
Limitations of the current project.....	184
Contributions to the literature.....	186
Opportunities for further studies.....	188
Implications for practice	190
Conclusion.....	191
References.....	193
Appendix A Research participant information.....	221
Appendix B Treatment manual	233
Appendix C Insomnia first handouts.....	267
Appendix D Anxiety first handouts	289

List of Tables

Table 1. Factors involved in the development and maintenance of chronic insomnia.	17
Table 2. Percentage of studies including cognitive and behavioural interventions for sleep and anxiety in insomnia ($n = 69$).	28
Table 3. Assessment instruments and measurement times.	95
Table 4. Treatment programme overview.....	97
Table 5. Descriptive statistics (mean, 95% CI) for all measures	101
Table 6. Paired-samples t tests for all measures.....	104
Table 7. Effect sizes for all measures.....	112
Table 8. Clinical significance on measures of sleep efficiency and insomnia severity	117
Table 9. Mean effect sizes (d) of psychological treatments of insomnia	121

List of Figures

- Figure 1. Percentage of studies targeting areas involved in insomnia etiology...27
- Figure 2. Participant flow chart..... 89
- Figure 3. Study design. An initial screening assessment occurred 4-6 weeks before treatment. Immediately prior to each phase of treatment, a measurement period included a two week sleep diary, plus other measures listed in Table 3. The period from the end of Phase 2 to follow-up ranged from 12 to 20 weeks. 94
- Figure 4. Depression Anxiety Stress Scales and Insomnia Severity Index means with 95% confidence intervals across main time points. Broken lines represent the anxiety first group. 113
- Figure 5. Means with 95% confidence intervals on the Dysfunctional Beliefs and Attitudes about Sleep and Quality of Life of Insomniacs..... 115
- Figure 6. Participants' scores on sleep diary variables at key time points.117
- Figure 7. Insomnia Severity Index score ranges across treatment phases..... 118
- Figure 8. Participants' scores on DASS-21 subscales distributed according to clinical ranges at key time points 119
- Figure 9. Sleep and insomnia severity scores for participants A (Insomnia first) and B (Anxiety first). These participants had low anxiety and stress scores. Sleep efficiency is an indicator of the percentage of time spent asleep after a person went to bed with the intent of sleeping and higher percentage

indicates better scores. ISI: Insomnia Severity Index; WASO: Time awake after sleep onset; SOL: Sleep onset latency; SE: Sleep efficiency. 156

Figure 10. Sleep and insomnia severity scores for participant C (insomnia first) and participant D (anxiety first). These participants had high anxiety and low stress scores. Sleep efficiency is an indicator of the percentage of time spent asleep after a person went to bed with the intent of sleeping and higher percentage indicates better scores. ISI: Insomnia Severity Index; WASO: Time awake after sleep onset; SOL: Sleep onset latency; SE: Sleep efficiency..... 158

Figure 11. Sleep and insomnia severity score for participants E and F (anxiety first). These participants had high anxiety and stress scores. Sleep efficiency is an indicator of the percentage of time spent asleep after a person went to bed with the intent of sleeping and higher percentage indicates better scores. ISI: Insomnia Severity Index; WASO: Time awake after sleep onset; SOL: Sleep onset latency; SE: Sleep efficiency. 160