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Inauguraldissertation

zur

Erlangung des Doktorgrades

der Humanwissenschaftlichen Fakultät

der Universität zu Köln

nach der Prüfungsordnung vom 10.05.2010

vorgelegt von

Tobias Heycke

aus

Bergisch Gladbach

Tag der Abgabe: 01.01.1970

Acknowledgment

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Introduction

Insomnia disorder is related to dissatisfaction with duration or quality of sleep. It can be a source of distress and impairment by decreasing productivity on work or school and lowering energy to engage in social activities (Association, 2013). Prolonged effects of insomnia are associated with higher risk of harm on mental health (Johnson, Roth, & Breslau, 2006; Taylor, Lichstein, Durrence, Reidel, & Bush, 2005) and cognitive functioning (Fortier-Brochu, Beaulieu-Bonneau, Ivers, & Morin, 2012).

Cognitive arousal as maintainer of the disorder is crucial to several behavioral models of insomnia (Espie, Broomfield, MacMahon, Macphee, & Taylor, 2006; A. G. Harvey, 2002; Lundh, 2005; C. M. Morin, Stone, Trinkle, Mercer, & Remsberg, 1993; Ong, Ulmer, & Manber, 2012; Perlis, Giles, Mendelson, Bootzin, & Wyatt, 1997). Harvey's model (A. G. Harvey, 2002) is frequently mentioned as theoretical background in investigations about cognitive process in insomnia. It posits that the excess of negatively toned activity about sleep triggers arousal and distress, channeling attention and monitoring to sleep threats. This may create distorted perceptions of sleep and overestimation of the real deficits during the day. To cope, the individual may engage in safety behaviors that paradoxically increase worry and preclude sleep self correction. In Harvey's model dysfunctional beliefs about sleep exacerbates negatively toned cognitive activity. Such beliefs are also the backbone of the Microanalytic model (Charles M. Morin, 1993), one of the most cited models for insomnia in the literature (Marques, Allen Gomes, Clemente, Santos, & Castelo-Branco, 2015).

Current evidence favors that beliefs and attitudes about sleep mediates insomnia perpetuation (Akram et al., 2020; Chow et al., 2018; Allison G. Harvey, Dong, Bélanger, & Morin, 2017; Lancee et al., 2019), although not all studies have found this association (Norell-Clarke, Hagström, & Jansson-Fröjmark, 2021). Morin (1993) suggests that insomnia maintenance feeds from a cyclic process of arousal, dysfunctional cognitions, maladaptive habits and consequences. Arousal refers to excessive activity in emotional, cognitive or physiologic domains (continua pouco claro). Core beliefs formed in relation to the cognitive arousal guide information processing (Marques et al., 2015). This may give rise to unrealistic expectations and rigidly held beliefs about requirements for sleep, and increased worry about the causes and consequences of sleep disturbances. Subsequent unhealthy sleep practices may include, for example, daytime napping, excessive time in bed or indiscriminate use of sleep medication. Consequences, real or perceived, are related to diminished performance during the day.

Constructs and Their Relations

Individuals high in insomnia symptoms typically demonstrate strong endorsement of dysfunctional beliefs about sleep (Carney & Edinger, 2006; Crönlein et al., 2014; Eidelman et al., 2016). Challenging those beliefs is in the core of Cognitive Behavioral Therapy for insomnia (CBT-I) (Belanger, Savard, & Morin, 2006). A recent meta-analysis observed clinically significant improvements in beliefs and attitudes about sleep favoring CBT-I over control – although, as the authors warn, those results should be interpreted with care given the low quality of evidence (Edinger J. D. et al., 2021). Insomnia severity was identified as risk factor for anxiety (Neckelmann, Mykletun, & Dahl, 2007) and depression (Blanken, Borsboom, Penninx, & Van Someren, 2020; Li, Wu, Gan, Qu, & Lu, 2016) and some studies argue this relationship the other way around (Chen et al., 2017; Jansson-Fröjmark & Lindblom, 2008). A relationship between anxiety and depression with dysfunctional beliefs about sleep is also expected: Beck's classic cognitive mechanism for the cause and maintenance of depression gives a central role to inaccurate beliefs and maladaptive information processing (Beck, 1979). Anxiety can be elicited from displeasing memories created through exposure to adverse experiences (Brewin, 1996). Thus, unrealistic attributions and expectations about sleep (or lack of sleep) may elicit anxiety-provoking thoughts. Associação entre Depressão e DBAS (Sadler, McLaren, & Jenkins, 2013).

Measurement of dysfunctional beliefs and attitudes about sleep

To assess disruptive sleep-related beliefs and habits, Morin et al. (1993) developed the Dysfunctional Beliefs and Attitudes About Sleep Scale (DBAS). The DBAS started as a 30-item self-report instrument rated in a 100-mm visual analog scale of agreement/disagreement. Later, Morin and colleagues (2007) shortened it to a 16-item version and replaced the response format for a 0-10 Likert-type scale. The items of the brief version were selected from the original scale based on criteria of response distribution, range, item-total correlations and exploratory oblique factor analysis. A 4-factor structure was fitted to the 16 items in a confirmatory factor analysis, labeled (a) consequences of insomnia, (b) worry about sleep, (c) sleep expectations, (d) medication, and a 5th second-order general factor. The DBAS is broadly employed in experimental studies assessing sleep-related cognitions, especially the 16-item version (Thakral, Von Korff, McCurry, Morin, & Vitiello, 2020). Researchers translated and validated the DBAS-16 to various cultures. These studies successfully replicated the original factor structure and presented good validity evidences (Boysan, Merey, Kalafat, & Kağan, 2010; Dhyani, Rajput, & Gupta, 2013; Lang et al., 2017). Moreover, the DBAS-16 outperformed the 30 and 10 item versions in reproducibility of factor structure, measures of internal consistency, concurrent validity and sensitivity to change (Chung Ka-Fai, Ho Fiona Yan-Yee, & Yeung Wing-Fai, 2016).

Objetivos do trabalho

The present paper therefore aims at (a) developing a German translation of the scale, (b) examining its factorial structure, and (c) examining its construct validity.

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Appendix A

Sets of IADS sounds used in Experiment 1: Valence Positive, Neutral, Negative

Table A1

Sound-Nr. (Bradley & Lang, 2007)

Positive	Neutral	Negative
110	109	278
172	171	279
725	206	285
809	221	296
810	270	501
811	365	624
815	367	625
816	368	711
817	375	712
820	722	719

Appendix B

Priors for the Bayesian logistic mixed effects regression models of two-alternative forced choice responses

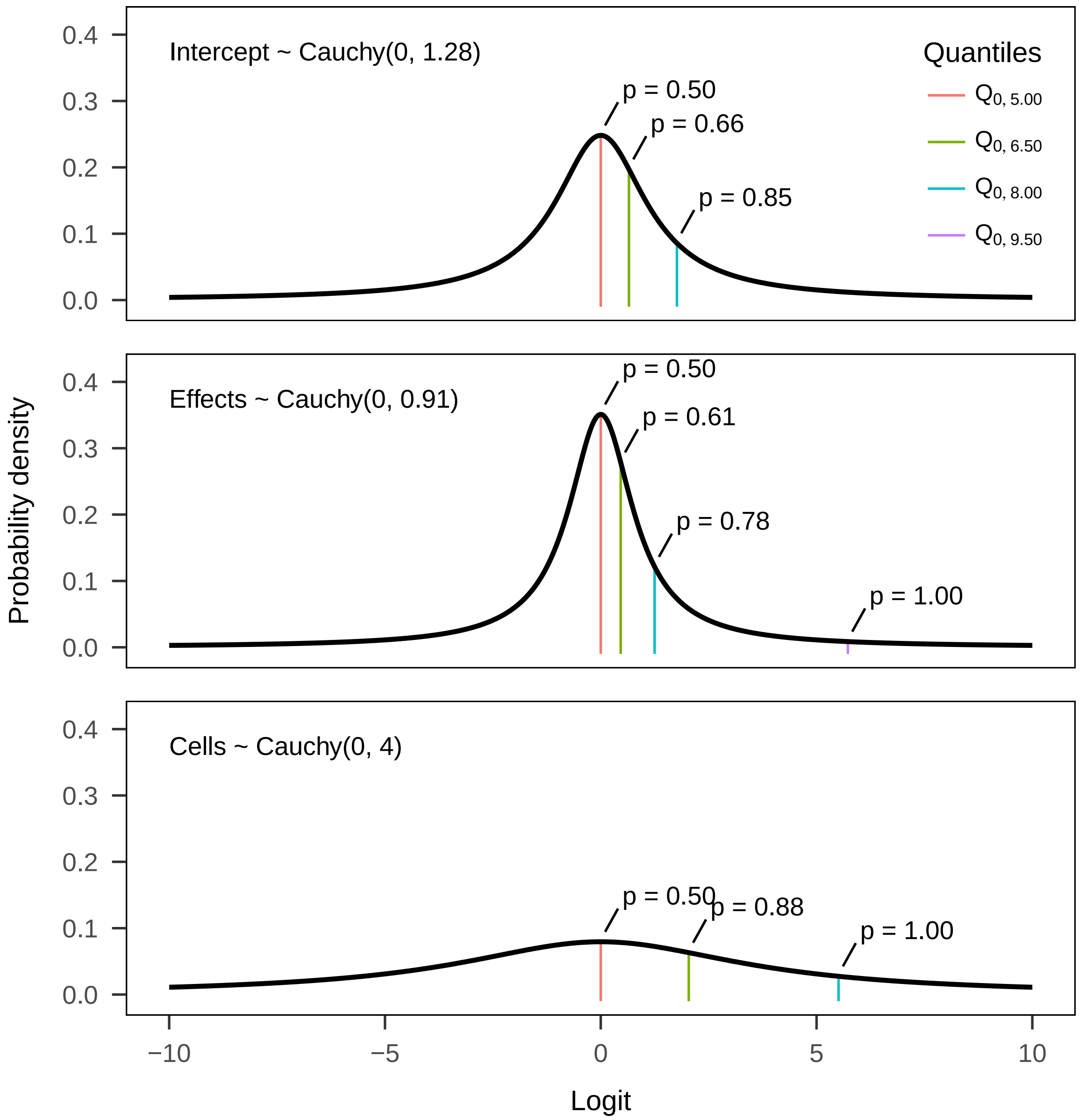

Figure B1. Priors for the Bayesian logistic mixed effects regression models of two-alternative forced choice responses. Colored lines represent distribution quantiles; annoted probabilities represent the resulting probability of choosing a positively paired CS starting from chance level (p = 0.5).

Appendix C

Mean CS visibility (Experiment 2 and Experiment 3)

Mean Visibility scores of each CS in Experiment 2 (chance level = .250, $N = 37$) and pilot of Experiment 3 (chance level = .125, $N = 7$) and the presentation time for each stimulus as used in Experiment 3.

Table C1
Mean CS visibility

CS	Visibility Study 2	Visibility Pilot	Set
03.png	.512	.400	1000 ms
08.png	.540	.329	1000 ms
14.png	.900	.657	1000 ms
22.png	.475	.400	1000 ms
04.png	.438	.200	20 ms
20.png	.400	.271	20 ms
50.png	.356	.129	20 ms
51.png	.423	.243	20 ms