Brandhorst et al., J Psychol Psychother 2016, 6:2
DOI: 10.4172/2161-0487.1000249

Journal of Psychology & Psychotherapy
ISSN: 2161-0487

Research Article Open Access

Improving Psychosocial Health, Coping, and Self-Efficacy in Parents of Sleep-Disturbed Young Children

Isabel Brandhorst[1], Martin Hautzinger[1] and Angelika A Schlarb[2]*

[1]*Department of Psychology, University of Tuebingen, Germany*
[2]*Faculty of Psychology and Sports Science, University of Bielefeld, Germany*

Abstract

Objective: Various research has shown that mothers of sleep-disturbed young children experience poorer physical and mental health, show more symptoms of depression or anxiety, and demonstrate a higher level of stress. Coping strategies and self-efficacy might play an important role in this context. In the present study we aimed to investigate psychosocial health, coping, and the sleep-related self-efficacy of parents participating in an Internet-based treatment for sleep-disturbed young children (six months to four years of age).

Methods: N=199 mothers and N=197 fathers answered questionnaires regarding psychosocial health, coping, and sleep-related self-efficacy before, immediately after, and three months after treatment. Two intervention conditions (written information only vs. additional telephone support) were compared to a waiting-list control condition. The treatment essentially addressed the child´s sleep situation but also included information on parental coping and psychosocial health.

Results: Both parents showed impaired psychosocial health (depression, compulsiveness) and more maladaptive coping (rumination, self-blame) before treatment. Feelings of aggression were reported by mothers only. More psychopathological symptoms in both parents were related to more maladaptive coping strategies and less sleep-related self-efficacy. Adaptive coping was associated with higher sleep-related self-efficacy, while maladaptive coping was related to lower sleep-related self-efficacy in mothers only. Mothers in both treatment conditions improved their psychosocial health (e.g., depression, somatization, anxiety, aggression) and their ability to cope in some scales (increase: relaxation, trivialization; decrease: rumination) after treatment. For fathers, only a few changes were observed. The impaired sleep-related self-efficacy of both parents improved with treatment. Personal telephone support rarely affected the results.

Conclusion: Teaching parents to treat their child´s sleep problem can improve impairments in psychosocial health, coping, and self-efficacy predominantly in mothers.

Keywords: Sleep problems; Young children; Intervention; Internet-based; Parents; Psychosocial health; Coping; Self-efficacy

Introduction

Sleep problems are common in infants, toddlers, and preschoolers throughout their development [1-4]. However, the definition of sleep problems differs between research groups. Studies have shown that mothers of young children with (persistent) sleep difficulties experience poorer physical and mental health [5,6], tend to be more depressed [7-11] and anxious [12], and report higher stress [4,12-14]. The direction concerning some of these associations – especially relating to maternal depression – is supported by two kinds of results. First, data suggest that disturbed sleep in newborns and infants is associated with a new onset of depressive symptoms in mothers [11,15], and maternal depression scores are not identified as predictors of later child sleep problems in long-term studies [6]. Second, findings indicate that the treatment of the child´s sleep problem can simultaneously improve maternal depression scores [16-20] and maternal stress or marital satisfaction [21]. Research including data on both parents is quite rare. Nevertheless, results indicate that sleep problems in young children are associated with impaired physical health in fathers [2], an increased level of distress [14,22], and impaired marital satisfaction [21]. All in all, mothers seem to be more affected by depressive symptoms, while fathers perceive more impairments in family functioning [22]. However, other research demonstrates that mothers and fathers of sleep-disturbed infants show equally high levels of distress [23].

A variety of studies illustrate the influence of coping strategies on psychosocial health in adults [24-26] and parents [27-29]. Studies indicate that adaptive coping strategies such as positive reappraisal mediate the relationship between parenting stress and parental reports of attachment in toddlers [28]. Furthermore, perceived social support – a coping strategy – mediates the association between maternal stress and maternal life satisfaction [27]. Sadeh et al. [30] indicated in their review that parental coping with emotions and anxieties arising from an infant´s distress signs (e.g. infant crying) is a real challenge. But, unfortunately, the role of coping in the context of parental distress related to pediatric sleep disturbances is still unclear. Recently, Tsai et al. [31] investigated how 12 Taiwanese first-time mothers coped in response to infant sleep concerns. "Self-help coping" (receiving and accepting suggestions that enable mothers to feel capable of adapting to infant sleep problems) and subsequent "seek-help coping" (active use of formal and informal sources of help to identify and manage infant sleep problems) were the major themes mentioned by these mothers [31].

***Corresponding author:** Angelika Schlarb, Faculty of Psychology and Sports Science, Bielefeld University, P. O. P. 100131, 33501 Bielefeld, Germany, Tel: +49(0)521-106-4320; Fax : +49(0)521-106-4320; E-mail: Angelika.Schlarb@uni-bielefeld.de

Received November 19, 2015; **Accepted** March 18, 2016; **Published** April 09, 2016

Citation: Brandhorst I, Hautzinger M, Schlarb AA (2016) Improving Psychosocial Health, Coping, and Self-Efficacy in Parents of Sleep-Disturbed Young Children. J Psychol Psychother 6: 249. doi:10.4172/2161-0487.1000249

Besides coping, parental self-efficacy seems to be a relevant factor that modulates parental behavior related to the child´s sleep situation. Prospective data showed that higher caregiver self-efficacy was linked to more self-soothing competence of the child one year later [32]. Furthermore, studies indicate that parental training of an infant´s sleep behavior is associated with an increase in their self-efficacy [33]. Other studies demonstrate that self-efficacy is useful in predicting treatment compliance in sleep-disturbed adults [34].

Various studies demonstrate the efficacy of behavioral interventions in reducing pediatric sleep disturbances [21,35] and in improving parental strain [16-20]. Personal support (face-to-face or telephone support) seems to increase improvements in parental psychosocial health [36,37]. For example, Giallo et al. [36] found that mothers receiving home visits and telephone support reported fewer symptoms of depression, anxiety, and stress treatment and were more satisfied with the program compared to a workbook-only condition and a control condition. However, the evidence base is still insufficient.

Internet-based interventions such as the Mini-KiSS Online treatment have already demonstrated their effectiveness in treating children´s sleep disturbances [38]. The present follow-up study investigates Mini-KiSS Online in a randomized controlled trial. We aimed to examine the effect of the treatment of the child´s sleep on parental psychosocial health, their coping behavior, and their sleep-related self-efficacy. Two intervention conditions (intervention based on written information only vs. receiving additional telephone support) were compared to a waiting-list control condition. Data regarding child sleep, parental behavior, and treatment satisfaction were submitted. We expected that parents of children with sleep disturbances would 1) initially show increased psychopathological symptoms compared to the norm sample and 2) low sleep-related self-efficacy values. Furthermore, 3) mothers were expected to show more psychopathological symptoms and lower sleep-related self-efficacy compared to fathers. Due to a lack of previous research, no assumptions were made on the initial coping strategies of parents. We expected to 4) reduce psychopathological symptoms, 5) increase adaptive and decrease maladaptive coping strategies, and 6) increase sleep-related self-efficacy in parents of the intervention conditions. We did not expect any change or expected less change for the controls. Furthermore, we assumed that 7) more improvements in parents receiving additional telephone support would be found.

Method

Design and procedure

Parents participated with their six-month-old to four-year-old children. They were recruited by magazines, newspapers, and Internet presentation. E-mail communication during the treatment and information about the study and its conditions were standardized. All parents were informed about the goal, procedure (randomization), content, and any other relevant aspects of the study prior to participation in the study. They were informed that they had the right to refuse to participate in the study or to withdraw consent to participate at any time without reprisal. Participation was absolutely voluntary. The psychologists were not involved in any otherwise dependent relationship with the parents. Only subjects who were capable of giving informed consent were included. They declared their willingness to participate and gave informed consent prior to the diagnostic entry. The study was conducted according to standard ethical guidelines as defined by the Declaration of Helsinki and approved by the ethics committee of the department of medicine of the University of Tuebingen. Families were randomized to one of two intervention conditions (intervention based on written information only (T-), intervention based on written information plus additional telephone support (T+)), or to the waiting-list control condition (C). Parents had 14 days to fill in online questionnaires. Then, parents of the treatment conditions started with the six-week Mini-KiSS Online training while parents of condition C started their six-week waiting time. After that, they completed the post-measurement and three-month follow-up (intervention conditions only). Control parents were randomly assigned to one of the two interventions with or without personal telephone support after post-measurement. No further measurements were performed on them.

Participants and dropout

Initially, N=559 families were interested in the treatment and received information; of these 50.63% (N=283) agreed to participate in the study and were randomized (T+: N=90; T-: N=91; C: N=102). Inclusion criteria were the child´s age between six months and four years and parental report that their child suffers from a "sleep problem". After the results of the randomization condition, 23.67% of all parents did not complete pre-measurement (T+: N=-11, -12.22%; T-: N=-31, -34.07%; C: N=-25, -24.51%). Furthermore, N=19 data sets were excluded because of a comorbid psychiatric disorder of the child (1x), respiratory disease of the child (11x), the use of medication influencing sleep (2x), the use of other treatment during the study (3x), exceeding pre-measurement timelines (2x). Finally, N=199 families (T+: N=72; T-: N=58; C: N=69) completed pre-measurement and started with their treatment or waiting time. The self-determined dropout after the treatment or waiting time was quite low (overall 10.05%, T+: N=-5, -6.94%; T-: N=-10, -17.24%; C: N=-5, -7.25%). For the treatment conditions, an additional dropout of 9.57% was recorded between the post-measurement and the follow-up (T+: N=-6, -8.96%; T-: N=-5, -10.42%).

Parents of N=96 girls (T+: N=34; T-: N=27; C: N=35) and N=103 boys (T+: N=38, T-: N=31, C: N=34) started with the treatment or waiting time. Two parents were single mothers (both condition C); one child lived with his or her biological mother and adoptive father (condition T+), and one child lived with his or her foster parents (condition T). Information about age can be found in Table 1. Table 2 shows that 64.32% of mothers had a university degree (average Germany: 9.5% to 16.7% for people 25 to 55 years of age) and 59.18% of fathers had a university degree (average Germany: 9.6% to 12.6% for people 25 to 55 years of age). Most of the mothers were intentionally unemployed at the time (52.85%) and fathers were full-time employed (91.19%). In conclusion, parents in this sample were more highly

Age		M	SD	Min	Max	N
Child (month)	T+	18.11	10.50	7	59	72
	T-	20.14	14.00	6	63	58
	C	21.03	12.33	6	57	69
Mothers (years)	T+	33.54	4.01	23	42	71
	T-	33.96	4.14	26	46	57
	C	34.12	4.05	25	45	69
	missing values					2
Fathers (years)	T+	36.46	6.30	24	58	71
	T-	37.22	5.29	28	51	54
	C	37.09	5.66	25	54	64
	missing values					8

Abbreviation: M, Mean; SD, Standard Deviation; T+, Treatment with personal assistance; T-, Treatment without personal assistance; C, Control condition.

Table 1: Age of children and their parents.

	Mothers				Fathers			
Highest education, #	Overall	T+	T-	C	Overall	T+	T-	C
Secondary general school	1	1	0	0	11	4	2	5
Intermediate school	27	15	4	8	36	20	8	8
Grammar school*	42	17	17	8	28	10	10	8
University**	128	39	36	53	116	37	37	42
Other	1	0	1	0	5	1	1	3
Missing values	-	-	-	-	1	-	-	1
Employment, #								
Full time	21	9	4	8	176	64	56	56
Part time	68	24	18	26	10	3	1	6
Unemployed (intended)	102	35	35	32	6	3	0	3
Unemployed (unintended)	2	1	1	0	1	1	0	0
Missing values	6	3	-	3	4	1	1	2

Abbreviation: #, Number of participants; T+, Treatment with personal assistance; T-, Treatment without personal assistance; C, Control condition; *, Including advanced technical college entrance qualification ("Fachhochschulreife"); **, Including conferral of a doctorate.

Table 2: Education and employment of parents.

educated compared to the overall population in Germany [39].

Diagnostic criteria according to Gaylor et al. [40] were used to diagnose sleep problems based on a sleep diary. For this purpose, the criteria had to be expanded for children younger than 12 months of age. Most children in our sample had sleep maintenance disorders (N=90; sleep maintenance perturbation N=19, sleep maintenance disturbance N=52). Additionally, many children showed sleep onset disturbances (N=68; sleep onset perturbation N=28, sleep onset disorder N=37). Sixteen children had neither sleep onset nor sleep maintenance problems according to Gaylor et al. [40].

Intervention and compliance

The Mini-KiSS Online program has been previously described elsewhere [38]. It contains six treatment sessions delivered weekly via e-mail and an online platform. Each session includes a part of the Mini-KiSS Online workbook constructed as a cognitive-behavioral bibliotherapeutic self-learning approach (including psychoeducation, sleep hygiene, bed time ritual, graduate extinction, token system, information about feeding, baby massage). Additionally, parents receive hypnotherapeutic imaginative exercises (audio files) for themselves and bedtime stories for the child. Mini-KiSS Online essentially addresses the child´s sleep situation but also includes information on parental coping and psychosocial health (e.g., information about stress and relaxation, attentiveness, calmness). Additionally, parents in T+ received six weekly telephone calls performed by psychologists who were familiar with the treatment and had been previously trained. Parents could ask sleep-related questions in the context of the intervention, on how to handle further sleep problems of their child or how to change parental sleep-related behavior in the evening or at night. Even if parents were asked to work on the exercises together, half of the mothers (51.82%) reported that they executed the training alone (48.18% of parents executed it together; 0% of fathers executed it alone). Interestingly, fathers held a different view (50.00% of parents executed it together; 48.11% of mothers executed it alone; 1.82% of fathers executed it alone).

Measurements

The revised German version of the Symptom Check List was used to ascertain psychiatric symptomatology in parents [41]. The questionnaire consists of 90 items and covers a variety of symptomatic areas related to the past seven days on nine subscales (depression, somatization, anxiety, phobic anxiety, interpersonal sensitivity, aggression, obsessive-compulsive, paranoid ideation, psychoticism). Based on a German norm sample, T-values above T ≥ 60 are conspicuous (or more strictly: T ≥ 65≙1.5 SDs / ≥ 70≙2 SDs above the mean value). A Global Severity Index (GSI) can be computed on the basis of all answers as a measure for total psychic stress. Psychometric values can be rated as excellent to satisfactory and declared as possible for repeated measure use (retest reliability between r = 0.69 and r = 0.92; internal consistence between r = 0.75 to r = 0.97).

The Stress and Coping Style Questionnaire was used to assess adaptive and maladaptive coping strategies [42]. It consists of ten subscales presenting adaptive coping strategies (relaxation, trivialization, minimization, denial of guilt, distraction, substitute gratification, search for self-affirmation, situation control, reaction control, positive self-instruction), six subscales presenting maladaptive coping strategies (Escape, Social withdrawal, Rumination, Resignation, Self-pity, Self-blame), and four subscales presenting neutral coping strategies (Need for social support, Avoidance, Aggression, Drug use), each covered by six items. The psychometric values can be rated as good (internal consistency for the single scales between r = 0.62 and r = 0.96, internal consistency for the sum scales between r = 0.82 and r = 0.96).

Sleep-specific self-efficacy was measured with a questionnaire based on a modified version of the generalized self-efficacy questionnaire by Schwarzer and Jerusalem [43]. Therefore, the questions were rephrased from referring to difficult situations in general to sleep-specific situations (e.g. For every problem concerning the sleep behavior of my child, I can find a solution.). The response format ranged from one (not at all true) to four (exactly true). Cronbach's alpha of this questionnaire in our survey was r=0.84 for mothers and r=0.88 for fathers.

The Mini-KiSS Online Anamnestic Questionnaire (MKO-AQ) collected anamnestic and demographic information as well as information about the family and sleep situation.

Sample characteristics and statistical analysis

Statistical analyses were performed using the PASW (v 22.0; SPSS Inc, Chicago, IL). Normal distribution was assumed due to the sufficient sample size (N per cell > 50) and the robustness of the analysis used here [44]. Overall, the significance level was α=5%. An analysis of the baseline group differences indicated that fathers differed in their educational level (analyzed by an analysis of variance (ANOVA) for metric values and Kruskal-Wallis test for non-metric values). All other demographics and outcome variables were equivalent. Contextual analyses were performed with Pearson´s product-moment correlation (after a visual check of linearity with scatter plots). Comparisons between our sample and an age-, gender-, and education-equal population were conducted with pairwise t-tests. All other analyses were based on raw values. For efficacy measures of parental psychological strain, parental coping strategies, and parental sleep-related self-efficacy, we used general linear mixed (GLM) models. GLM Model 1 was used to analyze pre-post treatment effects between the treatment (T+ & T-) and control conditions. GLM Model 2 examined differences between the two treatment conditions T+ and T- in a pre-post-comparison. GLM Model 3 verified the stability of the results at a three-month follow-up (main effect for time) and whether the treatment conditions differed (interaction term).

Results

Contextual analyses

For the global scales, analyses of the relationships between the questionnaires at pre-measurement were performed (Table 3). More

psychopathological symptoms in mothers (Mo) and fathers (Fa) were related to more maladaptive coping strategies and less sleep-related self-efficacy, while there was no association to adaptive coping strategies. Furthermore, adaptive coping strategies were associated with higher sleep-related self-efficacy while maladaptive coping strategies were related to lower sleep-related self-efficacy in mothers only.

Parental strain

Based on previous findings, we expected parents of children with sleep problems to be more burdened by psychopathological symptoms. Therefore, we compared pre-data of the SCL-90-R of our parents with an age-, gender-, and education-equal population using T-standardization (Table 4). In our sample, the results of the majority of mothers and fathers were in the average range. However, for some subscales a higher number of parents (≥ 20%) showed slightly increased or markedly increased T-values: depression (Mo & Fa), aggression (Mo), and obsessive compulsiveness (Mo & Fa), global severity index (Mo & Fa). On the basis of T-values, mothers showed more symptoms of depression ($t = 4.86$, $p \leq 0.001$), more interpersonal sensitivity ($t = 2.68$, $p = 0.008$), more aggression ($t = 4.75$, $p \leq 0.001$), more obsessive compulsiveness ($t=2.64$, $p=0.009$), and higher scores on the global severity index ($t = 3.19$, $p = 0.002$) compared to fathers (Table 4).

GLM Model 1 (T+ & T- vs. C): Treatment effects (significant interaction terms) in mothers were found for the following scales: Global severity index ($F(1,169.42) = 23.29$, $p \leq 0.001$), depression ($F(1,179.04) = 17.47$, $p \leq 0.001$), obsessive compulsiveness ($F(1,186.74) = 16.95$, $p \leq 0.001$), interpersonal sensitivity ($F(1,167.11)=4.68$, $p=0.032$), somatization ($F(1,167.07)=16.13$, $p\leq0.001$), anxiety ($F(1,170.34)=9.43$, $p=0.002$), aggression ($F(1,180.44)=11.49$, $p\leq0.001$), and paranoid ideation ($F(1,176.74)=6.60$, $p=0.011$). However, a statistical analysis revealed no treatment effects for fathers. The relevant raw values are presented in Table 5.

GLM Model 2 (T+ vs. T-): No significant interaction terms were found for mothers and fathers.

GLM Model 3 (post vs. follow-up): Significant interaction and time effects for depression (time: $F(1,92.99) = 5.64$, $p = 0.020$; interaction: $F(1,92.99) = 7.36$, $p = 0.008$) and global severity index (time: $F(1,100.97) = 4.73$, $p = 0.032$; interaction: $F(1,100.97) = 5.80$, $p = 0.018$) indicated that mothers of T- further improved after treatment, while mothers of T+ did not. In addition, mothers of the intervention conditions differed in interpersonal

		SVF-120 Adaptive Strategies	SVF-120 Maladaptive Strategies	Sleep-related self-efficacy
SCL-90-R	Mo	r=-0.13, p=0.063	r=0.51, p≤0.001	r=-0.185, p=0.009
GSI	Fa	r=0.06, p=0.399	r=0.55, p≤0.001	r=-0.19, p=0.008
SVF-120	Mo		r=-0.17, p=0.015	r=0.31, p≤0.001
Adaptive Strategies	Fa		r=0.04, p=0.631	r=0.02, p=0.840
SVF-120	Mo			r=-0.26, p≤0.001
Maladaptive Strategies	Fa			r=-0.18, p=0.013

Abbreviation: SCL-90-R GSI, Symptom Check List Global Severity Index; SVF-120, Stress and Coping Style Questionnaire; Mo, Mothers; Fa, Fathers.

Table 3: Correlations between global scales of the questionnaires.

Subscales	Mothers # (%) / Fathers # (%)			
	T<60	T=60-64	T=65-69	T=70-80
Depression	118(59.60) / 145(74.36)	45(22.73) / 25(12.82)	27(13.64) / 11(5.64)	8(4.04) / 14(7.18)
Somatization	173(87.37) / 171(87.69)	14(7.07) / 8(4.10)	8(4.04) / 9(4.62)	3(1.52) / 7(3.59)
Anxiety	176(88.89) / 163(83.59)	18(9.09) / 15(7.69)	3(1.52) / 12(6.15)	1(0.51) / 5(2.56)
Phobic anxiety	188(94.95) / 184(94.36)	7(3.54) / 4(2.05)	2(1.01) / 6(3.08)	1(0.51) / 1(0.51)
Interpersonal sensitivity	165(83.33) / 168(86.15)	15(7.58) / 13(6.67)	13(6.57) / 10(5.13)	5(2.53) / 4(2.05)
Aggression	138(69.67) / 160(82.05)	42(21.21) / 22(11.28)	15(7.58) / 9(4.62)	3(1.52) / 4(2.05)
Obsessive compulsiveness	120(60.61) / 137(70.26)	47(23.74) / 22(11.28)	25(12.63) / 21(10.77)	6(3.03) / 15(7.69)
Paranoid ideation	177(89.39) / 173(88.72)	18(9.09) / 13(6.67)	2(1.01) / 7(3.59)	1(0.51) / 2(1.03)
Psychoticism	182(91.92) / 166(85.13)	11(5.56) / 14(7.18)	5(2.53) / 10(5.13)	0(0) / 5(2.56)
Global severity index	156(78.79) / 155(79.49)	33(16.67) / 20(10.26)	8(4.04) / 13(6.67)	1(0.51) / 7(3.59)

Notes: Data include 1 missing value for mothers and 2 for fathers. T=50 average, T=60-64 slightly increased, T=65-69 markedly increased, T=70-80 strongly increased.
Abbreviation: SCL-90-R, Symptom Check List; #, Number.

Table 4: SCL-90-R: Distribution of standardized T-values at pre-measurement.

Subscales	T+: pre / post / follow-up: M (SD)	T-: pre / post / follow-up: M (SD)	C: pre / post: M (SD)
Depression	0.86(0.61) / 0.43(0.37) / 0.44(0.40)	0.93(0.57) / 0.45(0.40) / 0.31(0.19)	0.82(0.47) / 0.67(0.55)
Somatization	0.46(0.35) / 0.24(0.20) / 0.29(0.23)	0.49(0.47) / 0.25(0.27) / 0.25(0.30)	0.45(0.39) / 0.41(0.42)
Anxiety	0.31(0.29) / 0.16(0.18) / 0.15(0.22)	0.37(0.38) / 0.17(0.20) / 0.11(0.21)	0.29(0.32) / 0.23(0.33)
Interpersonal s.	0.57(0.55) / 0.30(0.33) / 0.28(0.28)	0.56(0.46) / 0.28(0.33) / 0.15(0.19)	0.56(0.51) / 0.43(0.50)
Aggression	0.63(0.58) / 0.32(0.33) / 0.31(0.34)	0.70(0.49) / 0.28(0.24) / 0.22(0.24)	0.56(0.44) / 0.45(0.41)
Obsessive-c.	0.79(0.56) / 0.33(0.34) / 0.35(0.32)	0.72(0.51) / 0.36(0.45) / 0.25(0.30)	0.72(0.48) / 0.56(0.47)
Paranoid ideation	0.38(0.46) / 0.20(0.24) / 0.18(0.28)	0.38(0.37) / 0.17(0.24) / 0.13(0.27)	0.34(0.39) / 0.28(0.41)
Global severity i.	0.52(0.33) / 0.25(0.19) / 0.26(0.20)	0.54(0.32) / 0.26(0.22) / 0.18(0.19)	0.49(0.28) / 0.40(0.32)

Abbreviation: SCL-90-R, Symptom Check List; T+, Treatment with personal assistance; T-, Treatment without personal assistance; C, Control condition; M, Mean; SD, Standard Deviation.

Table 5: SCL-90-R: Means and standard deviations of pre-, post-, and follow-up measurement of mothers.

sensitivity (interaction: F(1,108.03) = 4.30, p = 0.041) and aggression (interaction: F(1,91.41) = 7.88; p = 0.006), but there were no significant time effects. Stable effects were found in mothers of both treatment conditions (no time or interaction effects) for somatization, anxiety, phobic anxiety, obsessive compulsiveness, paranoid ideation, and psychoticism. For fathers, no significant interaction or time effects were revealed.

Parental stress and coping

Coping strategies of parents in this study were compared to an age- and gender-equal population (Table 6). For a better understanding, subscales with a plus sign (+) flag adaptive coping strategies, subscales with a minus sign (-) stand for maladaptive coping strategies, and subscales with a (N) indicate "not specified" or "neutral" strategies. In our sample, the results for the majority of mothers and fathers were in the average range. However, for some subscales, a higher number of mothers or fathers (≥ 20%) showed slightly increased or markedly increased T-values on maladaptive or neutral scales: need for social support (N) (Mo), rumination (-) (Mo & Fa), self-blame (-) (Mo & Fa), and aggression (N) (Mo). On the basis of T-values, mothers showed less minimization (+) (t=-3.45, p≤0.001), more substitute gratification (+) (t = -2.47, p = 0.014), more escape (-) (t = 2.07, p = 0.040), more rumination (-) (t = 2.02, p = 0.045), and more self-pity (-) (2.89, p = 0.004) compared to fathers.

GLM Model 1 (T+ & T- vs. C): Treatment effects (significant interaction terms) in mothers were found for the following scales: relaxation (+) (F(1,182.35) = 14.88, p ≤ .001), trivialization (+) (F(1,182,50) = 7.98, p = 0.005), search for self-affirmation (+) (F(1,133.24) = 4.82, p = 0.030), rumination (-) (F(1,179.36) = 12.21, p ≤ 0.001), the adaptive overall scale (F(1,178.12) = 4.14, p = 0.043), and the maladaptive overall scale (F(1,179.75) = 5.32, p = 0.022). For fathers, the following scales revealed significant treatment effects: minimization (+) (F(1,173.72) = 7.21, p = 0.008) and substitute gratification (+) (F(1,170.77) = 6.23, p = 0.014). All other interactions did not reach significance. The relevant raw values are presented in Tables 7 and 8.

GLM Model 2 (T+ vs. T-): No significant interaction terms were found for mothers. Fathers of T+ showed more reductions in rumination (-)(F(1,121.40) = 7.45, p = 0.007) and the maladaptive overall scale (F(1,109.25) = 4.56, p = 0.035) compared to T-.

GLM Model 3 (post vs. follow-up): Stable results (no significant time effects) and equality of both treatment conditions (no significant interaction) were found for mothers. Fathers further improved after treatment in relaxation (+) (F(1,96.02) = 5.22, p = 0.025), situation control (+) (F(1,100.54) = 5.88, p = 0.017), and reaction control (+) (F(1,99.04) = 5.14, p = 0.026) irrespective of group affirmation. Further improvements over time (F(1,80.20) = 5.66, p = 0.020) with an advantage for T- (interaction: F(1,80.20) = 5.33, p = 0.023) were found for rumination (-) in fathers. Similarly, a significant interaction term

Subscales	Mothers # (%) / Fathers # (%)				
	T<60	T=60-64	T=65-69	T=70-80	m
Relaxation(+)	177(90.31) / 162(91.53)	14(7.14) / 10(5.65)	3(1.53) / 1(0.56)	2(1.02) / 4(2.26)	3/20
Trivialization(+)	177(90.31) / 169(89.89)	8(4.08) / 12(6.38)	8(4.08) / 6(3.19)	3(1.53) / 1(0.53)	3/9
Minimization(+)	175(89.74) / 168(87.04)	16(8.21) / 18(9.33)	3(1.54) / 6(3.11)	1(0.51) / 1(0.52)	4/4
Denial of guilt(+)	174(89.23) / 157(83.07)	15(7.69) / 18(9.52)	3(1.54) / 11(5.82)	3(1.54) /3(1.59)	4/8
Distraction(+)	180(91.84) / 174(90.63)	11(5.61) / 11(5.73)	3(1.53) /7(3.65)	2(1.02) / 0(0)	3/5
Substitute gratification(+)	183(93.37) / 170(88.08)	13(6.63) / 17(8.81)	0(0) / 6(3.11)	0(0) / 0(0)	3/4
Search for self-affirmation(+)	176(89.80) / 180(94.24)	14(7.14) / 5(2.62)	3(1.53) / 3(1.57)	3(1.53) / 3(1.57)	3/6
Situation control(+)	182(92.86) / 169(88.48)	13(6.63) / 16(8.38)	0(0) / 2(1.05)	7(3.57) / 4(2.09)	3/6
Reaction control(+)	181(93.30) / 176(93.62)	13(6.70) / 10(5.32)	0(0) / 2(1.06)	0(0) / 0(0)	5/9
Positive self-instruction(+)	178(92.23) / 172(91.98)	9(4.66) / 13(6.95)	4(2.07) / 2(1.07)	2(1.04) / 0(0)	6/10
Need for social support(N)	146(74.49) / 155(82.89)	29(14.80) / 11(5.88)	13(6.63) / 14(7.49)	8(4.08) / 7(3.74)	3/10
Avoidance(N)	189(96.43) / 177(92.67)	3(1.53) / 12(6.28)	2(1.02) /2(1.05)	2(1.02) / 0(0)	3/6
Aggression(N)	149(76.02) / 152(80.42)	32(16.33) / 18(9.52)	8(4.08) / 16(8.47)	7(3.57) / 3(1.59)	3/8
Drug use(N)	193(98.47) / 180(93.26)	2(1.02) / 4(2.07)	1(0.51) / 8(4.15)	0(0) / 1(0.52)	3/4
Escape(-)	166(85.57) / 169(87.56)	12(6.19) / 8(4.15)	12(6.19) / 11(5.70)	4(2.06) / 5(2.59)	5/4
Social withdrawal(-)	160(81.63) / 162(83.94)	25(12.76) / 18(9.33)	4(2.04) / 11(5.70)	7(3.57) / 2(1.04)	3/4
Rumination(-)	137(70.26) / 151(78.65)	38(19.5) / 21(10.94)	20(10.3) / 8(4.17)	0(0) / 12(6.25)	4/5
Resignation(-)	170(87.18) / 167(86.53)	12(6.15) / 11(5.70)	9(4.62) / 8(4.15)	4(2.05) / 7(3.63)	4/4
Self-pity(-)	157(81.35) / 160(83.33)	24(12.44) / 28(14.58)	9(4.66) / 2(1.04)	3(1.55) / 2(1.04)	6/5
Self-blame(-)	156(79.59) / 147(77.37)	28(14.3) / 21(11.05)	10(5.10) / 18(9.47)	2(1.02) / 4(2.11)	3/7

Notes: T=50 average, T=60-64 slightly increased, T=65-69 markedly increased, T=70-80 strongly increased.
Abbreviation: SVF-120, Stress and Coping Style Questionnaire; #, Number; m, Number of missing values.

Table 6: SVF-120: Distribution of standardized T-values at pre-measurement.

Subscales	T+: pre / post / follow-up: M (SD)	T-: pre / post / follow-up: M (SD)	C: pre / post: M (SD)
Relaxation(+)	9.50(4.99) / 11.19(5.49) / 9.90(5.47)	9.09(5.12) / 10.72(5.40) / 15.56(5.55)	10.87(4.99) / 9.84(4.80)
Trivialization(+)	11.54(4.02) / 12.04(4.27) / 11.22(4.06)	10.97(3.83) / 11.59(3.51) / 11.61(3.69)	11.10(3.69) / 10.30(3.77)
S. f. self-affirma.(+)	10.03(4.55) / 10.69(4.99) / 9.88(4.65)	9.48(4.25) / 9.63(5.15) / 9.88(4.78)	10.81(4.21) / 10.27(4.91)
Rumination(-)	17.14(5.09) / 14.18(6.10) / 13.86(5.93)	17.78(4.29) / 15.00(4.76) / 14.44(5.23)	16.96(5.32) / 15.95(5.51)
Adaptive overall s.	11.38(2.58) / 11.60(3.20) / 11.07(2.69)	11.39(2.57) / 11.46(3.08) / 11.39(3.02)	11.59(2.68) / 11.16(2.88)
Maladaptive overall s.	10.17(4.50) / 8.56(3.72) / 8.61(3.99)	10.58(3.19) / 8.93(2.91) / 8.31(3.07)	10.75(3.65) / 9.73(3.83)

Abbreviation: SVF-120, Stress and Coping Style Questionnaire; T+, Treatment with personal assistance; T-, Treatment without personal assistance; C, Control condition; M, Mean; SD, Standard Deviation.

Table 7: SVF-120: Means and standard deviations of pre-, post-, and follow-up measurement of mothers.

Subscales	T+: pre / post / follow-up: M (SD)	T-: pre / post / follow-up: M (SD)	C: pre / post: M (SD)
Relaxation(+)	9.42(5.24) / 9.83(5.03) / 8.72(4.79)	9.38(5.25) / 9.36(3.98) / 8.43)	9.61(4.67) / 9.48(4.64)
Minimization(+)	11.11(4.30) / 11.13(4.42) / 11.42(4.05)	11.45(4.37) / 11.91(4.65) / 11.90(4.69)	9.79(4.00) / 11.38(4.06)
Substitute gratifica.(+)	8.07(4.17) / 8.48(3.77) / 8.68(3.66)	7.83(4.22) / 8.16(3.63) / 7.73(4.40)	9.03(4.58) / 8.18(4.28)
Situation control(+)	15.35(4.05) / 14.75(4.04) / 14.00(3.73)	15.14(3.77) / 15.41(3.55) / 14.40(4.40)	16.35(4.10) / 16.23(4.06)
Reaction control(+)	13.69(4.52) / 13.10(4.34) / 12.18(3.46)	13.43(4.67) / 13.43(4.13) / 12.23(5.21)	13.92(3.77) / 14.68(3.68)
Positive self-instr.(+)	14.60(4.48) / 13.75(4.55) / 13.89(4.14)	15.02(4.82) / 15.48(3.95) / 13.63(5.30)	14.80(4.26) / 15.28(4.53)
Rumination(-)	13.49(5.71) / 10.92(5.23) / 11.07(4.97)	13.16(6.03) / 12.66(5.95) / 10.74(5.79)	13.65(6.27) / 12.93(6.02)
Maladaptive overall s.	8.80(3.70) / 7.33(3.75) / 7.79(3.50)	8.14(3.87) / 7.25(3.51) / 6.85(3.98)	8.72(3.62) / 8.06(3.68)

Abbreviation: SVF-120, Stress and Coping Style Questionnaire; T+, Treatment with personal assistance; T-, Treatment without personal assistance; C, Control condition; M, Mean; SD, Standard Deviation.

Table 8: SVF-120: Means and standard deviations of pre-, post-, and follow-up measurement of fathers.

	T+: pre / post / follow-up M (SD)	T-: pre / post / follow-up M (SD)	C: pre / post M (SD)
Mothers	21.93(5.53) / 30.27(5.79) / 30.90(5.90)	21.84(4.96) / 30.26(5.98) / 30.02(6.27)	22.72(5.14) / 23.59(4.94)
Fathers	23.00(5.38) / 29.33(5.02) / 29.65(4.85)	23.17 (4.84) / 27.93(5.99) / 29.22(7.80)	22.73(5.80) / 23.62(5.76)

Abbreviation: T+, Treatment with personal assistance; T-, Treatment without personal assistance; C, Control condition; M, Mean; SD, Standard Deviation.

Table 9: Means and standard deviations of pre-, post-, and follow-up measurement for sleep-related self-efficacy.

indicated differences between the groups for positive self-instructions (+) in fathers, but there was no significant time effect (interaction: $F(1,99.34) = 4.67$, $p=0.033$; time: $F(1,99.34) = 3.28$, $p = 0.073$).

Parental sleep-related self-efficacy

Based on previous findings we expected to find low values for sleep-related self-efficacy in parents. Furthermore, we assumed that parents would experience an increase in their sleep-related self-efficacy after treatment. The data of mean values can be found in Table 9. Comparisons between mothers and fathers indicated that parents did not differ in their degree of parental sleep-related self-efficacy at pre-measurement ($t = -1.59$, $p = 0.113$).

GLM model 1 (T+ & T- vs. C): Analyses showed significant treatment effects for mothers ($F(1,188.93) = 68.14$, $p \leq 0.001$) and fathers ($F(1,170.64) = 32.35$, $p \leq 0.001$).

GLM Model 2 (T+ vs. T-): For both parents no significant differences were found between T+ and T-.

GLM Model 3 (post vs. follow-up): Stable results were observed for mothers and fathers at the three-month follow-up (no significant time and interaction effects).

Discussion

In the present study we aimed to investigate the psychosocial health, coping, and sleep-related self-efficacy of parents participating in an Internet-based treatment for sleep-disturbed young children. The data of mothers and fathers were assessed before, immediately after, and three months after Mini-KiSS Online. Two intervention conditions (written information only vs. additional telephone support) were compared to a waiting-list control condition.

Altogether, our results show that after Mini-KiSS Online mothers improve in some areas of psychosocial health (depression, somatization, anxiety, interpersonal sensitivity, aggression, obsessive compulsiveness, paranoid ideation). These results are in accordance with other infant sleep intervention studies observing stronger [37] or exclusive [18] improvements in psychosocial health in intervention conditions compared to control conditions. Furthermore, these results are in line with the reduction of the SCL-90 depression score in mothers participating in the Mini-KiSS on-site group intervention [19].

Our data demonstrate that impairment in psychosocial health is related to maladaptive but not to adaptive coping. However, after Mini-KiSS Online mothers mostly improved in adaptive coping (relaxation, trivialization, search for self-affirmation) and less in maladaptive coping (rumination). In line with our results, Walach et al. [45] found improvements after their eight-week treatment of coping in adults regarding adaptive coping but not regarding maladaptive coping. The improvements we found might be due to the direct intervention regarding coping imbedded in the Mini-KiSS Online materials (information and instructions about calmness, attentiveness, individual time for oneself and for partnership, eustress and distress, redraft of dysfunctional cognitions) or due to improvements in the child´s sleep. Future studies should prove whether these coping-related Mini-KiSS Online materials have an influence and whether parents benefit even more when coached to reduce maladaptive coping.

For both parental strain and coping no additional effect between pre- and post-measurement concerning telephone support were found for mothers. These results are similar to other infant sleep intervention studies in which no benefits were observed from telephone support [46,47]. However, our results are in contrast with data of Mimeault and Morin [48] who found benefits of telephone support in their treatment for insomnia in adults. It should be noted that our data showed an effect of personal telephone support on the treatment evaluation but not concerning primary outcome (child´s sleep; publication in progress).

In our sample a high number of mothers (40.41%) and fathers (25.64%) reported symptoms of depression before treatment. The SCL-90-R depression scale includes questions regarding lack of energy and hope, crying tendencies, or self-reproach, but does not include sleep problems. These results are in accordance with a variety of data addressing the considerable association between children´s sleep disturbances and maternal depression [8-11,49]. For example, various studies found increased depression scores in 45% of mothers of sleep-disturbed children while, in a mixed sample, only 16% of mothers were found to suffer from depression [6,20]. Muscat et al. [10] identified the combination of sleep problems of the child and maternal beliefs about the mother's role in regulating these difficulties as predictors for maternal depression. Studies including fathers of sleep-disturbed children have shown that 30% are affected by slight symptoms of depression [20]. Furthermore, our data confirm former results that mothers are noticeably more impaired than fathers [20].

The majority of parents showed average values for adaptive

or maladaptive coping strategies. Nevertheless, increased use of maladaptive coping strategies such as rumination (e.g., inability to leave aside some thoughts; mothers: 29.80%, fathers: 21.36%) or self-blame (e.g., ascription of stress to own mistakes; mothers: 20.42%, fathers: 22.63%) was reported by a high number of parents prior to treatment. These results are in accordance with data indicating that symptoms of depression are highly associated with the use of maladaptive cognitive coping, strategies such as rumination [50,51] and self-blame [50]. Furthermore, studies have demonstrated that self-blame is associated with parental perception of less family strength [52] and with increased parental fatigue [53]. A decrease of rumination after Mini-KiSS Online was observed for mothers only, while fathers improved between the post- and follow-up measurements. Self-blame did not change in both parents. Long-term studies could focus on the impact of this and other maladaptive cognitive coping strategies associated with parental symptoms of depression (e.g., catastrophizing; [50]) on the genesis of sleep disturbances in young children. It is conceivable that parents, concerned by repetitive thoughts of self-blame and catastrophe, might show immediate soothing behavior when the child starts crying.

Whereas recent studies have paid a good deal of attention to depression in mothers, less effort has been devoted to examining obsessive-compulsive symptoms [54]. In our sample a high number of mothers (39.40%) and fathers (29.74%) reported symptoms of obsessiveness prior to treatment; mothers were more affected. In line with our results, a cohort study including mothers two weeks postpartum showed that 38% reported subclinical obsessions or compulsions while 11% were screened positive for an obsessive-compulsive disorder [55]. Research has shown that pregnancy might be associated with the onset or worsening of a obsessive-compulsive disorder in mothers [56,57]. Checking rituals (e.g. check for infant dying during sleep) seem to be the most prevalent types of compulsive symptom for mothers; fathers share the same concerns [54,58-60]. It should be noted that the SCL-90-R obsessive-compulsive scale focuses on the repetition of aversive thoughts and accuracy but also includes symptoms that might also be attributed to symptoms of tiredness (mnemonic difficulties, difficulties starting with something, concentration difficulties). After Mini-KiSS Online, mothers reported less symptoms of compulsiveness while fathers reported no change. These results are in line with the performance of other cognitive-behavioral treatments addressing postnatal obsessive-compulsive symptoms in mothers [61].

Studies provide evidence that repeated aggressive thoughts (e.g., fears of harming the infant) are not rare among new mothers [55,59,62,63] and that such thoughts are triggered by occasions when the baby does not sleep or does not stop crying [64]. Data from our sample show that a high number of mothers (SCL-90-R: 30.31%; SVF-120: 23.98%) and fathers (SCL-90-R: 17.95%; SVF-120: 19.58%) report increased aggression scores. The SCL-90-R aggression scale includes questions on irritability, emotional release, impulse to hurt somebody or destroy something, or the desire to scream. The neutral SVF-120 aggression coping strategy describes the use of anger expressions and irritable or aggressive behavior to cope with stress. The number of parents perceiving symptoms of aggression in our sample is somewhat high compared to the prevalence of harm-related thoughts in 7% of a non-clinical subgroup of mothers with young children, but low compared to the prevalence in 41% of a subgroup of depressed mothers [65]. Even if such aggressive thoughts are common, these results give some cause for concern. Research describes that harm-related thoughts elicit precautionary behavior (e.g. avoiding being alone with the baby) or aggressive behavior towards the child in a minority of depressed mothers (4% to 5%) [65]. In our sample, mother´s symptoms of aggression (SCL-90-R) decreased after treatment but aggressive coping did not change (SVF-120). Furthermore, we observed a benefit for mothers who did not receive telephone assistance after treatment. Following recommendations by Brockington [62], further studies should distinguish between harm-related obsessive thoughts in mothers who are gentle and devoted and pathological anger that precedes child abuse. As mentioned by Giallo et al. [12], a high level of aggression (and depression or anxiety) may contribute to the mental and physical experience of fatigue. The authors explored mothers of young children (0-4 years of age) with sleep and settling difficulties. Approximately 71% of mothers reported that tiredness prevented them from being as they would like to be. The strongest predictors for maternal fatigue were the severity and duration of the child´s sleep problem and maternal sleep quality. Beside other factors, maternal fatigue was associated with high parenting hostility (e.g. using raised voice, losing temper, feeling angry), depression, and anxiety. Similarly, Murray and Finn [64] reasoned that moments of extreme tiredness, stress, and frustration promote thoughts in mothers of intentionally harming the newborn. Other studies report that parents experience increased irritability and anger when fatigued [66] and show over-reactive discipline [67]. Giallo et al. [12] reasoned that: "Fatigued parents may find it harder to manage anger and frustration associated with challenging parenting tasks or situations with their children, and therefore may be at risk of using negative parenting strategies such as yelling or smacking".

In our sample, increased need for social support (the neutral coping strategy representing beliefs of needing people to support oneself) was reported by mothers in particular (mothers: 25.51%; fathers: 17.11%). The importance of social support has been confirmed by considerable research. Studies show that perceived social support [68] and partner support [69] are related to a decreased risk of postnatal depression in mothers. Long-term observations even demonstrate that perceived social support is a protective factor that prevents postnatal depression in mothers [70]. Furthermore, emotional support provided by relatives [71] and emotional or instrumental support provided by spouses [72] are associated with less parenting stress. Moreover, maternal fatigue is positively associated with the need for more social support, but negatively associated with the satisfaction with social support [12]. However, in our study, need for social support did not improve with Mini-KiSS Online training for both parents – even not through personal telephone assistance.

All in all, the results indicate that there is no effect of additional telephone support. However, the results for depression and interpersonal sensitivity as well as aggression scores in mothers demonstrate that the termination of personal support might block further improvements. These observations are similar to the results of Mimeault and Morin [48], who reported that the initial advantages of personal telephone support in the treatment of sleep-disturbed adults disappeared at a three-month follow-up. On the other hand, data of fathers suggest that personal support is advantageous for rumination and positive self-instruction. Moreover, while the pre-post comparison rarely showed improvements in fathers (only for substitute gratification), there were further changes at the three-month follow-up (relaxation, situation control, reaction control, rumination). Future studies are necessary to research whether there are gender effects for personal support, whether fathers might not benefit in the short term but improve with a delay, or whether our results are due to lower paternal treatment compliance. Therefore, a follow-up measure for a waiting-list control condition would be necessary. In addition, it would be interesting to randomly assign the treatment performance to mothers or fathers.

Fathers in the waiting-list control condition experienced an increase in their adaptive coping strategy minimization, while no changes were observed in both intervention conditions. Positive waiting time effects can be found in several studies and meta-analyses [73-76]. For example, Beck et al. [74] identified improvements in well-being in 16% of adults waiting for psychological treatment. Arrindell [73] observed lower scores in the second measure of psychosocial health compared to the first in 54% and 72% of adults in a clinical sample, respectively. Different explanations concerning the nature of re-test effects have been discussed by Arrindell ([73]; e.g. natural coping mechanisms, mood-congruent associative processing, self-monitoring, hypothesis, response shift). However, in our sample, it is still unclear as to why these positive waiting-time effects on minimization are limited to fathers only. As an alternative explanation, our findings might be interpreted as a random result.

Prior to the treatment, the sleep-related self-efficacy in parents of our sample was quite low (M=21.84 to M=23.17) compared to the generalized self-efficacy of a control group (M=31) in a study with children (two to eight years of age) with or without conduct problems [77]. Furthermore, our results are contrary to the results of a longitudinal study in which caregiver self-efficacy was negatively associated with the child´s self-soothing competence [32]. The authors argued that lower self-efficacy leads to less responsiveness and thus promotes self-soothing of the child. However, our study cannot answer the question as to whether lower parental sleep-related self-efficacy leads to sleep problems of the child (through increased parental involvement) or vice versa. The sleep-related self-efficacy of both parents increased after Mini-KiSS Online. These results are in line with data of Wolfson et al. [33]. They offered information on behavioral strategies to promote healthy sleep in infants to first-time parent couples from childbirth classes. Their results showed that infants at the age of six to nine weeks in the training condition displayed significantly better sleeping patterns and parents reported greater parental self-efficacy compared to the control condition [33]. However, our results are contrary to those of other researchers who did not find any effects of a preventive childbirth education program for child-bearing women on their maternal role competence [78].

Limitations of this Work

There are a number of methodological limitations to be named. First, the study did not include objective measures. In general, multi-method and multi-reporter data should be used to reduce bias by subjective measure [79]. Another limitation was the multi-component approach of Mini-KiSS Online. It is not known which particular recommendation resulted in the improvements observed regarding psychosocial health or coping. Moreover, treatment compliance was not fully given and dropout rates were moderate. Further studies should compare the effects in compliant and non-compliant parents. The drop-out rates were compensated for by the use of the GLM models. In addition, we did not assess a longer-term follow-up. Moreover, the demographic data indicate that parents in our sample are more highly educated compared to the overall German population (36% to 53% had university degree). Similar observations have been made in other interventions for sleep-disturbed young children (64-69% college degree or higher; [18]). Furthermore, the results are in line with studies indicating that education and occupation are predictors for health-related Internet use [80,81]. Parents´ psychopathological symptoms and coping strategies were compared to the provided norm samples. Further studies should not compare these values to a general norm sample, but to parents of young children without sleep problems. It might be that increased psychopathological symptoms are due to parenthood in general and not explained by the sleep problem of the child.

Conclusion

As expected, parents in this study showed impairments in their psychosocial health and sleep-related self-efficacy. Given that parental coping in the context of pediatric sleep disturbances has not been sufficiently investigated, this study was exploratory, and provides a preliminary understanding of some coping strategies. Further studies are necessary to research the association of these three areas in the genesis of sleep problems in young children. Mini-KiSS Online leads to some improvements in psychosocial health, coping, and sleep-related self-efficacy – predominantly in mothers. However, it is not known if these effects are direct or indirect (through improvements in the sleep behavior of the child).

Acknowledgement

We acknowledge support for the Article Processing Charge by the Deutsche Forschungsgemeinschaft and the Open Access Publication Fund of Bielefeld University.

References

1. Jenni OG, Fuhrer HZ, Iglowstein I, Molinari L, Largo RH (2005) A longitudinal study of bed sharing and sleep problems among Swiss children in the first 10 years of life. Pediatrics 115: 233-240.
2. Martin J, Hiscock H, Hardy P, Davey B, Wake M (2007) Adverse associations of infant and child sleep problems and parent health: an Australian population study. Pediatrics 119: 947-955.
3. Mindell JA, Sadeh A, Kwon R, Goh DY (2013) Cross-cultural differences in the sleep of preschool children. Sleep Med 14: 1283-1289.
4. Wake M, Morton-Allen E, Poulakis Z, Hiscock H, Gallagher S, et al. (2006) Prevalence, stability, and outcomes of cry-fuss and sleep problems in the first 2 years of life: prospective community-based study. Pediatrics 117: 836-842.
5. Bayer JK, Hiscock H, Hampton A, Wake M (2007) Sleep problems in young infants and maternal mental and physical health. J Paediatr Child Health 43: 66-73.
6. Lam P, Hiscock H, Wake M (2003) Outcomes of infant sleep problems: a longitudinal study of sleep, behavior, and maternal well-being. Pediatrics 111: e203-207.
7. Giallo R, Woolhouse H, Gartland D, Hiscock H, Brown S (2015) The emotional-behavioural functioning of children exposed to maternal depressive symptoms across pregnancy and early childhood: a prospective Australian pregnancy cohort study. European child & adolescent psychiatry 24: 1233-1244.
8. Hughes A, Gallagher S, Hannigan A (2015) A Cluster Analysis of Reported Sleeping Patterns of 9-Month Old Infants and the Association with Maternal Health: Results from a Population Based Cohort Study. Maternal and Child Health Journal 19: 1881-1889.
9. Moore K, Gordon J, McLean L (2012) Child Sleep Problems and Parental Depression: Testing a Risk and Resistance Model. Journal of Child and Family Studies 21: 982-991.
10. Muscat T, Obst P, Cockshaw W, Thorpe K (2014) Beliefs about infant regulation, early infant behaviors and maternal postnatal depressive symptoms. Birth 41: 206-213.
11. Sharkey KM, Iko IN, Machan JT, Thompson-Westra J, Pearlstein TB (2016) Infant sleep and feeding patterns are associated with maternal sleep, stress, and depressed mood in women with a history of major depressive disorder (MDD). Arch Womens Ment Health 19: 209-218.
12. Giallo R, Rose N, Vittorino R (2011) Fatigue, wellbeing and parenting in mothers of infants and toddlers with sleep problems. Journal of Reproductive and Infant Psychology 29: 236-249.
13. Meltzer LJ, Mindell JA (2007) Relationship between child sleep disturbances and maternal sleep, mood, and parenting stress: a pilot study. J Fam Psychol 21: 67-73.

14. Thome M, Skuladottir A (2005a) Changes in sleep problems, parents distress and impact of sleep problems from infancy to preschool age for referred and unreferred children. Scand J Caring Sci 19: 86-94.

15. Dennis CL, Ross L (2005) Relationships among infant sleep patterns, maternal fatigue, and development of depressive symptomatology. Birth 32: 187-193.

16. Hall WA, Clauson M, Carty EM, Janssen PA, Saunders RA (2006) Effects on parents of an intervention to resolve infant behavioral sleep problems. Pediatr Nurs 32: 243-250.

17. Hiscock H, Cook F, Bayer J, Le HN, Mensah F, et al. (2014) Preventing early infant sleep and crying problems and postnatal depression: a randomized trial. Pediatrics 133: e346-354.

18. Mindell JA, Du Mond CE, Sadeh A, Telofski LS, Kulkarni N, Gunn E (2011) Efficacy of an internet-based intervention for infant and toddler sleep disturbances. Sleep 34: 451-458.

19. Schlarb AA, Brandhorst I, Hautzinger M (2011) Mini-KiSS - ein multimodales Gruppentherapieprogramm für Eltern von Kleinkindern mit Schlafstörungen. Zeitschrift für Kinder- und Jugendpsychiatrie und Psychotherapie 39: 197-206.

20. Smart J, Hiscock H (2007) Early infant crying and sleeping problems: a pilot study of impact on parental well-being and parent-endorsed strategies for management. J Paediatr Child Health 43: 284-290.

21. Mindell JA, Kuhn B, Lewin DS, Meltzer LJ, Sadeh A, et al. (2006) Behavioral treatment of bedtime problems and night wakings in infants and young children. Sleep 29: 1263-1276.

22. Loutzenhiser L, Sevigny PR (2008) Infant Sleep and the Quality of Family Life for First-Time Parents of Three-Month-Old Infants. Fathering: A Journal of Theory, Research, and Practice about Men as Fathers, 6: 2–19.

23. Thome M, Skuladottir A (2005b) Evaluating a family-centred intervention for infant sleep problems. J Adv Nurs 50: 5-11.

24. Berking M, Wupperman P (2012) Emotion regulation and mental health: recent findings, current challenges, and future directions. Curr Opin Psychiatry 25: 128-134.

25. Penley JA, Tomaka J, Wiebe JS (2002) The association of coping to physical and psychological health outcomes: a meta-analytic review. J Behav Med 25: 551-603.

26. Saxena P, Dubey A, Pandey R (2011) Role of Emotion Regulation Difficulties in Predicting Mental Health and Well-being. SIS Journal of Projective Psychology & Mental Health 18: 147-154.

27. Crnic KA, Friedrich WN, Greenberg MT (1983) Adaptation of families with mentally retarded children: a model of stress, coping, and family ecology. American Journal of Mental Deficiency 88: 125-138.

28. Jarvis PA, Creasey GL (1991) Parental stress, coping, and attachment in families with an 18-month-old infant. Infant Behavior and Development 14: 383-395.

29. McKelvey LM, Fitzgerald HE, Schiffman RF, Eye A von (2002) Family stress and parent-infant interaction: The mediating role of coping. Infant Mental Health Journal 23: 164-181.

30. Sadeh A, Tikotzky L, Scher A (2010) Parenting and infant sleep. Sleep Med Rev 14: 89-96.

31. Tsai SY, Hu WY, Lee YL, Wu CY (2014) Infant sleep problems: a qualitative analysis of first-time mothers' coping experience. Midwifery 30: 750-755.

32. Burnham MM, Goodlin-Jones BL, Gaylor EE, Anders TF (2002) Nighttime sleep-wake patterns and self-soothing from birth to one year of age: A longitudinal intervention study. Journal of Child Psychology and Psychiatry 43: 713-725.

33. Wolfson A, Lacks P, Futterman A (1992) Effects of parent training on infant sleeping patterns, parents' stress, and perceived parental competence. Journal of Consulting and Clinical Psychology 60: 41-48.

34. Bouchard S, Bastien C, Morin CM (2003) Self-efficacy and adherence to cognitive-behavioral treatment of insomnia. Behav Sleep Med 1: 187-199.

35. Tikotzky L, Sadeh A (2010) The role of cognitive-behavioral therapy in behavioral childhood insomnia. Sleep Med 11: 686-691.

36. Giallo R, Cooklin A, Dunning M, Seymour M (2014) The efficacy of an intervention for the management of postpartum fatigue. J Obstet Gynecol Neonatal Nurs 43: 598-613.

37. Hiscock H, Wake M (2002) Randomised controlled trial of behavioural infant sleep intervention to improve infant sleep and maternal mood. BMJ 324: 1062-1065.

38. Schlarb AA, Brandhorst I (2012) Mini-KiSS Online: an Internet-based intervention program for parents of young children with sleep problems - influence on parental behavior and children's sleep. Nat Sci Sleep 4: 41-52.

39. German Federal Statistical Office (2012) Statistisches Jahrbuch. Kapitel 3: Bildung [Statistical Yearbook. Chapter 3: Education]: Statistisches Bundesamt.

40. Gaylor EE, Burnham MM, Goodlin-Jones BL, Anders TF (2005) A longitudinal follow-up study of young children's sleep patterns using a developmental classification system. Behavioral Sleep Medicine 3: 44-61.

41. Franke GH (2002) SCL-90-R: Symptom Checklist by L.R. Derogatis - German Version. Beltz Test, Göttingen.

42. Janke W, Erdmann G, Kallus KW (2002) Stressverarbeitungsfragebogen mit SVF 120 und SVF 78: (SVF). Hogrefe, Verlag für Psychologie.

43. Schwarzer R, Jerusalem M (1999) Skalen zur Erfassung von Lehrer-und Schülermerkmalen. Freie Universität Berlin, Berlin.

44. Stevens J (1999) Intermediate Statistiscs. A Modern Approach. Erlbaum, London.

45. Walach H, Nord E, Zier C, Dietz-Waschkowski B, Kersig S, et al. (2007) Mindfulness-based stress reduction as a method for personnel development: A pilot evaluation. International Journal of Stress Management 14: 188-198.

46. Eckerberg B (2002) Treatment of sleep problems in families with small children: is written information enough? Acta Paediatr 91: 952-959.

47. Seymour FW, Brock P, During M, Poole G (1989) Reducing Sleep Disruptions in Young Children: Evaluation of Therapist-guided and Written Information Approaches: A Brief Report. Journal of Child Psychology and Psychiatry 30: 913-918.

48. Mimeault V, Morin CM (1999) Self-help treatment for insomnia: bibliotherapy with and without professional guidance. J Consult Clin Psychol 67: 511-519.

49. Giallo R, Gartland D, Woolhouse H, Brown S (2015) "I didn't know it was possible to feel that tired": exploring the complex bidirectional associations between maternal depressive symptoms and fatigue in a prospective pregnancy cohort study. Archives of Women's Mental Health 19: 25-34.

50. Garnefski N, Legerstee J, Kraaij VV, Van Den Kommer T, Teerds J (2002) Cognitive coping strategies and symptoms of depression and anxiety: a comparison between adolescents and adults. J Adolesc 25: 603-611.

51. Thompson RJ, Mata J, Jaeggi SM, Buschkuehl M, Jonides J, et al. (2010) Maladaptive coping, adaptive coping, and depressive symptoms: variations across age and depressive state. Behav Res Ther 48: 459-466.

52. Judge SL (1998) Parental Coping Strategies and Strengths in Families of Young Children with Disabilities. Family Relations 47: 263.

53. Cooklin AR, Giallo R, Rose N (2012) Parental fatigue and parenting practices during early childhood: an Australian community survey. Child Care Health Dev 38: 654-664.

54. Abramowitz JS, Meltzer-Brody S, Leserman J, Killenberg S, Rinaldi K, et al. (2010) Obsessional thoughts and compulsive behaviors in a sample of women with postpartum mood symptoms. Arch Womens Ment Health 13: 523-530.

55. Miller ES, Hoxha D, Wisner KL, Gossett DR (2015) Obsessions and Compulsions in Postpartum Women Without Obsessive Compulsive Disorder. J Womens Health (Larchmt) 24: 825-830.

56. Brandes M, Soares CN, Cohen LS (2004) Postpartum onset obsessive-compulsive disorder: diagnosis and management. Arch Womens Ment Health 7: 99-110.

57. Speisman BB, Storch EA, Abramowitz JS (2011) Postpartum obsessive-compulsive disorder. J Obstet Gynecol Neonatal Nurs 40: 680-690.

58. Abramowitz JS, Nelson CA, Rygwall R, Khandker M (2007) The cognitive mediation of obsessive-compulsive symptoms: a longitudinal study. J Anxiety Disord 21: 91-104.

59. Abramowitz JS, Schwartz SA, Moore KM, Luenzmann KR (2003) Obsessive-compulsive symptoms in pregnancy and the puerperium: a review of the literature. J Anxiety Disord 17: 461-478.

60. Wisner KL, Peindl KS, Gigliotti T, Hanusa BH (1999) Obsessions and compulsions in women with postpartum depression. J Clin Psychiatry 60: 176-180.

61. Challacombe FL, Salkovskis PM (2011) Intensive cognitive-behavioural treatment for women with postnatal obsessive-compulsive disorder: a consecutive case series. Behav Res Ther 49: 422-426.

62. Brockington I (2004) Postpartum psychiatric disorders. Lancet 363: 303-310.

63. Fairbrother N, Woody SR (2008) New mothers' thoughts of harm related to the newborn. Arch Womens Ment Health 11: 221-229.

64. Murray L, Finn M (2011) Good mothers, bad thoughts: New mothers' thoughts of intentionally harming their newborns. Feminism & Psychology 22: 41-59.

65. Jennings KD, Ross S, Popper S, Elmore M (1999) Thoughts of harming infants in depressed and nondepressed mothers. J Affect Disord 54: 21-28.

66. Giallo R, Rose N, Cooklin A, McCormack D (2013) In survival mode: mothers and fathers' experiences of fatigue in the early parenting period. Journal of Reproductive and Infant Psychology 31: 31-45.

67. Lesniowska R, Gent A, Watson S (2015) Maternal fatigue, parenting self-efficacy, and overreactive discipline during the early childhood years: A test of a mediation model. Clinical Psychologist.

68. Razurel C, Kaiser B, Sellenet C, Epiney M (2013) Relation between perceived stress, social support, and coping strategies and maternal well-being: a review of the literature. Women Health 53: 74-99.

69. Hildingsson I, Tingvall M, Rubertsson C (2008) Partner support in the childbearing period -- a follow up study. Women Birth 21: 141-148.

70. Rahman A, Iqbal Z, Harrington R (2003) Life events, social support and depression in childbirth: perspectives from a rural community in the developing world. Psychol Med 33: 1161-1167.

71. Melson GF, Windecker-Nelson E, Schwarz R (1998) Support and Stress in Mothers and Fathers of Young Children. Early Education and Development 9: 261-281.

72. Deater-Deckard K, Scarr S (1996) Parenting Stress Among Dual-Earner Mothers and Fathers:Are There Gender Differences? Journal of Family Psychology 10: 45-59.

73. Arrindell WA (2001) Changes in waiting-list patients over time: data on some commonly-used measures. Beware! Behav Res Ther 39: 1227-1247.

74. Beck A, Burdett M, Lewis H (2015) The association between waiting for psychological therapy and therapy outcomes as measured by the CORE-OM. Br J Clin Psychol 54: 233-248.

75. Hesser H, Weise C, Rief W, Andersson G (2011) The effect of waiting: A meta-analysis of wait-list control groups in trials for tinnitus distress. J Psychosom Res 70: 378-384.

76. Posternak MA, Miller I (2001) Untreated short-term course of major depression: a meta-analysis of outcomes from studies using wait-list control groups. J Affect Disord 66: 139-146.

77. Sanders MR, Woolley ML (2005) The relationship between maternal self-efficacy and parenting practices: implications for parent training. Child Care Health Dev 31: 65-73.

78. Ngai FW, Chan SWC, Ip WY (2009) The effects of a childbirth psychoeducation program on learned resourcefulness, maternal role competence and perinatal depression: a quasi-experiment. International Journal of Nursing Studies 46: 1298-1306.

79. Meltzer LJ, Mindell JA (2014) Systematic review and meta-analysis of behavioral interventions for pediatric insomnia. J Pediatr Psychol 39: 932-948.

80. Bianco A, Zucco R, Nobile CG, Pileggi C, Pavia M (2013) Parents Seeking Health-Related Information on the Internet: Cross-Sectional Study. Journal of Medical Internet Research 15: e204.

81. Lausen B, Potapov S, Prokosch HU (2008) Gesundheitsbezogene Internetnutzung in Deutschland 2007. Medizinische Informatik, Biometrie und Epidemiologie 4: 1-12.