

## Treatment of children's nighttime fears: The need for a modern randomised controlled trial

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### Abstract

Children's nighttime fears are common and cause significant interference to the child's functioning as well as causing much distress for the child and family. Therefore, effective and cost-efficient interventions are urgently needed by mental health professionals and counsellors. The authors review 29 studies, which investigated the efficacy of psychosocial treatment for children's nighttime fears. Most studies employed multiple baseline across subject designs or between group designs and most employed cognitive-behavioral techniques (i.e., desensitisation, emotive imagery, cognitive self-instruction, and reinforcement procedures). Although multi-method, informant assessments were not always conducted, in most studies rapid reduction of nighttime fears was typically achieved after only a few sessions with maintenance of gains. On the basis of our review, we make recommendations about assessment and intervention issues for the effective treatment of children's nighttime fears. Finally, future research directions are discussed including the need for a modern randomised clinical trial to more fully investigate treatment efficacy and the role of non-specific treatment factors.

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I feel paranoid when I go to bed. If I hear a bump...I don't like it when I am not asleep. Normally I wait it out. I call Mum if I have to wait a long time (p. 126) (Ben, an 11-year-old boy; [Contos, 1999](#)).

Children's nighttime fears are part and parcel of normal development ([King, Ollendick, & Tonge, 1997](#)). Several authors have commented on the developmental progression of these 'normal' fears and have shown how they emanate

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from increasingly sophisticated cognitive development in the growing child (Bauer, 1976; Ferrari, 1986; Warren & Sroufe, 2004). Infants and very young children show fear to things that occur in their immediate environment (e.g., loud noises, strangers, separation from parents). Their level of cognitive development limits the range of stimuli to which they can experience fear. As such, fears are limited to those stimuli which are in the here and now and in their immediate presence. Preschool children, on the other hand, are capable of showing fear to more global and imaginary stimuli such as ghosts, monsters and the dark. Older children, able to differentiate 'internal representations from objective reality', begin to show more realistic and specific fears including fears related to physical injury, health and school performance (Bauer, 1976; Gullone, 2000).

This pattern in the types of fears children experience at different ages was illustrated early on in a study by Bauer (1976) in which the fears of 4–6, 6–8, and 10–12 year old children ( $N=54$ ) were examined. The children were interviewed individually and told that all children were afraid of some things but that some children were more afraid of certain things than others. They were then asked, 'What are you afraid of most?' and then they were encouraged to draw pictures while describing their fears. Other questions probed the presence of nighttime fears and scary dreams. Seventy-four percent of the 4–6 year olds, 53% of the 6–8 year olds, but only 5% of the 10–12 year olds reported fears of ghosts and monsters; on the other hand, only 11% of the 4–6 year olds, but 53% of the 6–8 year olds and 55% of the 10–12 year olds described fears of bodily injury and physical danger. These age-related differences were also reflected in the description of scary dreams reported by the younger and older children. The younger children reported that appearances of monsters (e.g., 'His face looks ugly' or 'He has big ears') caused their fear, while the older children imputed harmful actions to the monster (e.g., 'They wanted to cut my head off' or 'Guess he would have choked me or something'). With regard to gender differences, Bauer (1976) observed that girls more frequently reported nighttime fears than boys. On the basis of Bauer's research, it can be seen that nighttime fears, although problematic, are transient for most children.

More recently, Muris and colleagues investigated nighttime fears in 176 normal school children aged 4 to 12 years in the Netherlands (Muris, Merckelbach, Ollendick, King, & Bogie, 2001). Children and parents were interviewed about the frequency, content, origins, coping behaviors, and the severity of children's nighttime fears. Results showed that 73.3% of children reported nighttime fears confirming the suspected high prevalence of such fears. Developmental patterns were also evident, with 58.8% of 4- to 6-year-olds, 84.7% of 7- to 9-year-olds and 79.6% of 10- to 12-year-olds reporting nighttime fears. Although nighttime fears were more prevalent in these Dutch children, it should be noted that fears of scary dreams and imaginary creatures decreased with age, as also found by Bauer (1976), while fears of frightening thoughts and personal harm increased with age. Gender differences were not found. In relation to the origins of the nighttime fears, nearly 80% of children attributed their fears to negative information. Conditioning and modelling were endorsed less frequently (25.6% and 13.2%, respectively). Children reported a variety of coping strategies and generally rated these strategies as helpful in reducing their anxiety. Moreover, in about 10% of the children, nighttime fears were related to one or more anxiety disorders according to *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed. *DSM-III-R*; American Psychiatric Association, 1987) criteria: separation anxiety disorder (6.3%), over-anxious disorder (4.4%), animal phobias (1.9%) and environmental phobias (1.3%). Finally, parent reports substantially deviated from children's reports. In particular, parents provided a marked underestimation of nighttime fears (see also Muris, Merckelbach, Gadet, & Moulart, 2000).

Building on these findings of Muris et al. (2001), Gordon (2004) investigated the nighttime fears of 511 Australian children and adolescents, aged 8 to 16 years. The most frequent nighttime fears related to environmental threats, personal security, frightening dreams, darkness, imaginary creatures, family and friend's security, insects and animals, and finally worry about the day's events. Females more frequently reported nighttime fears than males (72.9% and 54.6%, respectively) and a greater number of children reported nighttime fears compared to adolescents (79.4% and 48.8%, respectively). These age- and gender-related differences in the prevalence of nighttime fears are consistent with the findings of normative fear studies with children (e.g., Gullone & King, 1993; Ollendick, King, & Frary, 1989).

For some children, nighttime fears persist and become sufficiently intense to interfere with daily functioning. Such fears clearly warrant clinical assessment, diagnosis and intervention (Gordon & King, 2002). It is estimated that severe nighttime fears and sleep problems occur in 20–30% of children, with significant age and gender influences (Gordon, 2004; Morris & Kratochwill, 1983; Sadeh, 2005). Severe nighttime fears have been reported to comprise approximately 15% of the total referrals for the treatment of childhood phobias (Graziano & DeGiovanni, 1979). Cornwall, Spence, & Schotte (1996) found that children with darkness phobia showed little improvement following a 20 week waiting list, confirming that such problems are not transient and merit treatment. Such extreme fears can be discomfiting and dysfunctional for both the child and the family (Jackson & King, 1981; Friedman & Ollendick, 1989; Mooney, 1985).

Table 1  
Summary of nighttime fear treatment case studies

Reference	Nighttime fear	Sample	Pre-treatment assessment	Treatment	Research design	Post-treatment assessment	Outcome and follow-up
1 Cavior and Deutsch (1975)	Single fear; fear of a recurrent dream; Severe.	16 yo American boy; clinic-based.	Interview with therapist.	3 sessions (unstated duration) of modified systematic desensitization, with additional practice relaxation sessions without therapist.	Uncontrolled case study.	As for pre-treatment.	Follow-up interviews at 1, 2 and 6 months showed no recurrence of anxiety about the recurrent dream.
2 Contos (1999)	Multiple fears; fears of a 'boogie man in the heating duct' at night, of nighttime noises and related fears; Moderate.	11 yo Australian boy and family; clinic-based.	Unstructured interviews with child and parent; self-report of fear level — 'If you had a lemonade bottle with your worries in it, how full would it be?'	5 sessions (unstated duration) of hypnosis, story telling ('The Youngest Turtle' story), and family therapy.	Uncontrolled case study.	As for pre-treatment.	80% improvement of fears (self report); undisturbed sleep (parent report); gains maintained at 1 month phone follow-up.
3 Epston (1986)	Multiple fears; fears of the dark, of the night; Unclear Severity.	2×9 yo boys and 1×10 yo girl from New Zealand; clinic-based.	Interview with child and family.	Unstated treatment duration; 'Night watching approach' comprising problem solving strategies.	Uncontrolled case study.	Interview with child and family.	Elimination of nighttime fears; gains maintained at 1 month follow-up.
4 Graziano et al. (1979)	Multiple fears; fears of the dark, of being alone; Severe.	7×8–12 yo American children and parents; university-based.	Fear strength questionnaire; 120-item fear survey.	3 group instruction sessions over 3 weeks with parents and children; treatment consisted of parent directed reinforced practice, direct instructions, self control through verbal mediation, and relaxation.	Small- <i>N</i> multiple case pilot study.	Fear strength questionnaire; 120-item fear survey; program assessment by parents.	Fears were resolved and gains maintained at 3, 6 and 12 month follow-up.
5 Howsam (1999)	Multiple fears; fears of the dark, with insomnia, nightmares, and night terrors; Severe.	11 yo Australian boy and mother; clinic-based.	Interview with therapist.	4 treatment sessions of hypnosis over 4.5 months.	Uncontrolled case study.	As for pre-treatment.	At 3 and 7 month follow-up with parent, there was no recurrence of the boy's nighttime problems.

6	Kellerman (1980)	Multiple fears; fears of the dark, of going to sleep, of being alone; Severe.	5 yo boy, 8 yo girl, 13 yo girl and parents from USA; clinic-based.	Behavioural analysis.	Incompatible response training, self paced exposure, and operant reinforcement of appropriate sleep behaviour over approx. 2 to 4 weeks.	3 uncontrolled case studies.	Behavioural analysis.	Fears were resolved within 3 or 4 sessions for all children; treatment gains maintained at 24, 16 and 9 months respectively.
7	Kipper (1980)	Single fear; fear of the dark; Unclear Severity.	13 yo American girl; university-based.	Interview with therapist.	17 treatment sessions over 9 weeks of in vivo desensitization.	Uncontrolled case study.	Interview with therapist.	Both fears were eliminated; two follow-up sessions at unstated times were conducted.
8	Lazarus and Abramovitz (1962)	Multiple fears; fears of the dark, of being alone in the bathroom; Severe.	10 yo boy from an unstated country; unclear treatment setting.	Interview and unstated psychometric testing.	3 sessions of emotive therapy.	Uncontrolled case study.	Unstated.	Specific phobia eliminated and gains maintained at 11 month follow-up.
9	Merritt (1991)	Multiple fears; fears of going to bed, of kidnappers; Unclear Severity.	10 yo American girl and parents; clinic-based.	Unstructured interviews with child and parents.	Education of child and parents; art therapy; self-affirmation; relaxation with imagery; self-management.	Uncontrolled case study.	As for pre-treatment.	Fear was resolved after 6 weeks and at follow-up.
10	Protinsky (1985)	Single fear; night fear of cows entering bedroom at night; Unclear Severity.	1 × 4 yo American male; unclear treatment setting.	Unstructured interviews with child and parents.	Strategic therapy resulted in putting a 'cow feeding box' in the house.	Uncontrolled case study.	As for pre-treatment.	2 week, 1 and 6 month follow-ups revealed the boy could sleep in his own bed, and had no night fears.
11	Szykula and Morris (1986)	Multiple fears; unstated fears with night awakenings; Unclear Severity.	1 × 13 yo American girl; clinic-based.	Parent daily report collected by phone.	Strategic therapy resulted in no intervention for the child, and for parent to monitor the child.	Uncontrolled case study.	As for pre-treatment.	At 1 month follow-up, child had no nighttime symptoms.

Notes: Current authors' evaluation of severity of nighttime fear(s): Unclear Severity = unable to rate severity due to insufficient information.

Mild = low anxiety/avoidance response to feared stimulus; low level of interference with daily functioning; less than six months duration.

Moderate = moderate anxiety/avoidance response to feared stimulus; moderate level of interference with daily functioning; less than six months duration.

Severe = high anxiety/avoidance response to feared stimulus; high level of interference with daily functioning; more than six months duration.

Emotional and behavioral disturbances have been frequently reported by families of night-fearful children and may include: (1) crying, panic, and tantrums at bedtime, (2) disruptive behaviour such as night wakings and calls for parental or sibling comfort, bed sharing with parents or siblings, leaving lights, radio or television on, and refusal to go to the toilet alone at night, (3) wandering alone in the house at night unsupervised thus compromising household safety, (4) loss of confidence, self-disparaging negative statements, and feelings of social embarrassment, (5) poor quality sleep leading to daytime sleepiness/irritability and concentration difficulties at school, thus interfering with academic development, (6) avoidance of dark areas at school, refusal to camp out, visit relatives or friends, thus impairing social development (Cavior & Deutsch, 1975; Contos, 1999; Cornwall et al., 1996; Graziano, Mooney, Huber, & Ignasiak, 1979; King, Cranstoun, & Josephs, 1989; Kipper, 1980; Lazarus & Abramovitz, 1962; Merritt, 1991; Ollendick, Hagopian, & Huntzinger, 1991; Szykula & Morris, 1986).

King et al. (1997) reviewed etiological factors, assessment tools, and selected promising cognitive-behavioral interventions, and concluded that empirically supported psychosocial interventions are needed for the treatment of children's nighttime fears (Lonigan & Elbert, 1998; Ollendick & King, 2000). The present article extends the review of King et al. (1997) through an in-depth evaluation of research on the treatment of children's nighttime fears that has been conducted over the last four decades, considers implications for clinical practice, and sets out future research directions including the need for a modern controlled investigation that possesses sound methodological rigour. The review includes the 1960s to incorporate the pioneering emotive imagery treatment work of Lazarus and Abramovitz (1962). Also, from a historical perspective, it should be noted that some research interest in the treatment of childhood nighttime fears predated the multi-axial DSM-III (APA, 1980) diagnostic system (approximately one-third of the following reviewed studies). Thus this pre-1980 research reflected the zeitgeist of the times and did not include diagnoses using interview schedules, an important point on judgements about quality of research. Further, the authors are aware of the vast number of controlled studies of cognitive-behavioral interventions for childhood anxiety disorders and phobic disorders as defined in the DSM (Compton et al., 2004; King, Muris, & Ollendick, 2005). However, similar to test anxiety and school refusal (not actual DSM-disorders but problems of vast educational and clinical significance), nighttime fears are heterogenous and cut across a variety of DSM diagnostic categories (Muris et al., 2001). Hence, nighttime fears remain an important research treatment challenge in clinical child and family psychology (Sadeh, 2005).

## 1. Literature search of treatment studies

A systematic search of psychological journals was undertaken through PsycINFO and MEDLINE to identify studies (of English language) on the treatment of children with nighttime fear. Twenty-nine studies were found, dating from 1962 to 2004 (see Table 1 for case studies [ $n=11$ ], and Table 2 for multiple baseline and between-group designs [ $n=18$ ]). Treatments for night sleep disorders (e.g., Fins & Wohlgenuth, 2001) were excluded from the review. The recent article by Sidiki, Hamilton, and Dutton (2003) describing the medical treatment of a 3 year-old girl with a rare cause for fear of the dark was also omitted. In this particular case, ophthalmological diagnostic investigation revealed congenital stationary night blindness. Treatments for bedtime refusal and night wakings in children without assessment for nighttime fears were also excluded (e.g., Kuhn & Weidinger, 2000; Mindell, 1999).

## 2. Commentary on research

Rather than summarizing each study, the authors now present key findings in relation to sampling, heterogeneity and severity of problem, assessment, treatment, treatment challenges, treatment duration, maintenance of gains, and research design.

### 2.1. Sampling

Children between the ages of 3 and 16 years with nighttime fears were the participants of the studies. Most studies (66%) were undertaken in USA, with the case studies predominantly originating from clinic-based treatment settings. However, little information has been provided on socio-demographic variables such as parental occupation, number of siblings, friendships, ethnicity, and school situation. Contextual information of this nature is important as it can contribute to determinations of the usefulness and transportability of the findings.

Table 2

Summary of nighttime fear treatment studies utilising between-group and multiple baseline research designs

Reference	Nighttime fear	Sample	Pre-treatment assessment	Treatment	Research design	Post-treatment assessment	Outcome and follow-up
1 Cornwall et al. (1996)	Single fear; fear of the dark, meeting DSM-III-R criteria for specific phobia (to darkness stimuli); Severe.	24×7–10 yo Australian children and parents; university-based.	ADIS-C, ADIS-P; FSSC-R; RCMAS; Fear thermometer ratings by children; darkness tolerance test; Darkness Fear Behavior Questionnaire for parents.	6 sessions over 6 weeks, of emotive imagery.	Randomized experimental design with a waiting list control.	FSSC-R; RCMAS; Fear thermometer ratings by children; darkness tolerance test; Darkness Fear Behavior Questionnaire for parents.	Treatment group reported significant reductions in darkness phobia and anxiety; gains maintained at 3 months.
2 Friedman and Ollendick (1989)	Multiple fears; fears of intruders, being left alone, noises, dreams, monsters etc.; Severe.	6×7–10 yo American children and parents; university-based.	Structured interview with children and parents; rating of severity of nighttime fear by child and parents; FSSC-R; home monitoring measures by parents.	5 sessions over 5 weeks of relaxation, reinforcement and cognitive self-instruction.	Multiple baseline across subjects design.	Rating of severity of nighttime fear by child and parents; FSSC-R; home monitoring measures by parents.	Children's fear and disruptive bedtime behaviours were reduced in 5 out of 6 children and at 2-week follow-up; continuous home monitoring revealed that these improvements preceded treatment.
3 Giebenhain and O'Dell (1984)	Single fear; fear of the dark; Moderate to Severe.	6×3 –11 yo American children and parents; university-based.	Darkness tolerance to adjustable illumination level in child's bedroom; Fear thermometer.	Self-help manual/package of parent directed treatment: desensitization, reinforcement and verbal self-control statements; variable program duration of approx. 15 to 30 days.	Multiple baseline design across 3 pairs of matched subjects.	As for pre-treatment.	All children sleeping with reduced nighttime illumination and fear 1 level after 2 weeks, and at 3, 6 and 12 month follow-ups.
4 Graziano and Mooney (1980)	Multiple fears; Fears of the dark, of being alone; Severe.	33×6 – 12 yo American children and parents; University-based.	Fear strength questionnaire; 120-item fear survey; Home monitoring measures by parents.	3 group instruction sessions over 3 weeks with children and parents; Treatment consisted of parent directed reinforced practice, direct instructions, self control through verbal mediation, and relaxation.	Randomized experimental design with a waiting list control.	Program success rating by parents; Home monitoring measures by parents.	Experimental group had significantly less nighttime fear than the control group; the follow-up at 3 weeks, 2, 6, and 12 months showed maintenance and improvement in night fear, with only one child showing fear.
5 Graziano and Mooney (1982)	Multiple fears; fears of the dark, of being alone; Severe.	40×6–13.5 yo American children and parents; university-based.	As for Graziano and Mooney (1980)	As for Graziano and Mooney (1980)	Long term follow-up study of children from Graziano and Mooney (1982) and Graziano et al. (1979).	Parent questionnaire and phone follow-up.	Maintenance of improvement from 2.5 to 3 years was found in 31 of the 34 follow-up children.

Table 2 (continued)

Reference	Nighttime fear	Sample	Pre-treatment assessment	Treatment	Research design	Post-treatment assessment	Outcome and follow-up
6 Jackson and King (1981)	Multiple fears; fears of the dark, noises and shadows; Unclear Severity.	5 yo Australian boy and mother; unclear treatment setting.	Home monitoring measures by mother.	4 treatment sessions of emotive imagery and response induction aid (torch) over approx. 70 days.	Multiple baseline across subjects design.	As for pre-treatment.	At the conclusion of treatment, the child was free of fear episodes and slept through the night; gains maintained at 1, 2, 3, 15 and 18 months.
7 Kanfer, Karoly, and Newman (1975)	Single fear; fear of the dark; Unclear Severity.	45×5–6 yo American children; university-based.	Darkness tolerance and intensity to adjustable illumination level in a school room.	3 session/trials of verbal control responses: ‘competence’, ‘stimulus’ and ‘neutral’ sentences.	Randomized experimental design.	As for pre-treatment.	‘Competence’ group significantly outperformed the other two groups; No follow-up.
8 Kelley (1976)	Single fear; fear of the dark; Unclear Severity.	40×4–5 yo American children; university-based.	BAT for darkness tolerance in an experimental room; fear level.	3 therapy sessions over 3 weeks; 3 types of play desensitization treatment groups, a play placebo control, and a no-treatment control under differing instructional sets.	Randomized experimental design with 2 control groups.	As for pre-treatment.	Treatment groups did not differ in outcome; verbal instructions to remain longer in the dark room increased dark tolerance; no follow-up.
9 King, Cranstoun, and Josepfs (1989)	Multiple fears; fears of the dark, ‘aliens’, being alone and nightmares; Severe.	6 yo boy, 8 yo girl, and 11 yo girl and mothers from Australia; university-based.	Standardized interview schedule for mothers with additional questions concerning child’s sleep behaviour; unstructured interview for children; Darkness toleration test in bedroom; home monitoring measures; FSSC-R; Fear thermometer.	6–13 treatment sessions over approx. 30–50 days of emotive imagery.	Multiple baseline across subjects design.	Darkness toleration test in bedroom; home monitoring measures; FSSC-R; 2 questionnaires for parents concerning program satisfaction.	Results showed improvements on the darkness tolerance test, and in nighttime behaviour for 2 children; all children had reduced darkness fear at post-intervention.
10 Klingman (1988)	Single fear; Fear of the dark; Unclear Severity.	42×5 – 6 yo Israeli children; University-based.	Parent’s report of child’s fear; Child’s self-report of anxiety; Frequency of child’s coping statements.	5×20-min storytelling and discussion sessions over 5 weeks; Story content dealt positively with the dark.	Randomized experimental design with control group.	As for pre-treatment.	Experimental group had significantly less nighttime fear, and more coping statements than the control group; gains generally maintained at 4 week follow-up.
11 Leitenberg and Callahan (1973)	Single fear; fear of the dark; Unclear Severity.	14×5–6 yo American children; university-based.	Darkness tolerance test in experimental room.	Graduated and repeated practice in approaching darkness, reinforcement for gains, feedback of progress, instructions designed to arouse success expectations; maximum of 8 sessions.	Randomized experimental design with control group.	As for pre-treatment.	Experimental group that received reinforced practice procedure showed substantial improvement in dark tolerance times.
12 McMenemy and Katz	Multiple fears; unstated fears with	5×4–5 yo American	Nightly fear survey for parents; CBC.	4 training sessions of relaxation training,	Multiple baseline across subjects	Nightly fear survey for parents; CBC;	Mean reduction in fearful behaviours was 40% at 3

(1989)	night fear behaviours such as crying and bed refusal; Unclear Severity.	children and parents; university-based.		imagery, self-instructions and coping skills training with parental reinforcement.	design.	program success questionnaire.	weeks, and 48% at 6 weeks follow-up with continued improvement at 6 month phone follow-up.
13 Mendez and Garcia (1996)	Multiple fears; fear of the dark and of loud noises; Severe.	15×4–8 yo Spanish children.	Parent questionnaire about child's fears; parent rating of fear intensity; BAT.	8 sessions over 1 month of in-vivo systematic desensitization through games, modelling, and reinforcement.	Multiple baseline across behaviours design.	As for pre-treatment.	Significant improvements in parent ratings and BAT and at follow-up at 3 and 6 months.
14 Mikulas and Coffman (1989) (also reported in Mikulas, Coffman, Dayton, Frayne and Maier (1985))	Single fear; fear of the dark; Unclear Severity.	1. 20×4–6 yo children 2. 11×5–7 yo children 3. 23×4–7 yo children 4. 28×4–7 yo children. American children; University-based.	Dark Tolerance Test; Behavior Approach Test.	Home-based program administered by parents; bibliotherapy (story called "Uncle Lightfoot") and games.	Randomized experimental design; research comparisons between a coping model book, a mastery model book, games and social reinforcement.	As for pre-treatment.	General improvement from pre-test to post-test; mixed results for group comparisons; unstated follow-up.
15 Muris, Verweij, and Meesters (2003)	Multiple fears; fears of frightening dreams, imaginary creatures, the dark, being alone, burglars, thunderstorms; Moderate on average.	142×4–6 yo Dutch children; university-based.	Night-time fear interview; KFQ with children; Night-time fears questionnaire for parents.	A bedtime fears story with 2 endings was read to the children, in which they were asked to make a night fears drawing. In the experimental condition an "Anti-monster" letter was attached to the child's drawing. In the control condition, no letter was attached.	Randomized experimental design.	As for pre-treatment.	Child reports indicated a significant reduction in nighttime fears two weeks after treatment.
16 Ollendick et al. (1991)	Multiple fears; fears of going to bed, losing mother, monsters, burglars and being alone in the dark; Moderate to Severe.	10 yo girl, and an 8 yo girl and parents from America; university-based.	Individual problem-focused interviews with child and parents; CAS; ADIS-P; ADIS-C; FSSC-R; RCMAS; STAI; CDI; RBPC.	8–12 weekly treatment sessions of self control therapy (discussion of the nature of anxiety and of negative self-talk, deep breathing relaxation, positive self statements, problem solving training, self-reinforcement, praise); self-control training plus contingent reinforcement was added as second	Multiple baseline across subjects design.	RCMAS, FSSC-R, STAIC, CDI, RBPC.	For both subjects, self report of anxiety and behavioural avoidance of sleeping in own bed was reduced significantly only in joint self control training/reinforcement condition; follow-up at 1–2 years affirmed long-term maintenance.

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Table 2 (continued)

Reference	Nighttime fear	Sample	Pre-treatment assessment	Treatment	Research design	Post-treatment assessment	Outcome and follow-up
17 Rosenfarb and Hayes (1984)	Single-based; fear of the dark; Unclear Severity.	38 × 5–6 yo American children; university-based.	Dark tolerance; self report measure.	condition. Self statements and modelling in public and private context.	Randomized experimental design.	As for pre-treatment.	In a public context, children's dark tolerance improved an average of 50 s; in a private context, dark tolerance decreased an average of 2 s; no follow-up.
18 Sheslow, Bondy and Nelson (1982)	Single fear; fear of the dark; Unclear Severity.	32 × 4–5 yo American children; university-based.	BAT for darkness tolerance in an experimental room; fear thermometer.	3 treatment sessions on consecutive days, consisting of graduated exposure, verbal coping skills, and their combination.	Randomized experimental design with control group.	As for pre-treatment.	Groups which received direct exposure to the dark during treatment demonstrated significant changes in dark tolerance; no difference in low or high instructional groups in post-tests; no follow-up.

Notes: Current authors' evaluation of severity of nighttime fear(s): Unclear Severity = unable to rate severity due to insufficient information.

Mild = low anxiety/avoidance response to feared stimulus; low level of interference with daily functioning; less than six months duration.

Moderate = moderate anxiety/avoidance response to feared stimulus; moderate level of interference with daily functioning; less than six months duration.

Severe = high anxiety/avoidance response to feared stimulus; high level of interference with daily functioning; more than six months duration.

ADIS-C Anxiety Interview for Children (Silverman and Nelles, 1988).

ADIS-P Anxiety Interview Schedule for Parents (Silverman, 1991).

BAT Behavioral Avoidance Test.

CAS Child Assessment Schedule (Hodges, 1985).

CBC Child Behavior Checklist (Achenbach & Edelbroch, 1983).

CDI Children's Depression Inventory (Kovacs, 1978).

FSSC-R Fear Survey Schedule for Children-Revised (Ollendick, 1983).

RCMAS Revised Children's Manifest Anxiety Scale (Reynolds and Richmond, 1978).

STAIC State-Trait Anxiety Inventory for Children (Spielberger, 1973).

## 2.2. Heterogeneity and severity of problem

In the majority of the studies (72%), children presented with a fear of the dark. However, a range of other nighttime fears was also treated, such as bad dreams, nightmares, noises, shadows, monsters, intruders, burglars, kidnappers, refusal to go to bed, and fear of being left alone at night. Hence a diverse range of nighttime fears was targeted, with 59% of the studies treating multiple fears. For example, [Cornwall et al. \(1996\)](#) found that children with darkness phobia also refused going to bed, sleeping with the lights off and entering dark places, and experienced additional fears of the unknown such as ghosts, monsters, and physical injury. In other words, there is considerable heterogeneity in the clinical presentation of nighttime fears.

As inconsistent information was provided on the severity of the nighttime fears in these studies, the current authors rated the severity of participants' fear according to the level of anxiety/avoidance response to feared stimulus, the level of interference with daily functioning, and whether the duration of the fear was more or less than six months duration. Severity of nighttime fear was classified as 'Unclear' (insufficient information precluding an adequate rating), 'Mild,' 'Moderate,' or 'Severe.' The authors classified eleven studies as having treated participants with 'Severe' nighttime fear, two studies as having treated participants with 'Moderate' to 'Severe' nighttime fear, and one further study as having treated participants with 'Moderate' nighttime fear. The remaining 15 studies dealt with cases whose rating was 'Unclear'. Thus research findings on the efficacy of treatment for nighttime fear should be interpreted with some caution.

## 2.3. Assessment

Assessment was conducted with a variety of reporting procedures for children and/or parents, with only 4 out of the 29 reviewed studies employing a broad-based multi-method assessment approach (see [Ollendick & Hersen, 1993](#)).

Assessment procedures included unstructured interviews, and structured diagnostic interviews, such as the child and parent forms of the Anxiety Disorders Interview Schedule (ADIS; [Silverman & Nelles, 1988](#)). A variety of self-report anxiety or fear scales were utilized, such as, the Revised Children's Manifest Anxiety Scale (RCMAS; [Reynolds & Richmond, 1978](#)), the Fear Survey Schedule-Revised (FSSC-R; [Ollendick, 1983](#)), and the State-Trait Anxiety Inventory for Children (STAIC; [Spielberger, 1973](#)). These structured diagnostic interviews and self-reports are psychometrically sound instruments with strong research support in relation to reliability and validity ([Essau & Barrett, 2001](#); [Silverman & Ollendick, 2005](#)).

Fear "thermometer" ratings, administered before and/or after treatment, were also commonly employed. The studies reported interesting developmental variations in the results using such instruments for children with various nighttime fears (e.g., "If you had a lemonade bottle with your worries in it, how full would that bottle be?") (p. 127; [Contos, 1999](#)); moving a lever on a vertically slotted colour coded fear thermometer board ([Kelley, 1976](#)); and moving an arrow on a toy board ([Sheslow, Bondy, & Nelson, 1982](#)). Visual analogue fear ratings are convenient measures of acceptable validity and reliability ([Hersen & Bellack, 1988](#)).

In keeping with the behavioral assessment tradition, some assessments involved behavioral tasks on the part of the child related to fear-evoking stimuli. The Behavioral Avoidance Test (BAT), for example, was used by [Sheslow et al. \(1982\)](#) to measure the amount of time a child could tolerate darkness in an experimental room, school room or bedroom. However, the ecological validity of such assessment procedures has been called into question by some researchers ([King et al., 1997](#)). In particular, toleration tests lack an essential element of the anxiety evoking stimulus feared by the children, namely, controllability, as "children know that they have full licence to leave the testing room at any time. At bedtime, however, the contingencies are remarkably different as children are expected to stay in the bedroom for the evening" ([King et al., 1997](#); p. 435).

Parents have also been required to complete behavioral observations. In the study by [Jackson and King \(1981\)](#), for example, parents completed a nightly diary to record fear behavior, using a coding system (0 = child reported no frights and did not disturb parents; 1 = child reported fear but went back to sleep without disturbing parents; and 2 = child reported fear, could not go back to sleep, and disturbed his parents). However, reliability and validity cannot be assumed with parent observations and ratings ([King, Hamilton, & Ollendick, 1994](#)).

## 2.4. Intervention

The most common interventions used in the treatment of children with nighttime fears have been cognitive-behavioral procedures such as systematic desensitization, reinforcement and cognitive self-instruction.

Consistent with classical conditioning theory, over half of the reviewed studies utilised *in vivo* (e.g., Mendez & Garcia, 1996) or imaginal (e.g., Cavior & Deutsch, 1975) desensitisation, using anxiety response antagonists such as relaxation. In some instances, emotive imagery was employed, rather than muscle relaxation, as the anxiety-inhibiting response. For example, King, Cranstoun, and Josephs (1989) used the subject's favourite hero character in individualised scripts to assist with the presentation of anxiety provoking scenes (e.g., "Inspector Gadget [a cartoon hero] thanks you for helping him in his mission and gives you a medal. Then he takes you back inside, removes your special undercover uniform and puts you to bed. You fall asleep. When you wake up, it is morning. Your mother comes into your room and says 'What a brave boy you are, X. You slept in your bed yourself all night'" (p. 129).

Reflecting operant conditioning principles, reinforcement has frequently been a major part of treatment. For example, in the study by Giebenhain and O'Dell (1984), the child was rewarded with verbal praise, physical contact (such as hugging), and toys, treats, or tokens for staying in the bedroom at progressively lower illumination levels and for longer periods. Fading of reinforcement procedures occurred after the child reached the minimum criterion level.

Consistent with cognitive theories of behavior change, self-instruction or variously named coping self-talk, verbal mediation, verbal self-control statements, bravery words or positive self-statements have been used in over 30% of the studies. For example, Kanfer et al. (1975) used one of three verbal mediation responses: (1) sentences emphasizing the child's control or competence (e.g., "I am a brave girl/boy — I can take care of myself"); (2) sentences aimed at reducing the fear stimulus value of the dark, e.g., "The dark is a fun place to be"; or (3) neutral sentences such as "Mary had a little lamb". Each evening, well before bedtime, the parent encouraged the child to practice repeating these words aloud.

Parental involvement was a feature of many treatment programs. For example, Giebenhain and O'Dell (1984) successfully treated children with nighttime fears via a manual designed to teach parents how to help their child overcome their fear of the dark. Throughout the study, the therapist kept in contact with the participants via phone calls and home visits. Parents also participated in the multi-component cognitive-behavioral intervention packages evaluated by Giebenhain and O'Dell (1984) and Graziano and colleagues (1979), Graziano and Mooney (1980, 1982). The interventions included parent directed reinforced practice, direct instructions, verbal self-control statements and relaxation components.

### 2.5. *Treatment challenges*

When children are motivated by high levels of anxiety and influenced by powerful maintenance factors, treatment of nighttime fear can be difficult. For example, King et al. (1989) discussed a lack of therapeutic change for a subject who slept with his mother every night. When independent sleeping arrangements were tried, the child was too nervous and afraid to sleep in his own bed, while the mother reported having nightmares about her son during the separation. Such behavior is in need of more direct intervention, as suggested in by Lazarus, Davison, and Polefka (1965) in their classic article: "When avoidance behavior is motivated by high levels of anxiety, classical counter-conditioning techniques are called for; when anxiety is minimal, and avoidance behavior is seemingly maintained by various secondary reinforcers, operant strategies should be applied" (p. 225). In other words, to be effective interventions need to be robust and flexible, and address both anxiety and secondary gain/reinforcement.

Implementation problems were reported for a parent directed home-based program (Mikulas & Coffman, 1989). Written instructions were given to the parents plus a once-weekly phone call from a therapist. However, they found that "a parent might not read the instructions, might misunderstand what is read, or might choose to do something different. For example, one parent got too heavy-handed in her encouraging the child; it became coercion" (p. 199). These difficulties compromised the efficacy of the intervention, and serve to illustrate the importance of parental compliance and understanding.

### 2.6. *Treatment duration*

Treatment duration in the majority of reviewed studies was surprisingly short, averaging only 2 to 4 weekly sessions. For example, the intervention program of Graziano and Mooney (1980) involved parent groups of less than five hours, child group work of less than three hours, with home practice of about five minutes nightly for three weeks. As noted by the researchers, "This appears to be a small investment of time and effort to bring about statistically and personally significant changes" (Graziano & Mooney, 1980; p. 212). Giebenhain and O'Dell (1984) reported positive changes after only two weeks, and stated "some children may need only simple prompts and encouragement to achieve

reduced illumination levels” (p. 125). In contrast, nighttime fears were resolved over a longer four and a half month period in the hypnosis intervention study undertaken by [Howsam \(1999\)](#).

### *2.7. Maintenance and generalization of gains*

Post-treatment follow-up was undertaken in the majority of reviewed studies, through home visits, interviews and/or telephone conversations. In most studies, therapeutic gains were maintained at two-week follow-up, while six studies reported maintenance of gains at 12 months (e.g., [Giebenhain & O’Dell, 1984](#); [Graziano et al., 1979](#)). Importantly, researchers also reported favourable generalisation of treatment effects at follow-up. For example, [Graziano and Mooney \(1982\)](#) found that children’s successful experiences of having reduced their night fears had a generalised enhancement effect “in increasing confidence and ability to cope with common problems” (p. 599). Similarly, [Szykula and Morris \(1986\)](#) reported, in their case study, that there were also relationship improvements between the child, sibling and parents following fear reduction. However, significant family wide improvements were captured through anecdotal report or clinical impression only.

### *2.8. Research design*

An uncontrolled case study design was employed in 11 studies. Although case reports can be valuable in many ways, positive findings cannot be confidently attributed to the intervention. Seven studies reported using a multiple-baseline across-subjects design, and 11 studies utilised a randomised experimental design with control groups. Although the overall findings are encouraging for efficacy, no studies have investigated the extent to which improvements for the child might be due to the non-specific aspects of intervention, such as education and support from an adult therapist. In other words, the underlying mechanism that accounts for actual nighttime fear reduction in children has yet to be addressed by research designs ([Friedman & Ollendick, 1989](#); [King et al., 1994](#)).

[Giebenhain and O’Dell \(1984\)](#) concluded that the crucial components of nighttime fear intervention are still unclear: “Neither the crucial components of the manual nor whether or not other demand characteristics were responsible for behavior changes can be determined from the study” (p. 125). Moreover, [Kelly \(1976\)](#) and [Graziano and Mooney \(1980\)](#) suggested that adults’ verbal instruction or demand alone may decrease fear behavior, as children are often in the position of having to comply with the outright and sometimes subtle demands of adults. [Friedman and Ollendick \(1989\)](#) found, through continuous home monitoring, that nighttime fear improvements preceded their treatment program in the first two weeks of attending the program. For five out of the six children, these changes persisted through to the two-week follow-up. These researchers suggested that the specific variables responsible for the initial changes might include parent and child reactivity to completion of the home monitoring forms in the baseline period, interest and optimism of the clinic staff, the influence of group and peer pressures, and reactivity to the clinic setting and the measures. Hence, the issue of treatment mechanism is not fully understood.

## **3. Implications for clinical practice**

[Sadeh \(2005\)](#) cautioned recently that sleep problems in children, such as frequent night wakings, can result from or be exacerbated by underlying neurological or physiological problems such as colic, reflux, milk allergy, breathing problems or periodic limb movements. Such findings indicate the necessity of careful multi-disciplinary assessment and suggest that such cases be referred for appropriate medical investigation before offering cognitive-behavioral treatment. Specific assessment and treatment recommendations are now given in light of the current findings.

### *3.1. Assessment recommendations*

A comprehensive assessment of children who present with nighttime fears is essential. Specific consideration should be given to the content and severity of these fears, and associated behavioral difficulties of the child. Nighttime fears should not be confused with behavioral problems such as non-compliance and oppositional behavior ([King et al., 1997](#)).

Therefore, a multi-method, multi-informant approach is recommended for the assessment of children’s fears nighttime fears ([Barrios & Hartmann, 1997](#); [King et al., 1994](#); [Ollendick & Hersen, 1993](#)). Nomothetic assessment instruments such as diagnostic interviews and fear/anxiety self-report inventories can be used with idiographic measures

such as behavioral observations and self-monitoring (King et al., 1997). Such measures should be sensitive to developmental changes and be psychometrically sound (Essau & Barrett, 2001; Fonseca & Perrin, 2001; Ollendick & Hersen, 1993). Assessment information will assist in the formulation of individualized and measurable treatment goals such as compliance with parent instructions regarding bedtime, sleeping alone without lights, and sleeping soundly all night without interruptions (Gordon & King, 2002; Graziano et al., 1979).

### 3.2. Treatment recommendations

Ollendick and colleagues (Ollendick, 1979; Ollendick, Davis, & Muris, 2004) recommend that fear reduction procedures for children should combine graduated exposure to feared situations in vivo or in imagination, counter-conditioning, participant modelling, and reinforcement of non-fearful and approach behaviors. Consistent with social learning theory (Bandura, 1977), children must be given ample time to develop feelings of mastery in relation to the feared situation. If cognitive restructuring techniques are used, they must be commensurate with the age and cognitive verbal skills of the child (below 5 years is unlikely to be successful; King & Ollendick, 1997). With regard to the structure of the cognitive-behavioral program, Silverman and Carmichael (1999) have suggested a three-phase intervention for children with specific phobias that is applicable to severe nighttime fears: (1) an educational phase, (2) an application phase, and (3) a relapse prevention phase.

Drawing on the findings from our review, clinicians should note the following conclusions: (1) very brief treatment programs of only a few sessions may be sufficient to reduce children's nighttime fear and associated negative behavior; (2) cognitive-behavioral techniques such as desensitisation, emotive imagery, cognitive self-instruction and reinforcement procedures, have all been effectively used in the treatment of children's nighttime fears; (3) use of parents as co-therapists can be helpful in the delivery of clinic- and/or home-based programs to nighttime fearful children; (4) manual-based treatments appear promising and should help improve overall cost-effectiveness, as well as helping in replication of the treatment approach, and (5) child and parent levels of satisfaction/acceptability with the treatment program can be gauged through consumer satisfaction questionnaires (Graziano & Mooney, 1982).

Carrillo, Amorós, and Alcázar (2005; Spanish language) recently conducted a meta-analysis of 13 studies (of which 11 English articles were reviewed here) on the treatment of children's fear of the dark. They similarly found promising results for brief, intensive and individual therapy, especially when exposure in vivo procedures and parents were part of the treatment.

## 4. Future research

A modern randomised controlled trial is needed to investigate the efficacy of cognitive-behavioral interventions for children with nighttime fears. A between-group outcome comparison design is suggested comparing cognitive-behavior therapy, an attention-placebo control, and a waitlist/no treatment control. Such a trial is warranted to enable elaboration of the actual outcomes of nighttime fear treatment rather than assuming that behavioural and cognitive-behavioral interventions are efficacious. Moreover, it is currently unclear exactly how much positive therapeutic outcomes are due to non-specific treatment factors such as education and support (attention-placebo) from an adult therapist versus specific cognitive-behavioral treatment components, whether some children may outgrow their fears spontaneously, how many children do not respond to intervention, and exactly why intervention is effective for some and not other nighttime fearful subjects (see comments below on mediators and moderators).

Parental involvement and home based practice are important components that should also be evaluated. The relative efficacy of small group and individual treatment protocols is another research question to be investigated in the management of nighttime fears. Given the success of one session therapy for specific phobia in children (Öst, Svenson, Hellstrom, & Lindwall, 2001), together with the finding that very few treatment sessions are often sufficient for nighttime fear reduction, one session therapy should now be evaluated for nighttime fears. Further, intervention should be manual based with checks for treatment fidelity. Audio or video-recording of treatment sessions facilitates checks for treatment adherence or drift. The trial should also involve multiple outcome measures taken before and after treatment, and at a follow-up assessment. An evaluation of the long term treatment efficacy over many years would further enhance the value of such a trial since it is imperative that interventions be durable.

Bibliotherapy is often suggested as a cost-effective means of helping children overcome their nighttime fears. Children's literature abounds with stories to assist fearful children and to reduce bedtime problems (Brett, 1986).

Specialised stories have also been written for use by therapists. Stories that deal positively with the dark incorporating, for example, story characters as coping models and the use of behavioral strategies of counterconditioning, hierarchies and shaping have been developed. However, despite the proliferation of these stories, the authors could find only two studies that examined the efficacy of such an approach for children with nighttime fears (Klingman, 1988; Mikulas & Coffman, 1989). A recent related study by Burke, Kuhn, and Peterson (2004) evaluated the efficacy and acceptability of a social story, *The Sleep Fairy*, to reduce 4 children's (aged 2–7 years) disruptive behaviour and frequent night waking. The story outlined parental expectations for appropriate bedtime behaviour and rewards for meeting these expectations. While the results of these 3 studies were promising, future research is needed to investigate the effectiveness of bibliotherapy, and to identify which components of the intervention contributed to the effectiveness of the story telling, for example “establishing a bedtime routine, personal attention from parents, social story, positive reinforcement” (p. 394; Burke et al., 2004). Such material can be evaluated for use in a cognitive-behavioral treatment framework or other psychotherapeutic models.

Finally, studies need to be undertaken to determine for whom the treatments work and why they work. Kraemer and colleagues have drawn an important distinction between mediators (the “why” question) and moderators (the “for whom” question) in randomised controlled trials (Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001; Kraemer, Wilson, Fairburn, & Agras, 2002). Conceptually, mediators such as self-efficacy or automatic thoughts identify why and how treatments have effects (Prins & Ollendick, 2003). Moderators, such as socio-demographic and child or parent variables, identify for whom and under what circumstances treatments have different effects. The distinction between moderators and mediators is helpful in the conceptualization of randomized controlled trials and treatment outcome prediction analyses, and should be observed in any future trial in relation children's nighttime fears.

## 5. Conclusions

We reviewed 29 studies published in the last 40 years on the psychosocial treatment of nighttime fears in children (11 case studies, and 18 multiple baseline across subject or between-group designs). Findings were encouraging for the efficacy of brief intervention of a cognitive-behavioral nature. Assessment and treatment recommendations were presented, with the caution that sleep problems can be triggered by neurological or physiological problems such as colic, reflux, milk allergies, breathing problems or periodic limb movement. However, the quality of controlled efficacy studies can be questioned in terms of sampling issues, treatment fidelity, and a limited range of outcome measures. No studies have investigated treatment mechanism and the role of non-specific treatment factors. Since nighttime fears and sleep problems continue to be major problems in clinical services, it is imperative that a modern randomized controlled trial examine the efficacy of family and individual-based cognitive-behavioral intervention for the nighttime fears of children.

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