

Assessment instruments of darkness phobia in children and adolescents: A descriptive review

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ABSTRACT. The fear of darkness is one of the most common motives for consultation among children and adolescents. Several investigations about the evaluation of children's anxieties or fears have been published. However in the present we have not been able to find a study that specifically reviews the methods used to evaluate darkness phobia. The goal of this article is to review the different evaluation procedures used on children and adolescent treated of darkness phobia. Published studies have been revised and evaluation instruments have been classified into: a) interviews, b) fear inventories, c) fear assessment scales, d) observation test, and e) psychophysical indicators. The theoretical study contains a description of each instrument as well as a review of the application of the instruments in the selected studies. It is concluded that we have many assessment instruments of darkness phobia, but most of them are not standardized. It is necessary to normalize the available instruments to facilitate the clinical practice.

KEY WORDS. Fear of darkness. Childhood and adolescence. Assessment instruments. Theoretical study.

RESUMEN. La fobia a la oscuridad es uno de los motivos de consulta más frecuentes en la práctica clínica con niños y adolescentes. Aunque se han publicado numerosos trabajos sobre la evaluación de la ansiedad y miedos en la infancia, hasta el momento no existe ninguna publicación que revise específicamente los instrumentos utilizados

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para la evaluación de la fobia a la oscuridad en la infancia. El objetivo de este artículo es llevar a cabo una revisión de los diferentes procedimientos de evaluación empleados en niños y adolescentes que reciben tratamiento para su fobia a la oscuridad. Para ello se revisan los estudios publicados y se clasifican los instrumentos de evaluación utilizados en: a) entrevistas, b) inventarios de miedos, c) escalas de estimación, d) pruebas de observación y e) registros psicofisiológicos. El estudio teórico recoge una descripción de cada instrumento así como una revisión de su aplicación en los estudios seleccionados. De la revisión realizada se desprende la existencia de múltiples pruebas de evaluación, pero la mayoría de ellas no están estandarizadas, lo que pone de manifiesto la importancia de la normalización de dichas pruebas para facilitar la práctica clínica.

PALABRAS CLAVE. Miedo a la oscuridad. Infancia y adolescencia. Instrumentos de evaluación. Estudio teórico.

The fear of darkness is one of the most common fears among children, with a peak between four and six years. From the age of nine it starts to decrease in the majority of children. In some cases it persists and develops into a specific phobia. Darkness phobia manifests itself by protests at bedtime and not wanting to sleep with the lights turned off. It is considered one of the most common motives for consultation. In cases of very high distress and when the consequences of the phobia are damaging the child's development and the family dynamics, treatment is recommended. An assessment makes possible to obtain detailed knowledge of the child's problem, and to identify the variables that explain the persistence of the problem. It also makes possible to plan the therapeutic intervention. For the diagnosis, some kind of structured or semi-structured interview is commonly used to assess the criteria established by the World Health Organization (1994) or by the American Psychiatric Association (APA). The objective dimension of fear, *i.e.* the presence of symptoms and behaviour such as tachycardia, pallor, fit of rage, escape reactions, etc., can be evaluated by observation and psychophysical registration. The evaluation of the severity of the subjective perception of fear, or the frequency of somatic complaints associated with anxiety disorders in childhood (Hofflich, Hughes, and Kendall, 2006), is done by auto applied procedures, interviews, or assessment scales.

Although several investigations about the evaluation of children's anxieties or fears have been published, in the present we have not been able to find an investigation that specifically reviews the methods used to evaluate darkness phobia. The objective of this theoretical study (Montero and León, 2007) is to review the different evaluation procedures used on children and adolescents suffering from darkness phobia. The review is done through examination of published studies where methods of evaluation before treatment of the phobia have been used.

The article search for this study has been performed in the databases MEDLINE, PSYCLIT, CSIC and ERIC. The articles selected were those treating darkness phobia from a clinical point of view in children and/or adolescents. Those studies were selected including a description of the evaluation process and the instruments that had been used. They were then classified into a) interviews, b) fear inventories – general-specificity

of fear, c) fear assessment scale, d) observation tests – in natural situations – in arranged situations and e) psychophysical indicators. This article contains a description of the evaluation instruments used in children with darkness phobia as well as a review of the application of the instruments in the selected studies. Table 1.

Interviews

The interview is the most commonly used method for evaluating anxiety disorder in children and adolescents (Campbell and Rapee, 1996). The interview provides information about the problem and makes it possible to plan the intervention. It also establishes an empathic relation with the child and its parents. On the other hand, the interview can seem boring or threatening to the child and the time spent on this method is larger than on others. To avoid the oblivion problem it is recommended, following Ollendick and Francis (1988), to concentrate on the child's fear behaviour and on the situations that currently cause this behaviour by asking specific questions and not general ones (Ollendick and Cerney, 1981).

Assuming that non-structural interviews show a low reliability (Achenbach, 1980), it is preferable to use structured or semi-structured interviews, which also are easier for the child to respond to. Most of those interviews available today have as their objective to result in a strictly clinical diagnosis, following the criteria of APA or the WHO handbook. Among the most commonly used interviews for diagnosing anxiety disorders we find the Diagnostic Interview for Children and Adolescents-Revised, DICA-R (Welner, Reich, Herjanic, Jung, and Amado, 1987), with versions for parents, children and adolescents. The Anxiety Disorders Interview Schedule for Children, ADIS-C (Silverman and Nelles, 1988) focuses on the anxiety problems, following the diagnosis criteria of DSM-III-R, although it also includes information about other disorders. There is a version available for parents, the Anxiety Interview Schedule for Parents, ADIS-P (Silverman, 1991). Cornwall, Spence, and Schotte (1996) used both, among other methods, to diagnose darkness phobia in a study with 24 children around the age of 8 years.

Méndez (1996) developed the *Entrevista sobre Miedo a la Oscuridad* (Interview About Fear of Darkness), and used it in several studies conducted by his investigation team (*e.g.* González, 1996). This interview provides information about the child's phobia, the background and consequences of the phobia and the family's perception of the child's behaviour. The interview is based on the criteria of the DSM-IV and consists of 43 questions that the parents answer in writing. With this interview the therapist tries to find out (Méndez, 1999): a) the child's reaction to darkness (running away, sweating) and frequency, intensity and duration of the reactions, b) the signs of security, in the feared situation, that comfort the child, c) the parents attitude when the child shows fear, and the possible positive feedback the child achieves, *e.g.* going to bed later or sleeping in the parent's bed, d) the child's physical condition and the possible presence of other problems like fatigue, bad dreams or enuresis, e) the child's recourses in frightening situations: knowing how to relax, knowing how to calm down, etc., f) the case history: when the phobia started, previous treatment etc., g) negative repercussions of the fear: if it is transmitted to brothers or sisters, if the parents have to wait with the

child until he/she falls asleep, if the fear prevents the child from carrying out leisure time activities with other children, h) additional information about the child's development in general areas: personal (psychological adjustment, diseases, etc.), family (behaviour at home, relation with brothers and sisters, etc.), school (academic performance, behaviour in class, etc.) and social (friends, acquaintances, etc.) and about the child's history of development (prenatal development, birth complications, at what age it started to talk, to walk, to master sphincter control, etc.).

Apart from diagnostic interviews, behavioural interviews that exclusively refer to darkness fear have also been used. The objective of those interviews is to find out the specific stimuli that frighten the child, assuming that the night fear is a heterogenic phenomenon, referring to different situations: fear of intruders, of fantasy figures, of being alone, etc. The interviews examine at the same time the history, the duration and the severity of the phobia. They analyse the strategies that the parents use to confront the child's problem, if they are too permissive, if they permit the child to sleep in their bed or if they are overprotective, attitudes that can result in promotion of the phobia (King, Ollendick, and Tonge, 1997).

In most of the selected articles about fear of darkness, behavioural interviews were used, some of them standardised but the majority worked out for a particular study. Friedman and Ollendick (1989) worked out a behavioural interview which they used on six children between 7 and 10 years and separately also on their parents. Through those interviews they gathered general information about the history, the duration and the severity of the children's nightly fears. They also included a specific question about the severity of the problem from the point of view of the parents as well as of the child, which they had to respond using a scale between 1 and 10 where 1 meant (*no problem*) and 10 an (*extremely severe problem*). Muris, Merckelbach, Ollendick, King, and Bogie (2001) applied this method at different schools and used an individual interview with a duration of ten minutes on 176 children between the ages of 4 and 10 years. The interviewer started by telling a short story to a child and then asked questions to examine a) the frequency of the fear (How often do you feel frightened when you go to bed at night?), b) the contents (What are you afraid of?), c) the severity (How afraid are you of...-the feared stimulus-?), d) the origin of the child's fear, *i.e.* the existence of a determining experience (Have you ever had a unpleasant experience with...-the feared stimulus-?), modelling (Have you ever seen your mother frightened of ...-the feared stimulus-?), and transmitting information (Have you seen anything on TV about ...-the feared stimulus- that has frightened you?), e) the strategies of confronting the fear (What do you do when you get scared?) and f) the efficiency of the used strategies (How much does -used strategy- help you not to be afraid?). After interviewing the children, the interviewer used the part referring to anxiety disorders in the Diagnostic Interview Schedule for Children (DISC) (National Institute of Mental Health, 1992) and during one hour gathered information about the aspects of the children's fear unknown to the parents.

For the evaluation of eleven cases that included darkness phobia, Méndez and Maciá (1988) used two semi-structured interviews on children and parents, the *Entrevista Evolutiva* by García Marcos (1983) and the *Entrevista sobre Miedos, Estrategias*

y *Reacciones de los niños* by Pelechano (1981). With those interviews they gathered information about: a) the cognitive, psychophysiological and motor response of the phobia (*e.g.* the child thought that monsters hid in all dark places), b) the parameters of the phobic behaviour (*e.g.* for how long the child cried), c) the variables that control the phobic behaviour (*e.g.* the parents reactions), d) the repercussions that the phobic behaviour had on the child's life and on its surrounding, e) the history of the phobic problem, f) the areas where there could be difficulties (*e.g.* relations with other children, adults, sleeping problems etc.) and g) biographic and evaluative information (*e.g.* if the child had suffered any diseases, the age when the child mastered sphincter control). The information obtained permitted the therapists to give the parents and the child an explanation about the phobic behaviour and also to influence particularly the reinforcing aspects in the relation with the child.

Fear inventories

The fear inventories are measures that are easy to administrate and that show an appropriate cost-effectiveness relationship (Campbell and Rapee, 1996). It is possible to use general fear inventories to evaluate phobias in general, or specific fear inventories to obtain information about one specific phobia.

General inventories

The general fear inventories consist of 50 to 100 items, referring to stimuli or situations that have the potentiality to cause phobia in the child. They include an assessment scale, like *e.g.* the Likert Type, of three to five steps by which the child, the parent or some other caretaker evaluates the fear, ranging between no fear at all, in the beginning of the scale, to a lot of fear, at the end of the scale. The inventories, with acceptable psychometrical accuracy, have been used on children from the age of two (auto applied procedures), or on their parents or other family members (hetero applied procedures).

Application on children.

Some of the available and most commonly used general inventories are:

- Fear Survey Schedule for Children, FSSC (Scherer and Nakamura, 1968). The pioneer inventory among the ones we have. It consists of 80 items, a five graded scale and it is used on children between 9 and 12 years. The items in this test come from the inventory that Wolpe and Lang (1964) created and from the contribution of professionals specialized in the evaluation and treatment of childhood fears. Later, simplified versions of this inventory were created.
- Children's Fear Survey Schedule, CFSS (Ryall and Dietiker, 1979), applicable on children between 5 and 12 years. It consists of 48 items, a three-graded scale and an empty space where the child itself can add other fears not listed in the test.
- Fear Survey Schedule for Children-Revised, FSSC-R (Ollendick, 1983). It consists of the same number of items and a three-graded scale (*no fear, some fear and*

much fear). It is the most commonly used auto-applied test of fear for children from the age of 7. It is used as a standard instrument to individually identify the child's specific fear (Ollendick, King, and Frary, 1989). This inventory has been used in many studies about darkness fear (e.g. Cornwall *et al.*, 1996; Friedman and Ollendick, 1989; King, Cranstoun, and Josephs, 1989).

- A factorial analysis showed that 21 of the items are empirically related to darkness fear, forming a scale about darkness fear within the inventory (Friedman and Ollendick, 1989). Ollendick, Matson, and Helsel (1985) studied the importance of sex and age in the inventory. They could observe that girls expressed a greater number of fears than boys and that the number of fears were greater in small children. Eight of the ten most commonly mentioned items were the same in both sexes. Regarding the age, the youngest children informed about more specific fears than the older ones and than the adolescent children, e.g. fear of darkness or of closets, of going to bed at night, of unknown dogs, of getting lost in unknown places or of arguing with their parents. In a study made later on, Ollendick *et al.* (1989) studied again the factorial structure of the inventory, in a sample of 1,185 children and adolescents, between 7 and 16 years and they could observe that the instrument seemed to be stable and invariant and also independent of age, sex and nationality. They could also observe that the sub-scales were relatively homogeneous. The located factors in this study were: fear of failing or of criticism, fear of the unknown, fear of smaller injuries, of small animals, of death and of medical traumas.
- Muris, Merckelbach and Collaris (1997) performed a study on 129 children between 9 and 13 years, where they tried to find out whether the questionnaire FSSC-R would be a better method to expose the children's fears than open interviews with questions like "What is it that scares you most?" They formed two groups, giving first the FSSC-R and then the interview to one of the groups, and doing it the other way around with the other group. The results showed that it is hard to determine which method is the best one, and points out the advantages of both. The sample consisted of children with a mean age of 10, whose cognitive development permitted them to answer the open questions in the interview without difficulties. The results would not be the same if the children were younger, since it would not be as easy to apply the method on them which probably means that the advantages could not be generalized for preschool children.
- Chorot and Sandín (Sandín, 1997, pp. 59-61) performed a Spanish version of the questionnaire FSSC-R, where they eliminated the item "fear of Russia" and changed the item "fear of being alone" to two items: "fear of being home alone" and "fear of being alone away from home", with the objective to maintain the original number of items. With this modified questionnaire they investigated the dimensions, validity and reliability in a sample of 254 children between 9 and 11 years (Sandín and Chorot 1998). The results support the structure of the five factors of the fears defended by Ollendick's group, as

well as adequate levels of the questionnaire's reliability in general and of each one of its dimensions.

- Fear Survey Schedule for Children-II, FSSC-II (Gullone and King, 1992), an updated version of the inventory, with 78 items and an assessment scale of three steps. Evaluates the fears of adolescents between the age of 13 and 18, and includes new items like “fear of a nuclear war” or “fear of AIDS”.
- *Inventario de Miedos* (Sosa *et al.* 1993). This can be considered a Spanish adaptation of the “Fear Inventory” (Cautela, Cautela, and Esonis, 1983), which consists of 65 items, plus another nine items from the *Inventario de Miedos* elaborated by Pelechano (1981). This gives in all an inventory with 74 items, a three graded scale, also adding an open question: “Is there anything else that frightens you? If there is, what is it?” The inventory, elaborated to be applied on preadolescents and adolescents of the age between 9 and 15 years, evaluates ten types of fear: fear of death, fear of authority, fear of loneliness – fantasy figures, fear of animals, fear of the unknown, fear of assessment of performance, fear of being separated from parents, fear of physical contact, fear of natural phenomena and fear of doctors. The questionnaire yields three general scores based on the different items, except the one referring to fear of physical contact:
 - physical fears: scores from the scales of death, loneliness - fantasy figures, animals, natural phenomena and doctors;
 - social fears: scores from the scales of authority, unknown, assessment of performance and separation;
 - children's fears: the sum of the scores from physical and social fears.

Application on parents or other adults related to the child

Some of the most commonly used inventories on parents, teachers or other adults are the following:

- Louisville Fear Survey for Children, LFSC (Miller, Barrett, Hampe, and Noble, 1971, 1972). It consists of 81 items, referring to situations and stimuli that can cause fear in children and adolescents between 4 and 16 years old, and a three graded scale where the parents evaluate their child's fear. The items are taken from other evaluation inventories of fear in adults and from scientific infant literature. It is considered a very versatile instrument, because of the possibility of using it on parents, teachers and other adults and also as an auto applied assessment on the child. The factorial analysis done by the authors derived three aspects: fear of physical injury, fear of nature dangers and psychological stress.
- Fear Survey Schedule for Children-II Parent, FSSC-IIP (Bouldin and Pratt, 1998), is an adaptation for parents of the FSSC-II, with 94 items and a three graded scale.
- *Inventario de Miedos* (IM; Pelechano, 1981). The original version, consisting of 103 items, where later revised by the author (Pelechano, 1984), reducing the inventory to 100 items. It addresses parents with children between the age of 4 and 9 and it incorporates a three graded scale (*no fear, some fear and much fear*). It includes seven types of infant fear and an item referring to darkness (item number 28): a) fear of animals, b) fear of nature phenomena, c) fear

related to sickness, d) fear of death, e) social fears, f) fear of closed places, g) various fears: darkness, loneliness, high noises, terror movies, etc.

Specific inventories of fear of darkness

The specific inventories of fear evaluate one specific type of fear, and so are shorter than the general ones. Cornwall *et al.* (1996) used a questionnaire for parents that evaluated the behaviour of the child in situations and stimuli related to darkness. The inventory, which they named Darkness Fear Behaviour Questionnaire, consisted of 10 items. The response from each item is a value from a three-graded scale, where 0 means not true and 3 means very true or very correct. Some examples of the questions in the questionnaire are: "Is your child worried at bedtime?" or "Does your child insist on sleeping with the light turned on?" Graziano and Mooney (1980) used a questionnaire of fears, filled out by the parents, where they obtained information about the frequency, intensity, duration of the fear episode, disturbance in the family, the child's reaction during the episode of fear, severity of the problem as perceived by the parents, level of interference in school and disturbance in the child's social adjustment. Méndez and Santacruz developed the *Escala de Evaluación del Miedo a la Oscuridad*, consisting of 10 items and an eleven-graded assessment scale ranging between no fear of darkness to great fear of darkness (Méndez, Orgilés and Espada, 2006). The items in the scale are based on the criterion from the DSM-IV (American Psychiatric Association, 1994) for the diagnosis of a specific phobia. It evaluates the intensity of the child's fear (criterion A), the child's reactions on darkness (criterion B), the avoidance or escape from situations of darkness, the emotional alteration in situations of darkness from which the child cannot escape or unforeseen situations of darkness (criterion D), the negative repercussions or interference of the fear of darkness on a personal, familiar, school or social level, or a clinical discomfort (criterion E). The last item in the inventory needs a global evaluation of the severity of the child's fear of darkness. This assessment scale has been used in various studies controlled by Méndez's investigation team, to difference, together with other evaluation tests, darkness phobia among infants in general (*i.e.* Méndez, Orgilés, and Espada, 2004; Orgilés, Méndez, and Espada, 2005).

Fear assessment scales

Fear assessment scales or fear thermometers (Kelley, 1976) refer to graduated scales at which the child, previously trained, rates the degree of anxiety felt towards a certain stimulus on a scale of a minimum sense of fear to the maximum degree of fear. These are applied when the child is in the feared situation or while other assessment tests are accomplished, as for instance, during a behaviour approach test or a fear toleration test. They allow quantifying fear, and are easy and fast to put into practice. In addition, they can be combined with other tests. Moreover, these allow a continuous evaluation in the specific feared situation, what constitutes some advantages for the application at children's phobias. Nevertheless, this is a subjective measure of fear, what represents its main disadvantage.

To evaluate the child's fear of the darkness with a scale of assessment the child can be asked "How much do you fear being alone in the dark?" or "How scared did you feel?", if this scale is used after the child has done a test of observation. Since young children find it difficult to describe with a number his or her level of fear, it is possible to simplify the numerical scales to facilitate the use. These can also be represented in a graphic way by means of gestures, drawings, bar diagrams, etc. The scales of assessment of fear can be qualified in numerical, graphical, material and gesture scales (Méndez, 1999).

Numerical assessment scales

These are scales classified by algebraic values with a range of 3 ordered categories (*no fear at all, medium fear and high fear*), or five categories (*no fear at all, some fear, medium fear, high fear, and very high fear*). An example of scale is the one used by Klingman (1988), with five categories where 1 means (*not scared at all*) and 5 (*very scared*). The children were first trained to use it with several objects, such as ice creams or chocolate, afterwards, with activities like riding a horse, and later with several types of fears, as the fear of dogs. After being sure that all children could use the instrument correctly, the evaluator asked each child to rate his or her fear of the darkness.

Graphical assessment scales

Very young children have difficulties to rate their level of fear with a number, even if simple scales with few categories are used. Hence, it is more usual to use drawings, gestures or material resources to facilitate the expression of fear. With graphical assessment scales a child informs about the fear that he or she feels by using figures, which visual features, such as the length or the colour, reflect the degree of fear. The most common graphical representations are: a) horizontal or vertical line, which ends show the absence and the maximum presence of fear, b) horizontal or vertical triangle divided in three zones that represent the degree of fear: slight, moderate and strong, c) bar charts, where the smallest bars indicate slight fear and the high bars intense fear, d) traffic lights, where the red colour means very scared, the yellow colour a bit scared and the green colour not scared, e) faces, which expressions correspond to the level of fear: a smiling face means no fear and a tearful or very sad face represents high fear.

The graphical assessment scales have often been used as a procedure to know the child's subjective fear of darkness. Kelley (1976) pioneered its application when he used in 4 and 5-year-old children a scale made up of a vertical board and a lever that the child had to move to indicate one of the five levels differentiated by the colour, which informed about his or her degree of fear of the darkness. The same procedure was used in a later research (Sheslow, Bondy, and Nelson, 1982), using a board of wood of 12 x 50 cm. and a lever with an arrow that the child moved towards one of the five levels of different colours, ranging from no fear to high fear. This instrument of assessment was applied together with a tolerance test to darkness. Previously, the children were presented a series of articles, such as: hamburgers, spinaches, ice creams, lions, etc., so that they indicated according to the scale how scared they were by placing the arrow at the corresponding level. This method was used together with the

tolerance test to darkness, only when the observer was sure that the child knew how the instrument worked. Cornwall *et al.* (1996) used a procedure similar to the one used in the previous studies with children from 7 to 10 years old. In a multicoloured board with a scale of five points that was ranging from no fear to high fear, the children should indicate how scared they felt after imagining during two minutes a scene in which they were alone at home and a power blackout happened.

A very attractive modality for the child is the use of faces with gestures that express different degrees of fear. The parents who took part in the study of Giebenhain and O'Dell (1984) asked every morning their children, of ages between 3 and 11 years, how scared they had felt during the night. For this purpose, they used drawings of children's faces that reflected different degrees of fear. After having carried out a tolerance test to darkness, King *et al.* (1989) asked the three children of the survey, of 6, 8 and 11 years, how scared they had felt. They used a scale constructed specifically for this occasion with 5 points, at which every level of fear was accompanied by several behaviour describers and by the drawing of a child's face that expressed the degree of fear. In combination with other observation tests, at their survey Orgilés *et al.* (2005) used a scale of graphical assessment of darkness phobia. Children, from 5 to 9 years, reported of the fear experienced after having finished every proposed task, indicating one of the three faces that were expressing different degrees of fear: no fear, some fear, and high fear.

Material assessment scales

The child reports of the fear using objects under the instructions of the observer, who later registers the degree of the corresponding fear. Some materials that can be used are: a) blocks of wood or plastic: the children indicate the smallest block if they are not frightened, the medium-size one if they feel some fear or the biggest one if they are very frightened, b) weight that the children places on a balance to observe its effect; the largest and heaviest weight corresponds to a very intense fear, whereas the smallest and lightest one refers to the absence of fear or to a very slight fear, c) pitchers, which content corresponds to the fear felt by the child. The empty pitcher means absence of fear, the half full implies some fear, and the one that is completely full means high fear.

Gesture assessment scales

The children are trained to express how frighten they feel by using a part of their body. For this purpose the child can open and close his or her hands. If the child is not scared at all, hands are kept closed together, if the child is a bit scared his or her hands will be kept 10 cm. opened, and if he or she is very scared his or her hands will be totally extended. González (1996) used this procedure in his research with 38 children between 4 and 8 years who suffered darkness fear.

Observation tests

The fear reactions of the child can be observed at the natural environment where the problem arises or at an arranged situation, previously prepared by the tester.

Observation at natural situations

The observation in natural situations is preferable to observation in arranged environments. Nevertheless, occasionally this kind of procedure can be difficult to apply since children tend to avoid the phobic stimuli, reducing the possibilities of observation. This procedure is viable in some children's fears since these manifest themselves very often (*i.e.* fear of the darkness), or because of the firm attitude of the adults (*i.e.* medical fears) or for both causes (*i.e.* school fears).

At most researches on darkness phobia a daily observation record at the natural environment of the child is kept; this has been mostly filled out by the parents. Besides providing information to make up the baseline data in order to control the child's daily improvements and to be aware of possible problems of the procedure, it allows to evaluate the efficiency of the treatment. The observers establish a criterion of therapeutic improvement that usually implies the absence of a certain conduct registered during a specific time. For example, Graziano and Mooney (1980) think that ten consecutive nights without fear reactions would be the criterion to think that the phobia has been eliminated. They used a daily record at which every night the parents wrote their observations: a) how long the child took from the moment he or she was said to go to bed until he or she fell asleep, b) reactions that delayed the moment of going to sleep: crying, going out of bed, protesting, asking for a glass of water, etc., and c) the fear reported by the child every night. The record was later adapted and used by Friedman and Ollendick (1989), who named it "Home monitoring form". With this form the parents evaluated every night the difficulty their children had to go to bed, the nights without fear reactions and how many minutes it took from the moment the father/mother told the child to go to bed until he or she managed to be still in bed, with the lights off and noiseless. Occasionally, the description of children's problems to go to sleep should be noted down in the following morning and not the same night, so that the fear reactions and details of these during the previous night could be registered, as it happens at the report of King *et al.* (1989).

McMenamy and Katz (1989) applied a broader record to let parents evaluate children's fear at bed time. This was formed by 15 items referred to the time the child took to go to sleep, to the frequency and intensity of the reactions, such as protesting, crying, screaming or abandoning the bed, and to the parent's perception of the degree of fear of the child. Before using this record the parents had been trained for its use by applying techniques of role-playing.

At the study carried out by Mikulas and Coffman (1989) on fear to darkness, parents filled out the Fear Behaviour Checklist, which was modified at every research. At the first research the list had nine items, and enclosed situations as being alone in the dark or going to the bathroom at night, and a scale of five degrees. At the third research ten more items were included at the record, seven of them related to behaviour in the darkness and the other three referred to the incapacity of going to bed, the disturbance for the parents of the child's behaviour at night and the global assessment of fear of the darkness. The scale was extended to seven levels of fear. At the last sample of children gathered by the authors a record of eleven conducts related to fear to darkness and/or going to bed was applied, based on a scale of seven degrees.

To carry out a Spanish research, Méndez and González created the *Registro a la Hora de Dormir*, which daily evaluates the fear felt by the child when going to sleep (Méndez *et al.*, 2006). Parents describe on it every night the time of going to bed. The record will be filled out separately by the mother and by the father, and this will be done immediately after having brought the child to sleep, which allows judging the reliability among different observers. The assessment of the degree of fear is carried out by using a scale of five categories, which correspond to the values *no fear*, if the child goes to bed without problems; *some fear*, if the child idles when going to bed; *medium fear*, if the child complains but goes alone and with the lights off; *high fear*, if the child does not want to go to sleep and has to be helped either being at his or her side or leaving the light on; and *very high fear* if the child does not go to bed and has to be obliged and/or sleeps with his or her parents. Moreover, a section is enclosed for possible interesting observations from the parents.

Observation in arranged situations

Certain conducts are difficult to observe in the natural environments where they usually happen since the child, among other reasons, tends to avoid these. In such cases, the assessor can prepare the situation in an arranged form to register the reaction of the child when the feared situation happens. The interaction with the phobic stimuli can be gradual or not, by using behaviour approach test or tolerance tests.

Behaviour approach tests arose in the frame of systematic desensitization (Lang and Lazovick, 1963) and they imply the progressive interaction with the phobic stimuli. The children are asked to gradually come closer to the situation that scares them in order to observe their anxiety reactions. Through the behaviour approach tests two kinds of results are obtained (Méndez, 1999): a) results of physical variables: for instance, the distances of approximation in centimetres or meters to the phobic stimulus, the time of stay in seconds or minutes in the phobic situation, or the intensity of the feared stimulus, b) results of psychological variables: this kind gathers observable motor responses of avoidance or escape, such as denying or interrupting an action, defensive answers, as closing the eyes, covering the ears or stepping back, and disruptive answers, as trembling or crying.

There are two modalities of this type of tests, the tests of active approach to the phobic stimulus, where the child comes closer to this one in a gradual way, and the tests of passive approach, in which the phobic stimulus progressively approaches the child. Both types of tests are exposed hereunder, together with the available means referred to the fear of the darkness.

Tests of active approach to the phobic stimulus

- Mikulas and Coffman (1989) accomplished a sequence of tasks that the children carried out in their rooms under the supervision of one of the parents. At the first experiment the activities were the following ones: a) the child and the father/mother enter the dark room to take an object, b) the father/mother asks the child to go in his or her bedroom and take an object that is placed in the middle of the room while the father/mother is waiting at the door, c) the father/mother is waiting in a different room while the child takes an object placed at

the entry of the bedroom, d) the child enters the bedroom to take an object, which is easy to find while the father/mother is waiting in another room, e) in this case the child does not know where the object is. The test took place after nightfall and the tasks were carried out in order, stopping when the child was unable to do some action. The child executed the first two activities during one night and the other three the following night. In the second experiment the tasks decreased to four: to find the father/mother, who was hidden in the child's room, to take a toy easy to find in the dark room, switching on the lights of the house without help in the night, while the father/mother was staying somewhere else, and to go out alone in the dark to take an object.

Tests of passive approach to the phobic stimulus

- Kelley (1976) used a behaviour approach test in a sample of 40 children between 4 and 5 years, in a totally dark room in which a fluorescent light hanging from the ceiling allowed to reduce the light in five different steps. Every child was sitting down under the light and near a box with a button that when it was pressed the room would completely illuminate. The test was carried out first in presence of the experimenter and then, the child alone. The intensity of the light decreased in five steps with durations of 15, 45, 45, 45 and 60 seconds during successive steps. The children were informed that they were trying to know the time that they could stay in a dark room. The children were told that the light would become slighter and that if they were feeling scared, they could press the button and the light would switch on. Every test of the research finished when the button had been pressed or when the child stayed 210 seconds in progressive darkness.
- Méndez created the *Prueba de Aproximación Conductual a la Oscuridad*, where he enclosed six sections corresponding to six situations to which it is necessary to expose the child (Méndez *et al.*, 2006). The test must be carried out in the child's bedroom, and the situations change at the intensity of light allowed, which decreases until obtaining a complete darkness. To provide more or less light intensity, the opening of the door can be modified, as well as the entry of light to the room, switching on the lamp of the ceiling, the bedside lamp or the lamp of the corridor. The parents must observe the time that the child is able to stay in every situation, with a maximum of 120 seconds per task (720 seconds in the total test). During the test the child should be encouraged to stay in the darkness the maximum possible time. Instead of registering the time of stay, other criteria for assessment of the darkness phobia can be applied in every task of the test. For example, Méndez and García (1996) valued in 21 children from 4 to 8 years suffering from darkness and strong noises phobia, if they accomplished the activity to the first indication of the therapist without demonstrating signs of fear, if they were carrying out the action to the first indication but were showing fear reactions or if they did the task to the second indication, hence they were delaying the execution.

Tolerance tests are in line with the flooding procedure, since the behaviour of the child is observed when this interacts with phobic stimuli of high intensity. The child's behaviour during a test of tolerance cannot be analogous to the usual reaction (Ollendick and Francis, 1988; Pelechano, 1984), since it is an arranged procedure and this cannot cause the same anxiety as when exposed to the feared stimulus in a natural environment. In spite of this disadvantage, tests of tolerance are assessment instruments that contribute valuable information to the therapist (Ollendick and Francis, 1998; Pelechano, 1984) and by some authors this kind of tests is even considered as the most useful available procedure of fear assessment in children (Barrios and Shigetomi, 1985).

Tolerance tests have been used together with other tests in researches on darkness phobia with very different time limits of exposure. Sheslow *et al.* (1982) used a tolerance test to know the maximum time that 32 children participants at their study were able to stay in the darkness with a range of stay from 0 to 150 seconds. In the study of Cornwall *et al.* (1996) children should press a button to turn on the light when they were frightened, with a maximum time of exposure of 3 minutes. Leitenberg and Callahan (1973) informed the children of their study that they were going to play at being alone in a dark room. In order to know the time they could stay in without signs of fear, they indicated them that they should enter the room, close the door after entering and go out as soon as they felt a bit scared. Afterwards, the test was accomplished again but without giving the children the prizes that were given to the children the first time.

Using the parents as co therapists, King *et al.* (1989) carried out a tolerance test to darkness to children of their research during the night in their room, approximately two hours before going to sleep. The mothers were informed about the procedure and both parents were given instructions for the accomplishment of the test by the children. They had to say to the children: "I want you to go to your room and sit down or lie on your bed. I will turn off the lights and you must stay as long as you can. If you are frightened or very worried, please do not try to turn on the light; you must open the door and go out. You can go out of the room when you want, but try to be as brave as you can. I will be out here. Please, do not call me. Open the door and go out". The number of seconds that the child could tolerate was registered by the parents, with a maximum of 180 seconds. Mikulas and Coffman (1989) modified the maximum times of tolerance of the children at their studies. At the first test, the parents were bringing the children to bed while the light was off and asking them to stay as long as they could. The father/mother registered the time of leaving the room and the time the child was calling him or her, with a maximum of 30 minutes. The test was modified by the second sample, the children could turn on the light and go out of the room, and the third group of children could call the parents or leave the room after staying no longer than 20 minutes. In the last experiment the test extended again to a maximum duration of 30 minutes, and the child had to accomplish the test twice on not consecutive days.

The procedure of Mikulas and Coffman (1989) in the Tolerance Test to the Darkness was adapted to be applied to Spanish samples (i.e., Orgilés *et al.*, 2005). The children are asked to go to bed as if they would go to sleep, in order to know how long they are capable of staying alone, lying and in the dark. The light of the bedroom is turned off. The observer stays in another room measuring the time that it takes until the child

calls him or her asking to come back, or until the child leaves the room or turns on the light. The maximum time of stay can change, ranging from 5 to 30 minutes. Though Mikulas and Coffman fixed a maximum time of tolerance of 30 minutes, it seems to be advisable to use a shorter time limit, since sometimes children leave the room not because of fear but for the boredom, if the time of exposure extends too much they can fall asleep. For this reason, Orgilés *et al.* (2005) used a tolerance time limit of twenty minutes.

Psychophysiological records

The psychophysiological records have been rarely used in assessment of children’s anxiety for economic and viability reasons. These imply a high economic cost and the difficulty of keeping the child from moving while he/she is facing the feared stimuli and his/her psychophysiological reaction is being registered. Therefore, the use of technology is saved for researches or at the hospital context. An example of psychophysiological record used in fears is the index of perspiration of the palms. It is considered that the activity of the sudoriferous (sweat) glands of the hands is more influenced by emotional factors, such as anxiety, than by environmental variables, as temperature; hence it can be positively associated with the level of fear or anxiety of the child. Mooney (1982) used psychophysiological records in an unpublished study with 42 children from 6 to 12 years.

TABLE 1. Assessment instruments of darkness phobia in children and adolescents used in group studies.

Authors	Sample		Structured interviews	Inventories		Scales		Observation		
	N	Ages		Application on parents	Application on children	Application on parents	Application on children	Natural situations	Arranged situations	Tolerance test
Leitenberg and Callahan (1973)	14	5-6								•
Kanfer, Karoly, and Newman (1975)	45	5-6								•
Kelley (1976)	40	4-5					•		•	
Graziano and Mooney (1980)	33	6-12		•		•		•		
Sheslow <i>et al.</i> (1982)	16	4-5					•			•
Giebenhain and O'Dell (1984)	6	3-11					•		•	
Rosenfarb and Hayes (1984)	38	5-6								•
Klingman (1988)	42	5-6				•	•			
Mikulas and Coffman (1989)	83	4-7				•			•	•
Cornwall <i>et al.</i> (1996)	24	7-10	•	•	•	•	•	•		•
Méndez <i>et al.</i> (2004)	45	5-8	•	•		•	•	•	•	•
Orgilés <i>et al.</i> (2005)	32	5-8	•	•		•	•	•	•	•

Conclusions

The assessment of specific phobias in the childhood, as in most children problems, presents certain problems. First of all, in some cases children falsify their answers to cause a good image in front of the therapist or to obtain certain benefits from their parents. In addition, their aptitude to value the seriousness of the fear is reduced, what reduces the reliability of the answers. Due to the fact that the information provided by the children, though it is necessary to know their subjective experience of fear, can be slanted, it is usual to turn to the assessment of adults, such as parents and/or educators. Though the index of coincidence among the answers facilitated by these and by the child is usually low, the application of instruments of assessment for both provides complementary and more precise information.

Méndez, Orgilés, and Rosa (2005) carried out a meta-analysis on the efficiency of the psychological treatments at darkness phobia in the childhood and adolescence. One of the aims of the quantitative review was trying to assess the sensitivity of the instruments of measurement to detect the changes caused by the treatment. Approximately, 160 bibliographical references were checked, including those studies referred to the treatment of darkness phobia in children and teenagers, enclosing pre-test and post-test measurements, elaborated between 1960 and 2003. From the results of the meta-analysis it is clear that the most frequently used procedure of assessment is the artificial observation. The inventories, in spite of being frequently used, presented the lowest reliability of all instruments, probably because they were evaluating diverse variables (*i.e.* fear in general, anxiety, behaviour problems), while the rest of tests of evaluation were specific of darkness phobia. Regarding the assessors, most of them are parents, and rarely therapist or the own children. In addition, professionals value the efficiency of the treatment more positively than the children and the parents.

Some authors (King *et al.*, 1997) think that there should be enclosed in the assessment of children phobias a behavioural interview, a diagnostic interview, an inventory of fears for children and a control record for parents of the children's fear reactions at home. The process of evaluation of darkness phobia, as the rest of specific phobias, must be for this multi method and multi source. It implies the application of multiple tests to the children, to their parents and/or to close people. It includes besides the use of diverse procedures of measurement of subjective type (interviews and inventories), behavioural (approach and tolerance tests) and physiological (psycho-physiological record).

By the review of the published studies it is clear that, currently, we have diverse instruments of assessment of darkness phobia, but in most cases the tests are not standardized. Provided that the darkness phobia is a very common problem in the childhood and one of the most consulted clinical matters, it is necessary to generate instruments aimed at specifically assessing the mentioned disorder and the normalization of the available instruments to facilitate the clinical practice.

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