

Nighttime Fears of Adolescents and Young Adults

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ABSTRACT

Nighttime fears and fear of the dark are interchangeable concepts in literature. To a moderate extent, these types of fears are considered to be common among children and adolescents. Previous studies investigated children's and adolescents' thoughts about the content and origin of nighttime fears and the ways they cope with these fears. However, studies barely investigated this phenomenon beyond adolescence. Our study contributes to fill this research gap.

Eighty-three adolescents with an average age of $14.76 \pm .51$ (34 females) and 57 young adults with an average age of 22.31 ± 2.18 (29 females) participated in our study. We used a self-developed scale to measure their intensity of fear of the dark. Participants answered open-ended questions referring to the content and origin of fear of the dark and to their ways of coping with this fear. Associations of scores and answer categories with age and gender were tested.

The frequency of adolescents' and young adults' fear of the dark didn't differ significantly, while females reported more frequent nighttime fears than males. There were no gender or age differences regarding specified contents. Compared to adolescents, university students reported

negative information as the source of their fear of the dark more frequently, while women attributed their fears to vivid imagination more frequently than men. Young adults reported avoidance more frequently than adolescents, while women reported the use of avoidance, self-distraction, and seeking social support as ways to cope with their fear of the dark more frequently than men.

Results are discussed from a developmental point of view. It can be concluded that fear of the dark-to a moderate extent-remains a common fear among young adults. Its associations with mental health and psychological well-being should be further investigated by future studies.

Keywords: Fear of the dark; Nighttime fears; Adolescents; Young adults; Content of fear of the dark; Origins of fear of the dark; Coping with fear of the dark; Fear of the Dark Scale

INTRODUCTION

Moderate night time fears and fear of the dark are enormously common among children and adolescents, and are considered as normative [1]. Regarding its adaptivity, fear of the dark restricts mobility in the dark, thereby decreasing vulnerability, increased by limited vision [2]. Nevertheless, about 20-30% of children supposed to have severe nighttime fears [3], affecting their psychological well-being and daily functioning. For instance, nighttime fears are related to sleep problems, both in children [4] and adults [5]. Fear of darkness was reported to decrease with age [6], however, its prevalence in adulthood is barely researched.

According to Ranschburg [7], a Hungarian child psychologist, there is at least three aspects of darkness, effecting individuals' emotional states: (1) separation (darkness symbolizes separation, the disappearance of the individual and its environment), (2) mobilization of fantasy (fantasy contents could be projected into the environment, without the obstruction of objective reality, thus fear of the symbols is increased), (3) lack of safety (darkness elicits concrete fears, related to the sense of danger). From an interactional point of view, darkness is an archaic fear inducing situation, to which individuals relate the possibility of unreal consequences and physical injury [8]. The significance of these aspects has also been confirmed by research results, discussed later.

Large number of studies investigated the dimensions of childhood and adulthood fears and phobias, analyzing data from fear survey schedules, by factor analytic approaches [9,10]. Across the studies, fear of the dark either constituted an independent factor, or was included in the factors of *agoraphobic fears* or *fear of the unknown*, together with items like "being alone at home", "strange looking people", "getting lost in a crowd", "ghosts or spooky things" etc.

Present study aimed to investigate the characteristics of nighttime fears among adolescents and young adults. We assessed their origins, frequency and contents, the related coping behaviors, as well as their correlation with trait anxiety. To our knowledge, present study was the first to thoroughly investigate adults' nighttime fears.

Conceptualization of Nighttime Fears

The scientific concepts of nighttime fears and fear of the dark, and their distinction are rather confused. “Darkness phobia manifests itself by protests at bedtime and not wanting to sleep with the lights turned off” [11]. Nighttime fears are normal reactions to real or imagined threats at night” [1]. They constitute a heterogeneous class of fears, with several fear contents, for example intruders, imaginary creatures, storms and animals [12]. Some authors mentioned darkness itself, as a specific content of nighttime fears [1,13]. This may not be sensible, since nighttime fears typically appear in the dark and disappear when turning the lights on. In our point of view, darkness is not a concrete content, but a situation, intensifying concrete fears in some, and diffuse anxiety in others. Regardless the applied term, researchers of darkness phobia, nighttime fears and fear of the dark usually refer to each other’s work and sometimes use the terms, as they were interchangeable. Since the assessed negative affect typically occur at nighttime and in the dark, we believe that it often could be described by both concepts.

There are some studies though, which aimed to examine the independent effects of darkness and night. In the experimental study of Grillon, Pellowski, Merikangas and Davis [14], darkness facilitated the startle reflex of adults in general, and this effect was more significant among individuals, who reported higher childhood fear of the dark. On the other hand, the results of Li et al [15] underline the role of the day-night cycle. In their study, participants’ fear responses for a fear inducing stimuli were higher at the nighttime condition, than at the daytime condition (regardless the lighting condition). These results suggest that both night and darkness contribute to nighttime fears, though under natural conditions, their effect could not be distinguished.

Characteristics of Nighttime Fears

In this section, research evidence regarding night time fears’ frequency, severity, contents, origins and the related coping behaviors are reviewed. Since there is a lack of research concerning the characteristics of adulthood nighttime fears, the section mainly relies on data, collected among children and adolescents.

Frequency and severity

In the fundamental study of Muris and colleagues [12], 73.3% of 4-12-year-old children reported to have some level of nighttime fears, boys and girls equally. Interestingly, parental reports significantly underestimated children’s nighttime fears, and greater inaccuracy was observed in case of older children. According to parental reports, children’s nighttime fears decrease gradually (4-6 yr: 44.3%, 7-9yr: 32.1%, 10-12yr: 23.9%), but the reports of the children showed a remarkably different developmental pattern (4-6 yr: 58.8%, 7-9yr: 84.7%, 10-12yr: 79.6%). In addition, both children and their parents rated that nighttime fears were accompanied by moderate levels of anxiety, with girls reporting somewhat higher anxiety levels than boys.

In a similar research, carried out by Gordon and his colleagues [1] 64,2% of 8-16-year-old individuals reported nighttime fears. Comparing the two age groups (8-12 yr, 12-16 yr), nighttime fears were significantly more common among children (79,4%), than adolescents (48,8%). In addition, girls (72,9%) reported more frequent nighttime fears than boys (54,6%). Both boys and girls reported moderate levels of anxiety about their nighttime fears, with children reporting significantly higher ratings than adolescents. Frequent nighttime fears were found to be prevalent in 10.2% of the sample.

Regarding adulthood fear of the dark, the prevalence of darkness phobia is 2% in adults [16], and 17% of young adults had fear of the unknown, including fear of the dark [17].

Contents

Both Gordon et al. [1] and Muris et al. [12] collected information about the contents of nighttime fears and sorted the individual interview answers into categories. Muris et al. [12] reported the following content categories (and their frequencies) among children, between the ages of 10-12 years: intruders (36,7%), imaginary creatures (12.2%), environmental threats (10.2%), animals (10.2%) and frightening thoughts (10.2%). While in the 13-16-year-old sample of Gordon et al. [1] the following categories appeared: environmental threats (18.1%), personal security (12.6%), frightening dreams (2.4%), darkness (6.3%), imaginary creatures (2%), family/friends security (2.8%), insects and animals (1.2%), and worry about day's events (3.4%). Thus, participants mentioned external and internal, danger and safety related threats, combined with presumed consequences.

Origin

According to Rachman's theory [18], the following learning experiences can be distinguished in the acquisition of fears and phobias: (1) aversive classical conditioning, (2) modeling (i.e., vicarious learning) and (3) negative information transmission (i.e., exposure to negative information about the feared content). Investigating the origins of childhood fears, Ollendick and King [19] found that a vast majority of children (89%) attributed their fear to negative information. Muris et al. [12] obtained similar findings concerning nighttime fears: 77.5% of the participating children endorsed negative information (especially from television), as the origin of their fears. Conditioning and modeling were reported by remarkably lower percentages of children (25.6% and 13.2%). 24% of fearful children mentioned none of these pathways, indicating that they did not know where their nighttime fears came from. Since Gordon and colleagues [1] did not investigate the origins of nighttime fears, there are no available data regarding adolescents.

Coping behaviors

Nighttime fears are unpleasant emotions, triggering emotion regulation strategies. According to the results of Muris et al. [12] and Gordon et al. [1], children and adolescents usually cope with their nighttime fears, and rate their coping behaviors as helpful. Regulation strategies

reported by 4-12-year-old children were seeking support from parents (44.2%; e.g. 'I call mother and father into the bedroom and ask them to sit close by'), avoidance (29.5%; e.g. 'I try to stay up later'), distraction (27.1%; e.g. 'I start reading a book'), trying to sleep (24.0%; e.g. 'I try to go to sleep right away'), active control (1.6%; e.g. 'I check my room to see whether someone is there'), and clinging to stuffed animals' (5.4%; e.g. 'I hug my teddy bear'). Thus, in the framework of the process model of emotion regulation [20], these strategies can target the external situation (situation modification and situation selection), the internal thoughts (attentional deployment), as well as the emotional response ("trying to sleep" suggests emotional suppression).

As regulation and cognitive skills develop over time, dominant coping strategies change. In case of 13-16-year-old adolescents, self-distraction (65.3%, e.g. 'ignore or think of other things'), control over inanimate environment (15.3%, e.g. 'turn on a light or use a torch') and seeking social support (11.3%) were the most frequently reported types of coping strategies. Comparing the two researches, it can be seen, that self-distraction was reported by remarkably higher percentage of adolescents than children, while situation modification (avoiding darkness or separation) was less frequent among adolescents.

Individual and Gender Differences

Based on the correlates of general childhood fears and anxiety, nighttime fears could be related to several protective and risk factors, like: resilience, effortful and perceived control, self-related concepts, gender-stereotyping, coping strategies, emotion regulation skills, genetically based vulnerability, negative and positive life events, stress, family influences (attachment and parenting), social support and cultural differences [21]. In previous studies, significant nighttime fears of children and adolescents were associated to externalizing and internalizing problems [22,23], anxiety disorders, especially separation anxiety [12], higher level of other fears [23] and to preschoolers' difficulties concerning fantasy-reality differentiation [24]. In the study of Kushnir and colleagues [23] attention control mediated the association between nighttime fears and internalizing problems. In our previous research, adulthood fear of the dark was associated to insecure attachment and early maladaptive schemas [25].

Regarding the role of gender, females are more fearful than males in general: they report greater fear intensities, greater number of fears and their fear of the dark is also higher [6]. It has been suggested, that the robust gender differences are influenced by gender-role stereotyping. Concerning nighttime fears between the ages of 8 and 16 years [1], females reported significantly more environmental threats as a content, than males. Their fears were as severe as boys', but more frequent. Both the general and nighttime fear related differences became more pronounced with age.

Developmental Considerations Regarding Nighttime Fears

In her paper, Gullone [6] reviewed over a century's research, into the developmental patterns of normal fear. Evidence showed that fear of the dark, accompanied by separation anxiety and animal fears, emerges around the preschool years, and predominates between the ages of 6 and 10 years (aligned with fears of imaginary creatures). School years bring the emergence of fears related to supernatural phenomena, failure, criticism and bodily injury. Then, an age-related decrease has been reported for animal, supernatural phenomena and darkness related fears, while fears of social situations, bodily injury, illness and school become more prominent between the ages of 6 and 12 years. Regarding overall frequency and intensity, studies showed, that older children and adolescents report lower levels of fear and fewer fears than younger children, however these results were not completely consistent across studies. With respect to the duration of fears, longitudinal studies have reported that normative fears are relatively transitory. Overall, the level of specific fears seemed to decrease with age and maturation until adolescence, at which time a degree of stability begins to become apparent, especially for fears related to death and danger.

Concerning nighttime fears, in the study of Muris et al. [12] the frequency of frightening dreams decreased with age, while fears of intruders and frightening thoughts increased as children became older. Gordon et al. [1] found that children reported significantly more fears about personal security, frightening dreams, imaginary creatures and animals compared to adolescents. Based on their studies, the frequency and severity of children's (between the ages of 4-12 years) nighttime fears, were higher than adolescents' (between the ages of 12-16 years). Regarding pathologic nighttime fears, the symptoms of darkness phobia among children barely decreased in a 20 week long waiting period [26].

METHOD

Participants and Procedure

One hundred and forty individuals participated in our study, 57 university students (27 males, 29 females) from University of Pécs (Pécs, Hungary) and 83 secondary school students (49 males, 34 females) from a secondary school in Győr (Hungary). University students were 22.31 years of age on average ($SD = 2.18$), while secondary school students were 14.76 years of age on average ($SD = .51$). A sum of 76 males and 63 females participated in our study, one person didn't inform us about their gender.

After receiving their parents' informed consent, secondary school students filled out the questionnaire in school in groups of 25 to 30. University students received a copy of the questionnaire and returned it to the first author in a week. Participation for both groups was voluntary and anonymous. Participants didn't receive any reward in any form.

Measures

To measure fear of the dark we used a self-developed scale (Fear of the Dark Scale). The initial form consisted of 20 items capturing different situations where fear of the dark might have been relevant. Participants indicated their agreement with the statements on a 4-point Likert-scale. After the exploratory factor analysis, 14 items loaded significantly on a single factor, from which one further item was excluded due to conceptual reasons (see Results and Table 1 for details). 13 items constituted the final scale.

Table 1: Item loadings on Fear of the Dark Scale.

| Items | Factor loadings |
|---|-----------------|
| 1. I am afraid to walk on dark streets.* | .839 |
| 2. I can have a good sleep only in perfect darkness. | -.088 |
| 3. It is frightening if a fallout occurs at night.* | .283 |
| 4. I find darkness frightening in strange places.* | .723 |
| 5. When I'm sleeping together with someone, I am not afraid of the dark. | .094 |
| 6. I am not afraid to go to a dark cellar.* | -.639 |
| 7. For the night, I leave the lights on or let the light in from outside. | .062 |
| 8. In the night, I feel that darkness covers frightening things.* | .707 |
| 9. I find darkness frightening only if I'm alone. | .461 |
| 10. It is frightening when it's dark on a train for minutes when it passes through a tunnel.* | .555 |
| 11. There is nothing in the dark to be afraid of.* | -.830 |
| 12. It is very unpleasant for me, if my eyes are folded. | -.009 |
| 13. I am afraid in the dark.* | .737 |
| 14. If my friends walk me home at night, I am not afraid of the dark. | -.001 |
| 15. It is frightening for me, if I cannot see what is around.* | .411 |
| 16. I can walk home easily by night, even if it's dark.* | -.730 |
| 17. I am not afraid of the dark in my own room.* | -.192 |
| 18. I am afraid of total darkness, even by day.* | .202 |
| 19. I am afraid in the dark when with peers. | .058 |
| 20. I often have a bad sleep, because I am afraid in the dark.* | .253 |

Note:* items in the final version of Fear of the Dark Scale.

To capture the origins and content of fear of the dark and to reveal different coping efforts to decrease (or even stop) fear of the dark, we used multiple choice and open-ended written questions, based on the work of Gordon et al [1]. We asked our participants to answer the following questions: “How often are you afraid in the dark?” (1 = never, 5 = always); “What do you do in these situations in order to stop the fear?” (Open-ended question); “How much does it help you to become less anxious?” (1 = not at all, 5 = completely); “Is there something specific you are afraid in the dark? If yes, please specify!” (Yes with possibility to specify, no); “Do you have an idea about why you developed fear of the dark? If yes, please specify!” (Yes with possibility to specify, no).

To measure trait anxiety, we used the Hungarian adaptation [27] of the Spielberger Trait Anxiety Inventory [28]. This inventory measures trait anxiety through statements referring to general experience. Participants evaluated 20 items on a 4-point Likert scale indicating their agreement with them. The scale proved to be internally reliable in this study (Cronbach- $\alpha = .73$).

Statistical Analyses

We use IBM SPSS 22 for Windows to analyze our data. Besides computing descriptive statistics and frequencies, the following tests were used. To reveal the factor structure of Fear of the Dark Scale, we used Principal Components Analysis with Varimax rotation. To indicate the internal reliability of scales, we computed Cronbach- α values. To compare the frequency of fear of the dark between age groups and genders, we used a χ^2 -test. To compare the intensity of fear of the dark (as measured by Fear of the Dark Scale) between age groups and genders, we used an independent samples t-test. After coding answers regarding the origin of, content of, and coping with fear of the dark, frequencies were computed for each category for the total sample, and in age and gender split as well. We used one-sample χ^2 -tests (or Fisher's exact test where necessary) to determine whether individuals reporting a specific category differed with regard to age or gender from the distribution in the total sample. To test the relationship between intensity of fear of the dark and trait anxiety, we used Pearson's correlation. To test the relationship between intensity (as measured by the Fear of the Dark Scale) and frequency (as measured by a single item) of fear of the dark, we used Spearman's correlation.

RESULTS

In developing the Fear of the Dark Scale, the original aim was to tap different aspects of fear of the dark. Therefore, in generating items, we included items referring to dark-induced separation (e.g., "I find darkness frightening only when I am alone") and to limited perceptual abilities caused by darkness (e.g., "It is frightening if I cannot see what is around me"). First, 7 items were excluded because of their extremely low communality values. This resulted in the exclusion of all but one separation-related items. Thus, out of conceptual reasons, the remaining one was also removed despite its acceptable communality value. Principal Component Analysis was used to reveal the factor structure of the remaining 13 items (KMO = .89). Remaining items constituted one component that explained 41.93 percent of variance. A Cronbach- α value of .88 indicated that the scale's internal reliability was excellent. The scale showed strong correlation with the frequency of fear of the dark (as measured by a single item; Spearman's rho = .73; $p < .001$), which is indicative of the scale's concurrent validity. Intensity of fear of the dark (as measured by the Fear of the Dark Scale) was only weakly correlated with trait anxiety ($r = .21$, $p < 0.05$). This is indicative of the scale's discriminate validity, namely that the Fear of the Dark Scale is not a measure of non-specific trait anxiety.

Females (25.79 ± 6.90) reported significantly higher intensity of fear of the dark on the Fear of the Dark Scale ($t_{(136)} = -5.42$; $p < .001$) than males (19.96 ± 5.76). With regard to scores on the

Fear of the Dark Scale, no significant difference ($t_{(137)} = 1.58$; $p > .05$) emerged between university students (23.71 ± 6.71) and secondary school students (21.84 ± 6.98). Responses with regard to the frequency of fear of the dark (“How often are you afraid in the dark?”) are reported for the total sample, age-split and gender-split subsamples in Table 2. Seventy-one percent of participants reported to fear the dark to some amount. A significant association emerged between gender and frequency of fear of the dark ($\chi^2 (3) = 23.66$; $p < .001$). More males-than females-reported never being afraid in the dark, while more females-than males-reported to be often afraid. No significant association was found between age groups and frequency of fear of the dark ($\chi^2 (3) = 4.36$; $p > .05$).

Table 2: Frequency of fear of the dark in the total sample, in age-split and gender-split subsamples.

| <i>Frequency of fear of the dark</i> | Total N=138 | University students N=56 | Secondary school students N=82 % (N) | Females N=62 | Males N=75 |
|--------------------------------------|----------------|-----------------------------|---|-----------------|---------------|
| 1- never | 29% (40) | 21.4% (12) | 34.1% (28) | 9.7% (6) | 45.3% (34) |
| 2 | 52.9% (73) | 55.4% (31) | 51.2% (42) | 61.3% (38) | 45.3% (34) |
| 3 | 15.2% (21) | 17.5% (10) | 13.4% (11) | 24.2% (15) | 8% (6) |
| 4 | 2.9% (4) | 5.3% (3) | 1.2% (1) | 4.8% (3) | 1.3%(1) |
| 5 – always | 0 | 0 | 0 | 0 | 0 |

Open-ended questions were categorized post hoc. Frequencies were computed for each category. Because participants had the opportunity to name more than one answer for each question, frequencies might exceed the number of participants and 100 percent. The age- and gender-related distribution of the categories was compared to the sample-specific age and gender distribution. Frequencies of the content categories are reported in Table 3. Males -as compared to females-reported significantly more frequently that they were not afraid in the dark ($\chi^2 (1) = 12.50$; $p < .001$). No significant associations were found between the contents of fear of the dark and either age or gender.

Frequencies of preferred way of coping with fear of the dark are presented in Table 4. Participants rated their coping behaviors as helpful ($M = 4.42$, $SD = 0.84$). Age was associated with avoidance as coping with fear of the dark ($\chi^2 (3) = 6.16$; $p < .05$). Participants using avoidance to cope with fear of the dark were predominantly university students. Gender was associated with self-distraction ($\chi^2 (1) = 3.91$; $p < .05$), avoidance ($\chi^2 (1) = 5.55$; $p < .05$), and seeking social support ($\chi^2 (1) = 8.10$; $p < .005$). All these ways of coping with fear of the dark were more characteristic of females-as compared to males.

Table 3: Response categories with regard to the content of fear of the dark. Frequencies in the total sample and in age-split and gender-split subsamples.

| <i>Content of fear of the dark</i> | Total N=140 | University students N=57 | Secondary school students N=83 %(N) | Females N=63 | Males N=76 |
|------------------------------------|----------------|-----------------------------|--|------------------|------------------|
| Human threat | 15.7% (22) | 19.3% (11) | 13.3% (11) | 19.05% (12) | 11.8% (9) |
| Animal | 4.3% (6) | 5.3% (3) | 2.4% (2) | 6.3% (4) | 2.6% (2) |
| Imaginary creature | 4.3% (6) | 7% (4) | 2.4% (2) | 7.9% (5) | 1.3% (1) |
| Loss of control | 3.6% (5) | 7% (4) | 1.2% (1) | 6.3% (4) | 1.3% (1) |
| Environmental threat | 2.9% (4) | 3.5% (2) | 2.4% (2) | 4.8% (3) | 1.3% (1) |
| Nothing specific | 42.9% (60) | 38.6% (22) | 44.6% (37) | 47.6% (30) | 38.2% (29) |
| Not afraid | 28.6% (40) | 21.1% (12) | 33.7% (28) | 11.1% (7) | 43.4%(33) |

Note: Distributions significantly different from baseline age and gender distributions are highlighted in bold.

Table 4: Response categories with regard to the content of fear of the dark. Frequencies in the total sample and in age-split and gender-split subsamples.

| <i>Coping</i> | Total N=140 | University students N=57 | Secondary school students N=83 %(N) | Females N=63 | Males N=76 |
|------------------------|----------------|-----------------------------|--|-------------------|-------------------|
| Self-distraction | 35.7% (50) | 24.5% (14) | 37.3% (31) | 42.9% (27) | 23.6% (18) |
| Avoidance | 28.5% (40) | 42.1% (24) | 19.3% (16) | 39.7% (25) | 18.4% (14) |
| Seeking social support | 9.3% (13) | 12.3% (7) | 7.2% (6) | 17.4% (11) | 2.6% (2) |
| Trying to sleep | 2.1% (3) | 1.8% (1) | 3.6% (3) | 1.6% (1) | 3.9% (3) |
| Nothing | 9.3% (13) | 12.3% (7) | 7.2% (6) | 9.5% (6) | 9.2% (7) |
| Not afraid | 28.6% (40) | 21.1% (12) | 34.9% (29) | 11.1% (7) | 43.4%(33) |

Note: Distributions significantly different from baseline age and gender distributions are highlighted in bold.

Frequencies regarding the origin of fear of the dark are presented in Table 5. Age was significantly associated with being afraid of the dark because of negative information ($\chi^2 (1) = 7.26; p < .01$). University students-as compared to secondary school students-reported more frequently that they traced back their fear of the dark to negative information (e.g., news about disasters in the media). Gender was significantly associated with imagination as origin of fear of the dark ($p < .05$ according to Fisher’s exact test). Females-as compared to males-reported more frequently that their vivid imagination was the origin of their fear of the dark.

Table 5: Response categories with regard to the origin of fear of the dark. Frequencies in the total sample and in age-split and gender-split subsamples.

| <i>Origin of fear of the dark</i> | Total N=140 % (N) | University students N=57 | Secondary school students N=83 | Females N=63 | Males N=76 |
|-----------------------------------|----------------------|-----------------------------|-----------------------------------|-----------------|------------------|
| Negative information | 5.7% (8) | 12.3% (7) | 1.2% (1) | 9.5% (6) | 2.6% (2) |
| Archaic fear | 5.7% (8) | 8.8% (5) | 3.6% (3) | 7.9%(5) | 2.6% (2) |
| Fearful impression | 7.8% (11) | 12.3% (7) | 4.8% (4) | 12.7% (8) | 3.9% (3) |
| Imagination | 2.9% (4) | 5.3% (3) | 1.2% (1) | 6.3% (4) | 0 |
| Conditioning | 6.4% (9) | 5.3% (3) | 7.2% (6) | 7.9% (5) | 5.2% (4) |
| Don't know | 45.7% (64) | 40.4% (23) | 49.4% (41) | 47.6%(30) | 44.7% (34) |
| Not afraid | 28.6% (40) | 21.1% (12) | 33.7% (28) | 11.1%(7) | 43.4%(33) |

Note: Distributions significantly different from baseline age and gender distributions are highlighted in bold.

DISCUSSION

The present study investigated the characteristics of Hungarian adolescents' and young adults' fear of the dark, by multiple choice and open-ended questions and a self-developed Likert-scale. One hundred and forty individuals participated in our study, between the ages of 14 and 30 years. The 13-item Fear of the Dark Scale had good psychometric properties, showing excellent internal reliability and significant concurrent and discriminate validity.

Fear of the dark-particularly with lower frequency-was remarkably common among individuals, with anticipated gender differences. Overall, 71% of participants reported fear of the dark, with low (52.9%), moderate (15.2%) or high (2.9%) frequency. The frequency of adolescents' and young adults' fear of the dark didn't differ significantly, while females reported more frequent nighttime fears than males. These results are consistent with previous findings reporting high prevalence of moderate nighttime fears [1,12], gender-differences in darkness-related fears [1,6] and stability of fears beyond adolescence [6]. However, the assessed frequency rate is somewhat higher than anticipated, which can be due to either cultural diversity or assessment differences. Contrary to the study of Gordon et al [1], we applied a self-report questionnaire (vs. personal interview) and asked about fear of the dark (vs. nighttime fears).

Almost half of the participants (42.9%) didn't report a concrete content concerning their fear of the dark, while 28.5% did. This confirms our previous statement about the heterogeneous nature of fear of the dark, including both concrete fears and diffuse anxiety. Among the reported contents, *human threat* was the most common (15.7%). Its frequency was consistent with the findings of Gordon et al [1] and the danger-relevant aspect of darkness [7,8]. There were no gender or age differences regarding specified contents, though it was more common among adolescents to report that they do not fear of a concrete content than among young adults. It can be hypothesized that the reported content-related differences between children and adolescents

by Gordon et al [1] might be mainly due to some aspects of cognitive development which has less influence on the contents of fears after the age of 14. However, the age difference regarding non specified answers may be associated to the emerging ability of introspection.

Due to the exploratory nature of our study, no prior origin categories were offered for respondents. Instead of that, we asked them to freely report the presumed origins of their nighttime fears and categorized the answers post hoc. As a result, a vast majority of participants didn't indicate an origin, with less adolescence explaining their fears than young adults. The spontaneously reported origins (negative information, archaic fear, fearful impression, imagination, conditioning) were partially consistent with previous results [12,19]. University students – as compared to secondary school students-reported more frequently that they traced back their fear of the dark to negative information and women attributed their fears to vivid imagination more frequently than man.

In accordance with the results of Gordon et al [1] almost all participants who have fear of the dark, reported some sort of coping behaviors and rated their coping strategies as helpful. Overall, self-distraction (35.7%) and avoidance (28.5%) were reported to be the two most common coping behaviors. Thus participants preferred the modification of the dark situation and distracting their attention when regulating their nighttime fears-similarly to the findings of Gordon et al [1]. Young adults reported avoidance more frequently than adolescents, which can be associated with their relatively higher independence. Women reported avoidance, self-distraction, and seeking social support more frequently than men, which may be related to the higher frequency and severity of their fears.

In conclusion, the present study showed that fear of the dark is equally and remarkably common among adolescents and young adults. As its limitations, small sample size and cross-sectional design should be mentioned. Further research, including longitudinal studies, should enable the investigation of the stability of nighttime fears' characteristics as well as its clinical significance for psychological well-being and mental health issues.

References

1. Gordon J, King N, Gullone E, Muris P, Ollendick TH. Nighttime fears of children and adolescents: Frequency, content, severity, harm expectations, disclosure, and coping behaviors. *Behavior Research and Therapy*. 2007; 45: 2464-2472.
2. Prokop P. Universal Human Fears. In TK Shackelford, VAWeekes-Shackelford *Encyclopedia of Evolutionary Psychological Science* Cham: Springer International Publishing. 2016.
3. Gordon J, King N, Gullone E, Muris P, Ollendick TH. Treatment of children's nighttime fears: The need for a modern randomized controlled trial. *Clinical Psychology Review*. 2007; 27: 98-113.
4. Kushnir J, SadehA. Sleep of preschool children with night-time fears. *Sleep Medicine*. 2011; 12: 870-874.
5. Carney C, Moss T, Atwood M, Crowe B, Andrews A. Are Poor Sleepers Afraid of the Dark? A Preliminary Investigation. *Journal of Experimental Psychopathology*. 2014; 5: 2-13.
6. Gullone E. The development of normal fear: a century of research. *Clinical Psychology Review*. 2000; 20: 429-451.
7. Ranschburg J. Félelem, harag, agresszió. [Fear, anger, aggression]. Budapest: Tankönyvkiadó Vállalat. 1973.

8. Magnusson D, Oláh A. Situation-outcome contingencies: a study of anxiety provoking situations in a developmental perspective. In A Oláh (Ed), *Anxiety, coping and flow*. 2005.
9. Arrindell WA, Pickersgill MJ, Merckelbach H, Ardon AM, Cornet FC. Phobic dimensions: III. Factor analytic approaches to the study of common phobic fears; An updated review of findings obtained with adult subjects. *Advances in Behavior Research and Therapy*. 1991; 13: 73-130.
10. Burnham JJ, Gullone E. The Fear Survey Schedule for Children-II: a psycho metric investigation with American data. *Behavior Research and Therapy*. 1997; 35: 165-173.
11. Orgilés M, Espada JP, Méndez X. Assessment instruments of darkness phobia in children and adolescents: a descriptive review. *International Journal of Clinical and Health Psychology*. 2008; 8: 315-333.
12. Muris P, Merckelbach H, Ollendick TH, King NJ, Bogie N. Children's nighttime fears: parent-child ratings of frequency, content, origins, coping behaviors and severity. *Behavior Research and Therapy*. 2001; 39: 13-28.
13. Mooney KC. Children's nighttime fears: Ratings of content and coping behaviors. *Cognitive Therapy and Research*. 2001; 9: 309-319.
14. Grillon C, Pellowski M, Merikangas KR, Davis M. Darkness facilitates the acoustics startle reflex in humans. *Biological Psychiatry*. 1997; 42: 453-460.
15. Li Y, Ma W, Kang Q, Qiao L, Tang D, et al. Night or darkness, which intensifies the feeling of fear? *International Journal of Psychophysiology: Official Journal of the International Organization of Psychophysiology*. 2015; 97: 46-57.
16. Fredrikson M, Annas P, Fischer H, Wik G. Gender and age differences in the prevalence of specific fears and phobias. *Behaviour Research and Therapy*. 1996; 34: 33-39.
17. Volková A, Dušková P. Specific Fears in Emerging Adulthood among Czech Undergraduate Students. *Procedia - Social and Behavioral Sciences*. 2015; 171: 487-493.
18. Rachman S. The conditioning theory of fear-acquisition: a critical examination. *Behavior Research and Therapy*. 1977; 15: 375-387.
19. Ollendick TH, King NJ. Origins of childhood fears: an evaluation of Rachman's theory of fear acquisition. *Behaviour Research and Therapy*. 1991; 29: 117-123.
20. Gross JJ. The emerging field of emotion regulation: An integrative review. *Review of General Psychology*. 1998; 2: 271-299.
21. Muris P. *Normal and abnormal fear and anxiety in children and adolescents*. Amsterdam; Boston: Elsevier. 2007.
22. Jenni OG, Fuhrer HZ, Iglowstein I, Molinari L, Largo RH. A Longitudinal Study of Bed Sharing and Sleep Problems Among Swiss Children in the First 10 Years of Life. *Pediatrics*. 2005. 115: 233-240.
23. Kushnir J, Gothelf D, Sadeh A. Nighttime fears of preschool children: A potential disposition marker for anxiety? *Comprehensive Psychiatry*. 2014; 55: 336-341.
24. Zisenwine T, Kaplan M, Kushni, J, Sadeh A. Nighttime fears and fantasy-reality differentiation in preschool children. *Child Psychiatry and Human Development*. 2013; 44: 186-199.
25. Kopcsó K, Láng A. Korai maladaptív sémák és kötődési minőség összefüggései a sötétől való félelemmel. [Relationship between nearly maladaptive schemas, attachment quality and fear of darkness]. *Orvosi Hetilap*. 2014; 155: 1967-1972.
26. Cornwall E, Spence S, Schotte D. The Effectiveness of Emotive Imagery in the Treatment of Darkness Phobia in Children. *Behaviour Change*. 1996; 13: 223-229.
27. Sipos K, Sipos M. The development and validation of the Hungarian Form of the State-Trait Anxiety Inventory. *Series in Clinical & Community Psychology: Stress & Anxiety*. 1983; 2: 27-39.
28. Spielberger CD, Gorsuch RL, Lushene RE. *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologist Press. 1970.