The content of recurrent dreams in young adolescents

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Abstract

Studies on children's recurrent dreams have been largely anecdotal and based on adults' recollections of dreams experienced during childhood. We collected 102 reports of recurrent dreams from a sample of young adolescents aged between 11 and 15 years and scored the narratives using a range of content measures, including in relation to the threat simulation theory (TST) of dreaming. The most frequently reported themes involved confrontations with monsters or animals, followed by physical aggressions, falling and being chased. Recurrent dreams were more likely to include negative content elements than positive elements. Only half of the recurrent dreams contained threatening elements and their analysis provided mixed support for the TST. Differences between the content of recurrent dreams reported by young adolescent versus adults are discussed as are possible sex effects and key issues that remain to be addressed by future research.

Keywords

Recurrent dreams; Dream content; Dream recall; Parasomnia; Sex differences

1. Introduction

Recurrent dreams are defined as a class of dreams that reoccur over time while maintaining not only the same theme, but the same content (Brown & Donderi, 1986; Heaton, Hill, Hess, Leotta, & Hoffman, 1998; Zadra, Desjardins, & Marcotte, 2006). Many kinds of contemporary dream theories converge in their view that recurrent dreams are related to unresolved difficulties in the dreamer's life (e.g., Bonime, 1962; Domhoff, 1993; Fantz, 1987; Fosshage & Loew, 1987) and researchers have shown that the occurrence of recurrent dreams during adulthood is associated with stressors and lowered levels of psychological well-being (Brown & Donderi, 1986; Cartwright, Lloyd, Knight, & Trenholme, 1984;

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Robbins & Houshi, 1983; Zadra, O'Brien, & Donderi, 1998). Similarly, one study of 11-year-old children found that the presence of recurrent dreams was associated with emotional difficulties in boys although not necessarily in girls (Gauchat, Zadra, Tremblay, Zelazo, & Seguin, 2009). Furthermore, there is evidence to suggest that the maintained cessation of recurrent dreams in adults is accompanied by a positive rebound in the participant's level of psychological well-being (Brown & Donderi, 1986).

Although recurrent dreams are relatively common, with 60% to 75% adults reporting having had one at some point in their lives (Brown & Donderi, 1986; Cartwright, 1979; Cartwright & Romanek, 1978; Robbins & Houshi, 1983; Robbins & Tanck, 1992; Webb & Fagan, 1993; Zadra, 1996), relatively little is known about their actual contents, especially in children and young adolescents.

A majority of recurrent dreams experienced during adulthood are described as being negatively toned (Cartwright, 1979; Robbins & Tanck, 1992; Zadra, 1996; Zadra et al., 2006) and questionnaire studies of adults' retrospective accounts of recurrent dreams experienced during childhood show that almost 90% are described as being unpleasant or of a threatening nature (Cartwright, 1979; Robbins & Tanck, 1992; Zadra, 1996). In addition, two studies (Cartwright, 1979; Robbins & Tanck, 1992) of retrospective accounts of childhood recurrent dreams showed that in approximately 70% of cases, the dreams' unpleasant content was attributable to agents external to the dreamer, such as monsters and witches. Both studies also found that as people grow older, fewer recurrent dreams are reported as having threatening contents.

Further comparisons of recurrent dreams reported by adults as having occurred either during one's childhood or adulthood showed that although the themes related to "being chased" were common in adult as well as childhood recurrent dreams, the threatening agents in the former were usually human characters, whereas monsters, wild animals, or ghoulish creatures predominated in the latter (Robbins & Tanck, 1992; Zadra, 1996). In addition, non-threatening contents (e.g., descriptions of places, mundane activities, or acquaintances without any immediate danger to the dreamer) characterized up to 40% of adult recurrent dreams while these kinds of dreams occurred in only 10–15% of childhood recurrent dreams.

Finally, adult recurrent dreams have also been examined in relation to Revonsuo's (2000) evolutionary theory of dreams stipulating that the biological function of dreaming is to simulate threatening events and to rehearse threat avoidance behaviors. The result of this work (Zadra et al., 2006) provided partial support for the threat simulation theory (TST) of dreams. Specifically, while a majority (66%) of the 212 recurrent dreams studied contained one or more threats aimed at the dreamer, less than 15% of the recurrent dreams depicted realistic and probable situations critical for one's physical survival and the dreamer rarely succeeded in fleeing the threat despite important and appropriate efforts.

Although the aforementioned findings on recurrent dreams are of empirical and theoretical interest, adults' retrospective accounts of dreams experienced during childhood and early adolescence can be biased or distorted by selective or faulty recall. To our knowledge, no

study has investigated the content of recurrent dreams by questioning children directly. The goal of the present study was thus to obtain a more detailed and accurate account of recurrent dreams as reported by young adolescents between the ages of 11 and 15. This age range is of particular interest as it represents a time period during which dream recall tends to improve in quality and quantity and resemble that of adults (Foulkes, 1982, 1999; Siegel, 2005; Sándor, Szakadáta, & Bódizs, 2014). Our first aim was to document the most frequently encountered themes in the recurrent dreams of young adolescents and to quantify the dream narratives using a range of scales from the Hall and Van de Castle (1966) coding system. Given the oft-described negative nature of most recurrent dreams, including those reported by adults as having occurred during childhood, a secondary aim was to investigate the extent to which our sample of recurrent dreams depicted realistic threats and efficient avoidance responses as posited by the TST.

2. Method

2.1. Participants

Participants were obtained from a longitudinal study focusing on social, psychological and cognitive development of children in the province of Québec, Canada and came from all socioeconomic backgrounds of the urban areas of Montreal and Québec City. At the study's outset, 1000 families were randomly selected from the Québec 1996–1997 birth register (details on the epidemiological sampling plan can be found in Santé Québec, Jetté, Desrosiers, and Tremblay (1997). The initial sample of participants was comprised of 572 children who were seen annually, the majority since the age of 5 months. Due to annual attrition and year-to-year variations in participation rates, 173 children (87 girls, 86 boys) participated in the study at age 11 while variations in the number of participants available for scheduled periods of yearly data collection resulted in 216 young adolescents (112 girls, 104 boys) being available at age 12, 148 (75 girls, 73 boys) at age 13, 194 (100 girls, 94 boys) at age 14, and 208 (108 girls, 100 boys) at 15 years of age.

2.2. Questionnaires and measures

2.2.1. Assessment of recurrent dreams—Participants completed a sleep and dream-related questionnaire that contained a question on whether or not they had ever experienced a recurrent dream (defined as a dream that when recalled, gives you the impression that you had it before) in the past 12 months. If so, the child was asked to provide a detailed description of the dream, including the surroundings in which the dream took place, the people or things involved, the ending (if there was one), and any other details they thought were important.

2.2.2. Thematic content—Categories for the classification of the thematic content of recurrent dreams was based on the recurrent dream themes previously reported in the clinical empirical literature as well as pilot testing. Whenever possible, conceptually related categories used in previous studies were grouped to avoid overlap and only categories capturing more than 2% of the narratives' content were retained. Table 1 presents the final 12 thematic categories used to classify the recurrent dream narratives. When dream reports contained more than one theme, raters had the option of identifying a secondary theme if its

occurrence was not the direct consequence of the main theme (e.g., a character becomes ill only after being physically attacked).

2.2.3. Dream content—Since a majority of the dream reports did not make explicit mention of specific emotions (e.g., fear, anger, sadness), the overall emotional tone of each recurrent dream narrative was scored as being primarily positive, negative, neutral, or a combination of positive and negative emotions instead of as a function of specific subtypes of emotions.

The following variables from the Hall and Van de Castle (1966) coding system were also scored. *Good fortune and misfortune*. Good fortune is scored when something beneficial happens to a character that is completely adventitious while misfortunes refer to any mishap, adversity, harm, danger, or threat that happens to a character as a result of circumstances over which they have no control. *Success and failure*. These variables measure the successful handling of some difficulty encountered by a character or an incapacity of the character to achieve a desired goal because of personal limitations and inadequacies. *Friendly and aggressive interactions*. This scale measures the frequency of emotionally-toned social interactions.

2.2.4. Threatening events—The analysis of threatening events was carried out in two steps using the DreamThreat rating scale (Revonsuo & Valli, 2000), an instrument used in other investigations of the Threat Simulation Theory of dreams, including in adult recurrent dreams (Zadra et al., 2006). The first step consisted of identifying the presence of threats in the dream reports. To be judged as being threatening, an event was scored according to the same criteria used by Revonsuo and Valli (2000). Specifically, objective threats were comprised of any event in a dream report where, if the event was real, the physical or mental well-being of any person would be endangered or where any person's physical resources or territory would be jeopardized (i.e., any event that would be considered threatening if it should really occur in the waking life). Subjective threats included any event in a dream report that was interpreted or emotionally experienced by the dreamer to be somehow dangerous as well as those in which the participant reported the feeling of danger or threat even if no objective threat (as defined above) was reported to accompany this feeling. The second step was to conduct the actual content analysis using the following eight scales (for details see Revonsuo & Valli, 2000; Zadra et al., 2006): (I) *Nature of the threatening event*, (II) *Target of the threat*, (III) *Severity of the threatening event for the self*, (IV) *Participation of the self to the threatening event*, (V) *Reaction of the self to the threatening event*, (VI) *Consequences of the threatening event to self*, (VII) *Resolution of the threatening event*, and (VIII) *Source of the threatening event*.

It should be noted that depending on the exact context, dream reports scored as containing one or more of the negative themes presented Table 1 (e.g., contact with strangers, death in the family, others) do not always contain a threatening event as defined above.

Two judges first familiarized themselves with all dream content scales by scoring an unrelated series of dream reports and then discussed problematic cases among themselves and with the senior investigator (AZ). After achieving a good level of inter-rater agreement

on the unrelated sample of dream reports, the two judges independently scored all of the children's recurrent dream reports collected in the present study. Results showed a 95% agreement rate for the identification of dream reports containing a threatening event as well as a good to excellent agreement across all dream content categories with statistical kappa values ranging from .692 to 1.00. All instances of disagreements between judges were resolved by discussion.

2.3. Procedure

An invitation to participate in the study along with a consent form was first mailed to the parents or person responsible for the child. After consenting to the study, a research coordinator made an appointment with the family. A research assistant then met individually with each one of the children, provided them with the research questionnaires and remained on hand to answer any questions until the research instruments had been completed. Children were told that their answers were confidential and that they could ask for clarifications whenever needed. All reports of recurrent dreams were provided in writing by the children themselves and later transcribed in a computerized text document for further analyses. The project was approved by the Research Ethics Committee of the CHU Ste-Justine Research Center and conforms to the guidelines of the American Psychological Association (2002).

3. Results

Over one third of participants (35.3%) reported having had a recurrent dream over the past year at age 11, while the proportion decreased to 20.9% at age 12, 12.2% at age 13, and 18.3% at 14, and 15.4% at 15. The only significant sex difference in the proportion of boys and girls reporting a recurrent dream occurred at age 13, with significantly more boys (17.3%) than girls (6.8%) reporting having had a recurrent dream ($\chi^2 = 3.81$, $p < .05$). Approximately 54% of the 191 participants reporting having a recurrent dream over the past year provided a written description of their recurrent dream that was legible and contained sufficient details for the proposed analyses. The percentage of participants within each age group reporting having a recurrent dream that also provided a written account of the dream experience was 59% (36/61) at age 11, 62.2% (28/45) at age 12, 61.1% (11/18) at age 13, 37.1% (13/35) at age 14, and 43.8% (14/32) at age 15. A total of 102 recurrent dream reports were thus collected, 71 (69.6%) from girls and 31 (30.4%) from boys, a statistically significant difference ($\chi^2 = 13.5$, $p < .001$). The mean number of words per dream narrative was 50.5 ± 24.2 words with no significant differences in report length as a function of sex. Almost a third (35.3%) of the 102 recurrent dreams reports collected were reported at age 11, while 27.4% were collected at age 12, 10.7% at age 13, 12.7% at age 14, and 13.7% at age 15.

In terms of thematic content, 57.9% of the dream reports contained a single theme and 42.1% contained two or more. The distribution of thematic categories across the recurrent dreams reported by boys and girls are presented in Table 2. The vast majority (91%) of recurrent dreams contained one or more negative themes while only 9% contained only positive ones. Themes involving confrontations with monsters, animals or zombies were the

most frequently reported category followed by physical aggressions, falling, and being chased. Themes involving car accidents occurred in 6.9% of the recurrent dreams reported by boys as well as girls while the theme of being chased but not physically attacked was reported by 6.5% of the boys and 11.3% of the girls. All other themes appeared in fewer than 6% of the narratives. It should be noted that with the exception of one positive recurrent dream featuring the theme "contact with strangers," the remaining positive themes came from the "Others" category and included examples such as finding oneself in a bountiful environment, being at an amusement park, being at a party with friends, dancing, and playing a sport. Finer analyses of thematic contents as a function of age and sex were not further explored since these breakdowns resulted in too many categories having zero frequency counts and with over two thirds of all data cells containing *n* values 5. Moreover, in addition to not being amenable to statistical analyses, the data showed no discernable patterns in observed frequency distributions.

The proportion of recurrent dreams from boys and girls described as having a positive or negative emotional valence as well as the results from the Hall and Van de Castle (1966) content variables are presented in Table 3. Results from Zadra's (1996) study of 110 adult recurrent scored on the same content variables are included for comparative purposes. As can be seen in Table 3, recurrent dreams from young adolescents are similar to adult recurrent dreams in that they are more likely to contain negative content elements (e.g., negative emotions, misfortunes, aggressions) than positive elements (e.g., positive emotions, good fortunes, friendliness). In fact, good fortunes were entirely absent from the present data set while instances of success and positive emotions were noted in fewer than 10% of all narratives. Recurrent dreams described as being affectively neutral were about five times more common in young adolescents than in adults while the categories of "misfortunes" and "failures" were considerably more prevalent in the sample of adult recurrent dreams. Although a comparable proportion of recurrent dreams from boys and girls were found to contain aggressive social interactions, those reported by girls were significantly more likely to contain one or more friendly interactions. There were no other statistically significant sex-related differences in the content of the dream narratives.

Sixty-six of the 102 recurrent dreams (47%) were identified as containing a threatening event. No dream report was scored as containing more than one threat. Results obtained on the 'Nature of the threatening event' scale as well as the other content variables from the DreamThreat scales are presented in Table 4. Findings from Zadra et al.'s (2006) sample of adult recurrent dreams are included for comparative purposes. Aggressions and violence (e.g., threat of violence, physical aggression by a human, animal or other creature) were the most frequent type of threat found in the current sample of recurrent dreams and characterized a considerably greater proportion of all threats (45.5%) than previously found for adult recurrent dreams (19%). This was followed by threats involving accidents and misfortunes (e.g., uncontrollable events and dangerous activities described as having caused or having a high risk of physical injury) and escapes and pursuits. While failures (e.g., failing or running the risk of failing in achieving an important goal or carrying out an important task) and physical anomalies (e.g., the subject or another dream character notices that their body does not behave as it should; e.g., losing control over body movements)

accounted for approximately 25% of threats in adult recurrent dreams, these two categories of threat noticeably absent from the current sample.

As was true of adult recurrent dreams, and in accordance with the TST, the majority of the threats tended to be dangerous and aimed at the dreamer and then when facing a threat, the dreamer tended to take defensive or evasive actions that were possible and reasonable in almost half of the recurrent dreams with threats. Most of the time, however, the dream ended either with the threat being fulfilled (29.4%) or by the participant waking up (42.4%). Furthermore, over 40% of the threats encountered belonged to the realm of fantasy or fiction (e.g., fairy tales, comics, science fiction) and only one in five of all identified threats were realistic and likely to occur in waking life.

4. Discussion

To our knowledge, this is the first study to have investigated the content of recurrent dreams directly reported by children as opposed to querying adults retrospectively about recurrent dreams they may recall having had during childhood. The prevalence of recurrent dreams in our sample ranged between 35% at age 11 and 15.4% at age 15. These values are lower than the results obtained by Robbins and Tanck (1992) who reported that a little over half of college students recalled having had a recurrent dream during childhood. Reasons for this discrepancy remain unclear.

Themes in which the dreamer is in danger (e.g., threatened with injury, death, or chased) have been found to characterize approximately 40% of recurrent dreams from adulthood (Cartwright, 1979; Cartwright & Romanek, 1978; Robbins & Houshi, 1983; Zadra, 1996; Zadra et al., 2006) and between 65% and 90% of recurrent dreams recalled by adults from their childhood (Robbins & Tanck, 1992; Zadra, 1996). Using the same broad content category (i.e., tabulating reports containing one or more of the categories 'confronting monsters', 'physical aggression', 'being chased' and 'falling'), almost 60% of the present sample of recurrent dreams could be classified as containing themes in which the dreamer was in danger. Although the dreamers' precise behavioral reactions to these dangers were not formally investigated, our reading of these recurrent dreams indicates that in a majority of these cases, the dreamer was often fleeing, hiding, or helplessly watching events unfold.

Turning to more specific content categories, the most frequently reported theme in the children's recurrent dreams involved confrontations with various kinds of monsters, animals and zombies. This finding is consistent with Robbins and Tanck's (1992) observation that threatening agents in childhood recurrent dreams often involve folkloric or fictional characters such as monsters and witches. The second most frequently reported theme involved physical aggressions in which the dreamer's physical integrity was directly threatened by another dream character. Although the extent to which our young adolescents considered these recurrent dreams to be nightmares is not known, the fact that this content category is one of the most frequently reported themes in people's idiopathic nightmares (Robert & Zadra, 2014) speaks to the potential intensity of such negative dream imagery. That approximately 8% of the recurrent dreams reported by young adolescents involved encounters with strangers (but without the ensuing action being related to another thematic

category) is a novel and interesting observation that may partially reflect their growing exposure to and awareness of strangers in their everyday lives as well as a broadening of social networks from early childhood into adolescence. The finding that the themes 'death in the family', 'being late or lost', and 'being stuck or trapped' were rarely reported in children's recurrent dreams parallels their equally low occurrence (2–6%) in adult recurrent dreams (Zadra, 1996). In addition, while 42% of recurrent dreams reported by adults as having occurred during childhood involve the theme 'being chased,' this theme characterized less than 10% of the present sample of recurrent dreams. This suggests that recurrent dreams of being chased experienced during childhood may be particularly salient and thus more likely to still be recalled in adulthood than some other recurrent themes.

Several thematic content categories reported in studies of adult recurrent dreams were noticeably absent from the recurrent dreams collected from our 11 to 15-year-old children. These included themes involving problems with house maintenance (e.g., the dreamer becomes overwhelmed by an inordinate number of household chores or discovers that the house is falling apart or in ruins), losing one's teeth, being unable to find a private toilet, and discovering or exploring new rooms in a house.

The idea that recurrent dreams reflect particularly salient, enduring, or otherwise stressful difficulties in the dreamer's life has been suggested by many dream theorists (e.g., Bonime, 1962; Domhoff, 1993; Fantz, 1987; Fosshage & Loew, 1987) and is supported by various empirical data (e.g., Brown & Donderi, 1986; Gauchat et al., 2009; Robbins & Houshi, 1983; Zadra, O'Brien, & Donderi, 1998). Although the same dream themes or symbols may represent different things to different people, the present findings suggest the presence age-related similarities as well as differences in how conceptual metaphors (e.g., Lakoff, 1993) may be used in recurrent dreams to structure oneiric representations of emotional stressors and preoccupations. Much work remains to be done, however, before we may understand the mechanisms by which particular dream themes come to represent embodied simulations and enactments of the dreamer's personal conceptions, concerns or difficulties (e.g., Domhoff, 2010, 2011).

Over 60% of the recurrent dreams reported by our participants were described as containing negative emotions, a percentage lower than the 80–90% found to characterize childhood recurrent dreams recalled by adults (Cartwright, 1979; Robbins & Tanck, 1992; Zadra, 1996). Moreover, almost a third of recurrent dreams collected in the present study were described without emotions being present or as affectively neutral (e.g., dreams involving mundane events, descriptions of places or settings, or of acquaintances). Taken together, these findings suggest that as people grow older, they are more likely to remember emotionally salient recurrent dreams from their childhood than relatively unexciting ones. That approximately 9% of the current sample of recurrent dreams contained only positive emotions is line with the 6–10% figure previously found in studies of adults reporting recurrent dreams from either adulthood or childhood (Cartwright, 1979; Zadra, 1996).

Results from the Hall and Van de Castle (1966) scales highlighted the predominance of negative content categories (i.e., misfortune, failure and aggressive social interactions) over their positive equivalents (i.e., good fortune, success and friendly social interactions). One

striking result was that while friendly interactions were present in almost a third of girls' recurrent dreams, they occurred in fewer than 3% of the boys' recurrent dreams. Although we are not aware of any data pertaining to children's dream content that could help explain this finding, even if this difference is present, albeit to a lower extent, in the everyday dreams of normal children (Crugnola, Maggiolini, Caprin, De Martini, & Giudici, 2008), a parallel may be drawn with a recent study (Robert & Zadra, 2014) showing that when compared to men's bad dreams, women's bad dreams are more frequently centered around interpersonal conflicts and are twice as likely to contain friendly interactions. One may speculate that by ages 11–15 years, recurrent dreams experienced by young female adolescents may already be incorporating ongoing interpersonal concerns to a greater degree than do recurrent dreams experienced by boys of the same age, including a tendency to depict positive social interactions even in the context of potentially negatively-toned dreams. In fact, one recent review article suggests that it is between 9 and 14 years of age that children's dreams begin to resemble those of adults in terms of length, complexity and links with one's personality (Sándor et al., 2014).

When compared to percentage values obtained from adults recalling recurrent dreams having occurred prior to age 12 (Zadra, 1996), the present sample of recurrent dreams contained fewer misfortunes (26.5% vs 43%) but more failures (7.8% vs 2%). Since misfortunes in dreams occur as a result of circumstances over which they have no control whereas failures result from a character's "personal limitations and inadequacies," these findings suggests that recurrent dreams from 11 to 15 year-old children are more likely to reflect issues of personal competence than do recurrent dreams from early childhood. Given that failures characterize an even greater percentage (approximately 17%) of adult recurrent dreams (Zadra, 1996), this hypothesis is consistent with Cartwright's (1979) suggestion that "as the subject grows, the responsibility in the repetitive dreams with an unpleasant tone is less often attributed to things beyond her control" (p. 135).

Our investigation of the TST revealed that 47% of the recurrent dreams in the current study contained a threatening event as operationalized in the Dream Threat rating scale. This is lower that the figure of 66% found in adult recurrent dreams (Zadra et al., 2006) but almost identical to the percentage found in the everyday dreams of nontraumatized Palestinian children aged between 9 and 17 years (Valli, Revonsuo, Pälkäs, & Punamäki, 2006).

The analysis of the nature of the threatening events in recurrent dreams yielded a number of interesting findings. Consistent with the TST, aggressions and violence represented the most frequently encountered threat, accounting for over 45% of all cases. By comparison, this content category characterized only 19% of threats in adult recurrent dreams (see Table 4). A closely related type of threat, namely 'escapes and pursuits,' was also common accounting for over a fifth of all threats. Taken together, these two categories show that threats involving aggressive components characterize almost 70% of all threats reported in recurrent dreams of young adolescents, a figure that is considerably higher than what has been reported in adult recurrent dreams (45%) as well as in the everyday dreams of adult students (41%) and of healthy children (53%) (Valli & Revonsuo, 2009). In line with the TST, these findings suggest that the simulation of aggressive threats is a salient feature of recurrent dreams reported by young adolescents.

The category 'accidents and misfortunes' was the second most frequently reported type of threating event (29%) in the present study, a figure that is greater than what was found in adult recurrent dreams (20%) as well as in children's everyday dreams (9–16% of threats) (Valli & Revonsuo, 2009). This high occurrence of dangerous and uncontrollable events adds to the global characterization of children's recurrent dreams being primarily negative in nature and often due to events outside the dreamer's purview.

Although DTS-defined failures (e.g., failing or running the risk of failing in achieving an important goal or carrying out an important task) characterize 7% of threats in adult recurrent dreams (Zadra et al., 2006) and 8–18% of threats in children's dreams (Valli & Revonsuo, 2009), they were absent from the current sample of recurrent dreams. This finding adds to the idea that on negative elements in children's recurrent dreams tend to result from events beyond the dreamer's control. Threats related to physical anomalies (e.g., concrete walls shedding tears, losing one's teeth) were also absent from the current sample of recurrent dreams while characterizing 17% of threats in adult recurrent dreams but the significance of this finding remains unclear.

With regards to the other DTS content scales presented in Table 4, adolescent and adult recurrent dreams presented similar overall patterns. Specifically, and consistent with the TST, the threats in the recurrent dreams reported by our young adolescents tended to directly involve the dreamer and to be particularly dangerous but only elicited a response from the dreamer that was possible and reasonable in about half of the cases. Furthermore, and as was also true of adult recurrent dreams, over a third of the threats in the current sample of recurrent dreams ended up being fulfilled, approximately 40% ended with the dreamer waking up and only a minority of threats was realistic and likely to occur in waking life.

Thus, like most other studies of the TST in both children and adults (see Valli & Revonsuo, 2009, for a review) the present findings indicate that if dreaming serves to simulate threatening events in order to improve the dreamer's capability to perceive and avoid diverse threats in the waking state, then the perceptual component may be present, but successful and ecologically adaptive avoidance behaviors are absent in many cases.

This study is not without inherent limitations. First, the number of recurrent dreams collected was relatively small, especially with respect to boys. This limits the generalizability of the results as well as the robustness of any sex-related findings. Second, some participants who reported having a recurrent dream did not provide a written narrative of the dream. How these unreported dreams may have differed from the narratives that were obtained remains an open question. Third, some dream reports contained too few details or were too vague to allow thorough content analysis as is usually performed with dream reports from daily dream journals. Fourth, even though we did not explicitly ask our participants to indicate if the recurrent dream was nightmare, the fact that about 40% of the recurrent dreams reported ended with the participant waking up suggests that an important proportion of the recurrent dreams were also nightmares. Finally, although dream reports were collected from young adolescents aged 11–15, the small sample size precluded us from examining possible changes or trends as a function of age as well as gender.

5. Conclusions

This study is the first to present results on the content of recurrent dreams collected directly from children and young adolescents. In addition to providing a global portrait of the themes and content characteristics of their recurrent dreams, our findings reveal notable differences between the recurrent dreams of 11–15 year-olds and those of older adults. For instance, whereas threatening agents in adult recurrent dreams are typically human characters, children's recurrent dreams are much more likely to contain monsters, wild animals, and other types of ghoulish creatures. There is also growing evidence to suggest that as people age and mature, their recurrent dreams are more likely to reflect issues of personal competence. To what extent the content of recurrent dreams may reflect personal doubts, interpersonal issues, or be a byproduct of direct experiences with books, stories, movies, or television remains to be clarified. Since recurrent dreams that appear in childhood can persist into adulthood, longitudinal investigations of how the content of such dreams may become altered over time (e.g., transitions from dreams of physical threats to dreams of personal doubt or incompetence) could shed light on the issue of how dream symbols or metaphors believed to depict problems or concerns in the dreamer's life (e.g., Lakoff, 1993) also change with age. Our findings also provide some support for the TST. However, it should be noted that over half of the recurrent dreams did not contain a threat as defined in the DTS and among the recurrent dreams that did, few presented realistic life-threatening events and the dreamer rarely succeeded in escaping the threat even when reacting to the threat. Finally, much work remains to be done to elucidate why people in different age groups experience recurrent dreams, what psychosocial factors may help explain their occurrence, and to what extent different classes of recurrent dreams (e.g., negatively-toned versus positively-toned contents) show differential relations to waking measures of stress, mood, and psychological well-being.

Acknowledgments

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Table 1

Classification of thematic categories in children's recurrent dreams.

Theme	Description
Being chased	Dreamer is chased by another character but not physically attacked
Physical aggression	Threat or direct attack to one's physical integrity by another character, including sexual aggression, murder, being kidnapped or sequestered
Falling	Feeling of falling in mid-air, falling off cliffs or from other elevated objects
Car accidents	The dreamer or another character is involved in a car accident
Contact with strangers	Dreamer encounters one or more unknown characters with ensuing action unrelated to another thematic category
Death of the dreamer	The dreamer dies during the course of the dream
Death in the family	Witnessing or learning about the death of a family member
Confrontation with monsters, animals or zombies	The dreamer is confronted by monsters, animals, zombies or similar creatures
The dreamer is injured or ill	The dreamer is suffering from physical illness, disease, or injuries
Stranger entering the dreamer's house	A stranger is breaking into the dreamer's house or trying to enter it
Being stuck or trapped	The dreamer is either stuck or trapped
Others	Includes idiosyncratic as well as infrequent themes such as being in an insalubrious environment, flying out of control, and facing natural forces

Table 2

Thematic content of boys' and girls' recurrent dream themes.

Theme	Boys N = 31 (%)	Girls N = 71 (%)	Total N = 102 (%)
Confronting monsters/animals/zombies	29.0	23.9	25.4
Physical aggression	22.6	16.9	18.6
Falling	16.1	7.0	9.8
Being chased	6.5	11.3	9.8
Contact with strangers	12.9	5.6	7.8
Car accident	6.5	7.0	6.9
Death of the dreamer	6.5	5.6	5.9
Family death	6.5	4.2	4.9
The dreamer is injured or ill	16.1	7.0	4.9
Stranger enters or tries to enter the dreamer's house	3.2	4.2	3.9
Being late or lost	0	2.8	2.0
Being stuck or trapped	6.5	1.4	2.9
Others	38.0	39.4	38.2

Table 3

Emotional valence of recurrent dreams and proportion containing Hall & Van de Castle content categories.

Content variable	Boys $N = 31$ (%)	Girls $N = 71$ (%)	Total $N = 102$ (%)	Zadra (1996) $N = 110$ (%)
Positive emotions	6.5	9.9	8.8	10.0
Negative emotions	71.0	59.2	62.7	77.3
Neutral	22.5	26.7	25.5	5.5
Mixture of positive and negative emotions	0	4.2	2.9	7.3
Good fortune	0	0	0	4.6
Misfortune	25.8	26.8	26.5	41.8
Success	3.2	4.2	3.9	1.8
Failure	3.2	9.9	7.8	17.3
Friendliness	3.2	28.2	20.6[*]	n/a
Aggression	41.9	38.0	39.2	n/a

[*] Significant difference between girls and boys, $\chi^2 = 8.21$; $p < .05$.

Table 4

Nature and content of threatening events.

Nature of threatening elements	N	% of all threats (N = 66)	% obtained by Zadra et al. (2006) (N = 147)
Aggressions and violence	30	45.5	19.0
Accidents and misfortunes	19	28.8	19.7
Disasters	2	3.0	3.4
Escapes and pursuits	15	22.7	25.9
Failures	0	0	6.8
Physical anomalies	0	0	17.0
DreamThreat content scales			
Dreamer is target of the threat	58	87.9	94
Dreamer threatened with death or serious injury	48	72.8	65
Dreamer actively participates in the threatening event	35	53.0	78
Dreamer's reaction is to threat is possible and reasonable	31	47.0	54
Threat is fulfilled	36	29.4	40
Dreamer wakes up	28	42.4	37
Threat belongs to realm of fantasy or fiction	28	42.4	47
Threat is realistic and likely to occur in waking life	14	21.2	19