

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/227152588>

# The Typical Dreams of Canadian University Students

Article in *Dreaming* · December 2003

DOI: 10.1023/B:DREM.000003144.40929.0b

CITATIONS

133

READS

2,529

7 authors, including:



**Antonio Zadra**

Université de Montréal

108 PUBLICATIONS 2,875 CITATIONS

[SEE PROFILE](#)



**Valerie Simard**

Université de Sherbrooke

32 PUBLICATIONS 644 CITATIONS

[SEE PROFILE](#)



**Carlyle Smith**

Trent University

98 PUBLICATIONS 6,217 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



Theories of nightmares [View project](#)



Sleep spindles and cognition [View project](#)

## The Typical Dreams of Canadian University Students

Tore A. Nielsen,<sup>1,2,6</sup> Antonio L. Zadra,<sup>1,3</sup> Valérie Simard,<sup>1,3</sup> Sébastien Saucier,<sup>1,3</sup>  
Philippe Stenstrom,<sup>1,3</sup> Carlyle Smith,<sup>4</sup> and Don Kuiken<sup>5</sup>

---

*To investigate the dimensional structure of dreams, the Typical Dreams Questionnaire (TDQ) was administered to 1181 first-year University students in three Canadian cities. A profile of themes was found that varied little by age, gender or region; however, differences that were identified could be interpreted as due to developmental milestones, personality attributes or sociocultural factors. Factor analysis produced a solution consisting of 16 coherent factors that were differentially associated with demographic variables and that accounted for 51% of the variance. Women loaded primarily on negative factors (failure, loss of control, snakes-insects), men primarily on positive factors (magic-myth, alien life). Results support the concept of typical dream themes as consistent over time, region and gender and as reflecting the influence of fundamental dream dimensions that may be influenced by sociocultural, personality, cognitive or physiological factors.*

---

**KEY WORDS:** dreaming; typical dreams; sex differences; personality factors.

---

### INTRODUCTION

Both lay and scientific theories about the meaning of dreams attempt to explain regularities in dream content over time, gender, regions or cultures. Common dream “dictionaries,” for example, suppose that recurrent symbols portend similar fortunes regardless of age or other demographics. Some popular writers (Garfield, 2001) go so far as to propose that a number of dream types are universal. In the scientific and clinical domains, global taxonomies of dream types have been proposed (Hunt, 1989) as has a fundamental repetition dimension that is thought to reflect inter-individual consistencies in emotional concerns (Domhoff, 1996). Nevertheless, despite many such undertakings there still exists no widely-accepted, empirically-based typology of dreams.

One avenue of research that has made some progress in identifying and characterizing basic dream dimensions concerns typical dreams. Typical dreams are recurrent in

<sup>1</sup>Sleep Research Center, Hôpital du Sacré-Coeur de Montréal, Québec.

<sup>2</sup>Department of Psychiatry, Université de Montréal, Québec.

<sup>3</sup>Department of Psychology, Université de Montréal, Québec.

<sup>4</sup>Department of Psychology, Trent University, Peterborough, Ontario.

<sup>5</sup>Department of Psychology, University of Alberta, Edmonton, Alberta.

<sup>6</sup>Correspondence should be directed to Tore A. Nielsen, Dream & Nightmare Laboratory, Hôpital du Sacré-Coeur de Montréal, 5400 boul. Gouin Ouest, Montréal, Québec, Canada; e-mail: [tore.nielsen@umontreal.ca](mailto:tore.nielsen@umontreal.ca).

nature, demonstrate little variation in content (Ward, Beck, & Rascoe, 1961) and are shared by many persons (Griffith, Miyagi, & Tago, 1958). Freud (1955, p. 519) identified typical dreams as having high consistency, high prevalence and a seeming lack of associational sources—a pattern that he attributed to their origin in memories of common, early childhood experiences. For Freud, typical dreams about falling and flying stemmed from shared early experiences of being tossed in the air or swung about by adults, dreams of being naked in public from early experiences of undressing in front of strangers, and so on.

Many subsequent psychoanalytic authors expanded upon Freud's ideas by examining the nature and significance of specific typical themes such as finding money, losing teeth or flying through the air (Saul, 1966; Saul & Curtis, 1967; Feldman, 1955; Darlington, 1942; Griffith, 1951). Such efforts have continued sporadically (Kafka, 1979; Renik, 1981; Andresen, 1985; Myers, 1989). Other investigators have surveyed the incidence and prevalence of multiple typical themes among large samples. The dreams of normal individuals (Gahagan, 1936; Griffith et al., 1958) and psychiatric patients (Ward et al., 1961) have been studied with this method. Griffith, et al., for instance, demonstrated striking similarities among Japanese and American respondents in the prevalence of 34 typical dream themes. Cross-cultural differences that were observed in this work, such as more frequent dreams of fire and fewer dreams of nudity among Japanese respondents, could be interpreted in the context of known differences between Japanese and American cultures.

These early efforts provide a methodological point of departure for the present study of dimensional structure in dreams. The prior work has provided preliminary evidence for the existence of some types of dreams, although their diversity, prevalence and frequency, their relationships with personality and sociocultural factors and, ultimately, their meaning for individuals or groups still remain largely unknown. Although there exists a comprehensive system for coding and quantifying the content of dreams (Hall & Van de Castle, 1966; Domhoff, 1996), this system deals primarily with the frequency and descriptive attributes of different types of characters, objects and settings and not with a dream's thematic, dimensional or typical nature. Other systems (see Winget & Kramer, 1979 for review) deal with very circumscribed attributes or qualities of dream content that are frequently dictated by a particular cognitive, developmental or personality theory, e.g., ego functioning, repression, hostility, primitivity or bizarreness. Home journal methods might be useful for assessing typical themes, but administration and scoring of such journals is extremely resource-consuming when large numbers of participants must be assessed. Laboratory collection methods are even more limited in this respect. Inventories such as the TDQ, on the other hand, facilitate the assessment of multiple dream types among large samples and are well-suited for quantifying the lifetime prevalence of personally important dream themes, whether these are frequent or infrequent in occurrence.

Our primary goal in the present work was therefore to extend and elaborate previous avenues of investigation that have specifically addressed typical dreams by validating a questionnaire on typical dreams and examining its dimensional structure. We undertook a study of some of the psychometric properties and demographic correlates of the *Typical Dreams Questionnaire (TDQ)* and determined whether multivariate analyses of it support the existence of basic dream types or dimensions.

## THE TYPICAL DREAMS QUESTIONNAIRE

We replicated and extended Griffith, et al.'s (1958) questionnaire approach to the study of typical dreams. The TDQ appears in Appendix 1 and all modifications are listed in Table 1, Column 2. The TDQ employs 28 items taken without modification from the 34 originally used by Griffith et al. (1958). We dropped two items (*being hanged by the neck, being buried alive*) because these were only rarely endorsed in the prior study. Three other items (*falling, falling with fear, falling without fear*) were combined into a single item termed *falling*. The most prevalent of Griffith et al.'s themes (*being attacked or pursued*) was separated to distinguish pursuit ("*being chased and attacked but not physically injured*") from physical assault ("*being physically attacked (e.g., beaten, shot, raped*"). An additional 24 items (i.e., items 20–27, 29, 30, 33, 41, 44–55) were "new" typical themes whose prevalence had never been investigated but which we have frequently observed in home journal studies of dream content. Both English and French versions of the TDQ were developed (<http://www.crhsc.umontreal.ca/dreams/index.html>) and translations have been made into German (Schredl, Ciric, & Götz, 2001) and Japanese (Nielsen, Zadra, & Fukuda, 1999a).

We have reported preliminary characteristics of the TDQ with both normal (Zadra & Nielsen, 1999; Zadra & Nielsen, 1997) and clinical (Nielsen, Zadra, Germain, & Montplaisir, 1998a; Nielsen, Zadra, Germain, & Montplaisir, 1998b) samples. We found high consistencies among student samples (Zadra et al., 1999), among sleep-disordered patients (Nielsen et al., 1998a; Nielsen, Zadra, Germain, & Montplaisir, 1999b), and between contemporary students and students from Griffith, et al.'s study (Zadra et al., 1997). Some of these preliminary findings are elaborated in the present work.

## PARTICIPANTS

Participants were students enrolled in Introductory Psychology courses at one of three major Canadian Universities. Of the 1348 participants who completed the TDQ, 341 were from McGill University, 388 from Trent University, and 619 from the University of Alberta. In the Alberta sample, 167 students (12.4%) did not specify their gender; they were found to be younger than both the men ( $t = 2.92, p = .004$ ) and the women ( $t = 1.62, p = .105$ ) in the remaining sample and were thus dropped from subsequent analyses. For the remaining 1181 participants, 28.9% were men and 71.1% were women.

Of these participants, a total of 1171 (99.2%) specified their age ( $M = 19.8 \pm 3.9$  yrs). A  $2 \times 3$  ANOVA with Gender (Men, Women) and Region (McGill, Trent, Alberta) as independent variables and age as the dependent variable revealed a main effect for Region ( $F_{1165} = 8.35, p < .0003$ ) such that Alberta participants were on average about one year younger ( $19.2 \pm 3.24$ ) than those from McGill ( $20.3 \pm 4.49$ ) and Trent ( $20.1 \pm 3.87$ ; Scheffé  $t$ -test, both  $p < .005$ ). This difference is due, in part, to the fact that Alberta students typically started University directly after Grade 12 whereas McGill and Trent students typically started after Grade 13 and, in part, to the fact that there were fewer mature students in the Alberta sample (%students > 25 yrs = 3.8) than in the McGill (5.9%) or Trent (6.8%) samples. There was no difference in age between women ( $19.7 \pm 3.970$ ) and men ( $20.1 \pm 3.60$ );

$F_{1165} = 2.63, p = .105$ ), no Gender  $\times$  Region interaction for age ( $F_{1165} = 0.66, p = .520$ ), and no Gender differences in age within regions (McGill:  $t = 1.55, p = .123$ ; Trent:  $t = 0.22, p = .829$ ; Alberta:  $t = 0.93, p = .353$ ).

## QUESTIONNAIRE ADMINISTRATION

Questionnaires were administered to English-speaking students during regular course hours. At McGill, questionnaires were given during three separate courses over 3 consecutive sessions. Consistency across these 3 samples was very high (Zadra et al., 1999) and justified combining them into a single sample. Students at the Trent and Alberta sites completed the questionnaires in multiple sections of a single course. Alberta students completed several additional questionnaires about personality attributes (not reported here) and they received partial course credit for participation. Trent and McGill students received no such credit.

The TDQ is one page in length and requests first that participants write their name, age, sex and occupation, followed by 55 numbered items with accompanying check boxes. Participants are then asked to respond to questions about which theme was most frequent, which occurred earliest in life, and the number of dreams and nightmares recalled in a typical month. The Alberta cohort was asked to specify which theme was most frequent and which was most important.

Additionally, two measures were calculated for exploratory purposes: 1) a measure of typical theme diversity, or *Divers55* (total #items/55); and 2) a sleep paralysis (*SP*) subscale (sum of *items 4, 15, 29, 39 and 44*) which consisted of those items characterizing the fear, inhibition and sense of presence attributes of SP experiences (Fukuda, Ogilvie, & Takeuchi, 1998; Powell & Nielsen, 1998; Nielsen & Zadra, 2000b).

## STATISTICAL ANALYSES

To adjust for the large number of comparisons in assessing prevalence and questionnaire consistency over gender, region and age, while maintaining a relatively liberal criterion for detecting Type I errors, a significance probability value of  $p < 0.005$  (trends:  $0.005 < p < 0.01$ ) was applied within each set of comparisons. To maintain a more conservative criterion for detecting Type I errors in assessing consistency over time, a value of  $p < 0.01$  (trends:  $0.05 < p < 0.01$ ) was applied. To control for Type I errors in the assessment of additional variables and discriminant validity of the factor solution, a value of  $p < 0.01$  (trends:  $0.05 < p < 0.01$ ) was used for each variable.

## RESULTS

### ANALYSIS 1: PREVALENCE OF TDQ ITEMS

#### Consistencies in Prevalence Profiles

Spearman *rho* coefficients were calculated between the ranked ordered sets of 55 TDQ prevalence scores for each of the 3 regions. These were uniformly high and significant (mean *rho* over 3 regions = 0.954, range = 0.948 – 0.965,  $p < .000001$  for all). High

coefficients indicate that the rank-orderings of item prevalence varied little from sample to sample. Coefficients were also high for men and women considered separately, although they were higher for women (mean  $\rho = .958$ ) than for men (mean  $\rho = .876$ ).

A  $2 \times 3$  ANOVA with Gender (Men, Women) and Region (McGill, Trent, Alberta) as independent variables and *Divers55* as dependent measure indicated that theme diversity did not differ as a function of Gender ( $F_{1175} = 0.004$ ,  $p = .952$ ) or Region ( $F_{1175} = 0.139$ ,  $p = .871$ ); specifically, overall mean diversity was  $16.38 \pm 8.14$  items (mode: 13; median: 15; range 0–50), and was similar for women ( $16.40 \pm 7.77$ ) and men ( $16.33 \pm 8.99$ ), and for the McGill ( $16.66 \pm 8.69$ ), Trent ( $16.75 \pm 8.26$ ) and Alberta ( $15.91 \pm 7.43$ ) samples.

### Prevalence of Typical Themes by Gender, Time, Region and Age

#### Gender

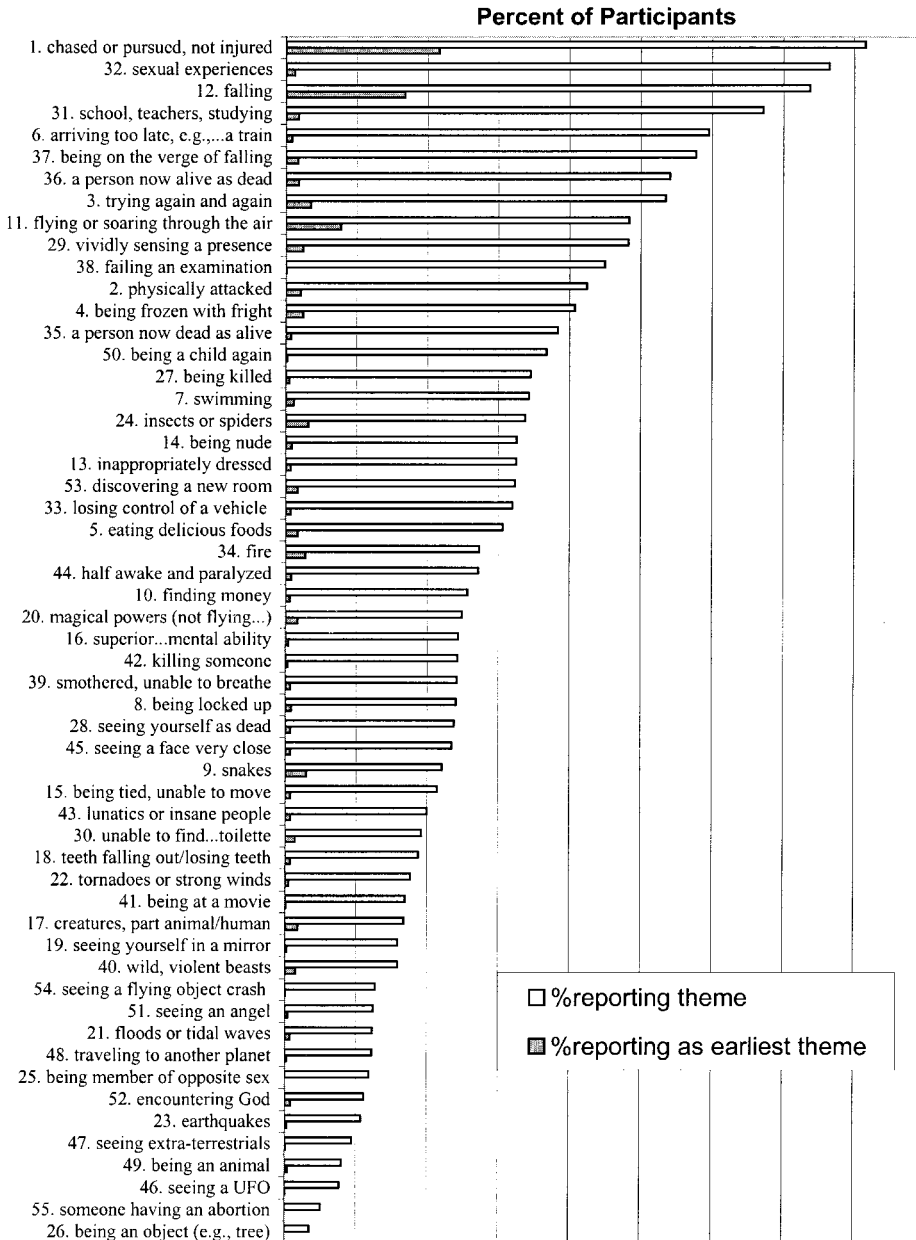
As shown in Figure 1, the two most prevalent themes were *1-being chased or pursued, but not physically injured* (81.5%) and *32-sexual experiences* (76.5%). The former was the most prevalent item for women (83.1% vs. 77.7% for men;  $p < .031$ ) whereas the latter was the most prevalent item for men (85.0% vs. 73.0% for women;  $p < .00001$ ). In total, women had higher prevalences than men ( $p < .005$ ) for 8 items (4, 9, 24, 30, 31, 36, 38, 55); men had higher prevalences than women ( $p < .005$ ) for 10 items (10, 11, 16, 17, 20, 32, 42, 46, 47, 48). The affective nature of these items was clearly different for the two sexes. For those characterizing men, they were predominantly positive (6/10 or 60.0%); for women they were predominantly negative (7/8 or 87.5%). Reliability of 4 of the 18 gender differences (*Items 46–48, 55*) is in doubt because the prevalences of the items were among the lowest of the questionnaire, i.e., less than 13% each.

#### Time

To compare and contrast our results with those from Griffith et al.'s 1958 sample, we calculated Spearman  $\rho$  coefficients between the 28 items in their Table 1 that could be directly compared with our TDQ items. The mean  $\rho$  was .794. As in our inter-sample comparisons, the mean  $\rho$  for women (.770) was higher than that for men (.682).

We also calculated chi-squares by gender and time for prevalence distributions from our results and those of Griffith et al. Of the 9 gender differences ( $p < .05$ ) and 8 trends ( $p < .10$ ) they found, we replicated (at  $p < .01$ ) eight (4, 9, 10, 17, 31, 32, 36, 42), we replicated with trends ( $p < .05$ ) three (7, 14, 34) and we failed to replicate six (5, 13, 18, 19, 35, 37). The latter item (37) was the only one out of 17 for which the gender distribution we observed was *opposite* to that reported by Griffith et al. In addition, three gender differences that we identified (11, 16, 38) were not present in Griffith, et al.'s results. Eight of our observed gender differences were for new items (20, 24, 30, 41, 46–48, 55) that had not been evaluated by Griffith, et al.

When we split Griffith et al.'s most prevalent item (*being attacked or pursued*) into two distinct items (items 1 and 2), chase/pursuit *with* and *without* physical injury, the former item was just over half as prevalent (42.4%; rank: 12th) as the latter item (81.5%; rank: 1st), and did not differ by gender, whereas the latter item did show a slight gender difference ( $p = .03$ ). When we combined our Items 1 and 2 to reproduce Griffith et al.'s original item



**Fig. 1.** Percent of participants reporting presence of each of 55 TDQ themes (white bars) and percent reporting each theme as their earliest remembered (black bars). Participants were free to endorse the presence of any of the 55 themes, but could specify only one as their earliest. Prevalence and age of recall are related for only some themes. Item 1, *Chase/pursuit without injury* was both most prevalent (81.5%) and most often selected as the earliest (21.6%). Similarly, Item 12, *Falling*, was third most prevalent (73.8%) and second most often selected as earliest (16.8%). In contrast, item 32, *Sexual experiences*, was second most prevalent (76.5%) but only rarely selected as earliest (1.3% or 20th). Numbers preceding themes refer to their order of appearance in the questionnaire.

Table 1. Prevalence estimates by gender (including comparisons with 1958 sample) and age for the total sample

Rank	Item type <sup>a</sup>	TDQ item	Total prevalence	Men prevalence	Women prevalence	P gender Grif <sup>b</sup>	18- prevalence	19+ prevalence	P age
1	m	1	81.5	77.7	83.1	0.031	82.8	80.8	0.400
2	o	32	76.5	85.0	73.0	<b>0.0001</b> *m	68.8	80.3	<b>0.0005</b>
3	m	12	73.8	73.0	74.0	0.716	74.6	73.4	0.661
4	o	31	67.1	56.9	71.3	<b>0.0000</b> *w	68.3	67.0	0.648
5	o	6	59.5	54.5	61.5	0.026	60.1	59.0	0.707
6	o	37	57.7	53.4	59.5	0.052†m	59.1	57.3	0.547
7	o	3	53.5	54.5	53.1	0.651	55.6	52.9	0.370
8	o	36	54.1	43.1	58.6	<b>0.0000</b> *w	56.6	52.7	0.206
9	o	11	48.3	58.1	44.4	<b>0.0002</b>	51.1	46.9	0.168
10	n	29	48.3	44.3	49.9	0.081—	49.9	47.5	0.446
11	o	38	45.0	37.2	48.1	<b>0.001</b>	51.1	41.7	<b>0.002</b>
12	m	2	42.4	39.9	43.5	0.261	45.4	41.2	0.166
13	o	4	40.7	32.3	44.2	<b>0.0002</b> †w	36.4	43.1	0.027
14	o	35	38.4	36.7	39.0	0.444*w	32.9	41.3	<b>0.005</b>
15	n	50	36.7	33.1	38.2	0.101—	35.2	37.9	0.353
16	n	27	34.5	35.8	34.0	0.571—	36.2	33.8	0.414
17	n	24	33.8	25.5	37.1	<b>0.0001</b> —	39.2	30.8	0.004
18	o	7	34.3	29.0	36.4	0.015†w	35.9	33.8	0.464
19	o	14	32.6	37.5	30.6	0.021†m	30.2	33.6	0.231
20	o	13	32.5	30.8	33.2	0.421*w	34.2	31.3	0.320
21	n	53	32.3	30.8	33.0	0.467—	31.2	33.0	0.529
22	n	33	32.0	29.3	33.1	0.208—	33.9	31.3	0.363
23	o	5	30.7	28.7	31.4	0.364†w	34.2	28.4	0.043
24	n	44	27.2	25.2	28.0	0.335—	24.2	28.8	0.090
25	o	10	25.7	34.0	22.3	<b>0.0000</b> ‡m	26.2	25.1	0.676
26	o	34	27.3	22.6	29.3	0.019*w	28.4	27.0	0.607
27	n	20	24.9	39.3	19.0	<b>0.0000</b> —	25.4	24.3	0.665
28	o	16	24.4	36.4	19.5	<b>0.0000</b>	25.4	23.8	0.726
29	o	39	24.2	21.1	25.5	0.113	24.7	23.8	0.726
30	o	42	24.3	36.1	19.5	<b>0.0000</b> *m	25.2	24.0	0.661
31	o	28	23.8	22.6	24.3	0.533	25.4	23.0	0.350
32	o	8	24.0	22.9	24.5	0.548	25.9	23.0	0.262



Table 1. (Continued)

Rank	Item type <sup>a</sup>	TDQ item	Total prevalence	Men prevalence	Women prevalence	P gender Grif <sup>b</sup>	18– prevalence	19+ prevalence	P age
33	n	45	23.5	22.6	23.8	0.652—	20.7	25.1	0.095
34	o	9	22.1	16.4	24.4	<b>0.003</b> †w	22.7	21.8	0.732
35	o	15	21.4	19.4	22.3	0.270	19.0	22.7	0.135
36	n	22	17.7	17.3	17.9	0.821—	19.5	16.6	0.228
37	n	30	19.2	13.8	21.4	<b>0.003</b> —	18.2	19.6	0.562
38	o	18	18.8	16.7	19.6	0.243 *w	19.2	18.6	0.793
39	o	43	20.0	20.2	19.9	0.890	20.9	19.6	0.588
40	n	41	16.9	21.4	15.1	0.009—	18.5	16.0	0.282
41	o	17	16.8	22.3	14.5	<b>0.001</b> †m	15.7	17.5	0.430
42	o	40	15.9	19.6	14.4	0.026	18.7	14.7	0.075
43	o	19	15.9	15.8	16.0	0.960*w	17.2	15.2	0.371
44	n	51	12.4	11.7	12.7	0.634—	9.5	13.8	0.034
45	n	48	12.3	18.2	9.9	<b>0.00009</b> —	13.7	11.6	0.286
46	n	21	12.4	12.9	12.1	0.719—	16.2	10.5	0.005
47	n	54	12.8	15.8	11.5	0.046—	13.0	12.9	0.957
48	n	25	11.9	9.4	12.9	0.094—	11.5	11.8	0.861
49	n	52	11.2	13.2	10.4	0.160—	10.7	11.6	0.668
50	n	23	10.8	12.6	10.0	0.189—	11.5	10.5	0.619
51	n	47	9.5	16.4	6.7	<b>0.00000</b> —	9.2	9.5	0.888
52	n	49	8.0	11.1	6.8	0.013—	8.2	7.7	0.732
53	n	46	7.7	12.0	6.0	0.0004—	8.2	7.4	0.614
54	n	55	5.1	1.8	6.4	<b>0.001</b> —	5.2	4.9	0.823
55	n	26	3.5	5.0	2.9	0.070—	4.0	3.1	0.435

<sup>a</sup>Item type: o = original item from Griffith, et al.; m = item modified from Griffith, et al.; n = new TDQ item.

<sup>b</sup>Grif: Griffith, et al., 1958 report; \* gender difference ( $p < .05$ ); †gender trend ( $p < .10$ ); m = %male higher; w = %women higher; —new item.

(i.e., participants endorsed Items 1 or 2 or both), prevalence was 86.6% overall and slightly higher for women (87.7%) than for men (83.9%; Pearson chi-square for gender = 3.13,  $p = .077$ ). Corresponding figures from Griffith et al. were 77.2% (total), 77.2% (women) and 76.6% (men).

### *Region*

One of the sample regions was either higher (+) or lower (–) in prevalence than were the other two regions on 7 themes ( $p < .005$ ); 2 trends ( $p < .01$ ) were also noted. Seven of these 9 themes (77.8%) distinguished Trent students from the other two groups: *items 3–, 29+, 34+, 39+, 51+, 52+, 38–*. One theme (11.1%; *Item 44+*) distinguished McGill students from the others, and one theme (11.1%; *Item 10+*) distinguished Alberta students. Further, 2 of the themes (*Items 10, 34*) are qualified by a Gender X Region interaction, i.e., more Alberta men than women reported *10-finding money* and fewer Trent men than women reported *34-fire*. The combination of Items 1 and 2 (replicating Griffith et al.'s *attack/pursuit* theme) showed no differences for regions.

### *Age*

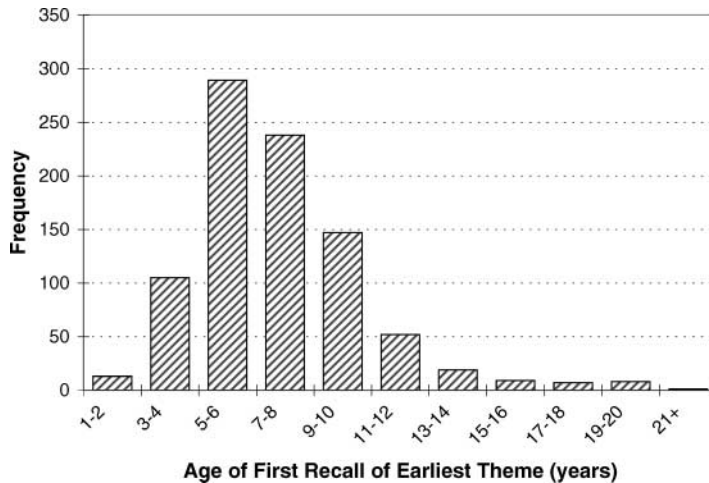
Frequency distributions by age were examined for the 1171 participants (99.2%) who responded to this variable. The sample could be conveniently split at a point that provided 2 relatively equally sized groups: 18 and younger ( $N = 402$ ) vs. 19 and older ( $N = 769$ ). The former group contained participants aged 16–18 while the latter contained participants aged 19–60, with 42 (5.5%) exceeding 2 SD and 32 (4.2%) exceeding 3 SD of the mean age for the total sample ( $19.8 \pm 3.9$ ). Five themes significantly ( $p < .01$ ) discriminated the two age groups (see Table I). Two were more prevalent in older participants: *32-sexual experiences*, and *35-a person now dead as alive*. Three were more prevalent in younger participants: *38-failing an examination*, *24-insects or spiders*, and *21-floods or tidal waves*. The combination of Items 1 and 2 (*attack/pursuit*) was slightly more prevalent in younger (89.5%) than in older (85.1%) participants (chi-square = 4.52,  $p = .033$ ).

### **Additional Variables**

Of the 7 additional variables examined, 3 nominal variables (*earliest theme*, *most frequent theme*, *most important theme*) were assessed with simple frequency distributions, and 4 continuous variables (*age of earliest theme*, *typical recall of dreams*, *typical recall of nightmares*, *sleep paralysis subscale*) were evaluated for gender and regional differences in separate  $2 \times 3$  ANOVAs in which Gender (*Men*, *Women*) and Region (*McGill*, *Trent*, *Alberta*) were independent variables. Square root transformations were applied to the dream and nightmare recall variables to correct their skewed distributions.

### **Earliest Theme**

A total of 930 participants (78.7%) responded to the question concerning which of the 55 themes occurred earliest in life. Three themes clearly stood out as being reported by 2 to 5 times more participants than the others. These were *1-chased or pursued but not injured*,



**Fig. 2.** Frequency distribution of responses ( $N = 888$ ) to question about participant's age when earliest TDQ theme was recalled. A substantial proportion (13.3%) estimated their earliest recall to occur at age 4 or younger. However, the majority occur at ages 5–6 (32.5%), 7–8 (26.8%) and 9–10 (16.6%).

*12-falling*, and *11-flying or soaring*. These items were also among the 10 most prevalent themes overall and among those that participants evaluated to be their most frequently occurring theme (see below).

### Age of Earliest Theme

A total of 888 participants (75.2%) responded to the item requesting age at which their earliest theme was first recalled. The distribution of ages for all earliest themes combined appears in Figure 2. The overall mean was relatively young,  $7.3 \pm 3.08$  years. Mean ages for specific themes did not differ substantially from this value for the 7 most prevalent early themes (1, 12, 11, 3, 24, 9, 34). However, some other themes were first recalled only much later in life, i.e., in late childhood or early adolescence; these included *32-sexual experiences* ( $13.1 \pm 5.02$  years), *35-a person now dead as alive* ( $12.4 \pm 4.31$  years); *18-teeth falling out* ( $9.7 \pm 3.15$  years) and *10-finding money* ( $9.3 \pm 2.22$  years). The  $2 \times 3$  ANOVA produced no significant main effects or interactions for Gender and Region for this variable.

### Typical Recall of Dreams

Overall, 960 participants (81.3%) responded to a question about the recall of dreams in a typical month. The average number of recalled dreams was  $9.60 \pm 10.16$ , or about 1 every 3 days. A very marginal Gender  $\times$  Region interaction ( $F_{2,954} = 2.76$ ,  $p = .064$ ) indicated that McGill men estimated recalling fewer dreams per month ( $6.78 \pm 5.24$ ) than did either McGill women ( $10.24 \pm 9.20$ ) or any group from the other regions. However, the fact that the group of McGill men bore the smallest N of the six cells in this analysis ( $N = 63$ ) raises some doubt upon whether the result is representative. Apart from this

trend, there was also a very marginal trend for Gender ( $F_{1,954} = 3.20, p = .074$ ), women reported recalling slightly more dreams in a typical month ( $9.79 \pm 9.72$ ) than did men ( $9.12 \pm 11.20$ ).

### Typical Recall of Nightmares

Overall, 936 participants (79.3%) responded to a question about the recall of nightmares in a typical month. The average number of recalled nightmares was  $1.97 \pm 3.40$  or almost 1 every two weeks. A significant main effect for Gender ( $F_{1,930} = 19.23, p = .00001$ ) indicated that women estimated recalling more nightmares per month ( $2.17 \pm 3.58$ ) than did men ( $1.48 \pm 2.85$ ).

### Sleep Paralysis (SP) Subscale

A  $2 \times 3$  ANOVA with the SP subscale score as dependent measure revealed a significant main effect for Gender ( $F_{1,1175} = 10.14, p = .001$ ) in which women scored higher ( $1.70 \pm 1.36$ ) than did men ( $1.42 \pm 1.36$ ).

### Most Frequent and Most Important Themes

Participants from Alberta were asked two additional, exploratory questions about theme frequency and importance. There was a general, although by no means exact, correspondence between the prevalence rank order of the 55 themes and participants' estimates of theme frequency, i.e., the more prevalent themes were also the most frequent. Of particular note is that *Item 1-being chased or pursued but not physically injured*, was the most frequent of the 55 themes in addition to being the most prevalent.

On the other hand, a clear relationship between prevalence and frequency on the one hand and *personal importance* of the theme on the other was less apparent. *Item 1*, which is both prevalent and frequent, was, in fact, also rated as most personally important by a relatively large proportion of the participants (9.1%). However, several other themes are less prevalent and/or frequent yet nevertheless rated by a sizeable number of participants as most personally important. *Items 35-a person now dead as alive* and *36-a person now alive as dead* illustrate this point in that both have low frequencies but were rated by many participants as being most personally important (7.6% and 9.7% respectively).

## ANALYSIS 2: FACTOR STRUCTURE OF THE TDQ

### Principal Components

Responses to TDQ Items 1 to 55 for the entire sample were subjected to Principal Components Factor Analysis with Varimax rotation and Kaiser normalization. A 16-factor solution included all 55 items and accounted for 50.6% of the variance (see Table 2). All 16 factors were readily interpretable, in some cases even for items with factor loadings as low as .30. Internal consistency of items in each factor reflected by Armor's (1974) theta coefficient varied from a high for Factor 1 (1.032) to a low for Factor 16 (0.037). Factors

**Table 2.** Factors and factor loadings for principle components analysis (Varimax rotation) of total sample (N = 1181)

TDO	TDQ <sup>a</sup>	Prev <sup>b</sup>	Factor Name	fac1	fac2	fac3	fac4	fac5	fac6	fac7	fac8	fac9	fac10	fac11	fac12	fac13	fac14	fac15	fac16	
27. being killed	27	34.5	1	Death-murder	<b>0.725</b>	0.129	0.028	0.084	-0.001	0.008	0.013	-0.006	-0.050	0.089	0.107	0.090	0.131	0.062	0.075	0.028
28. seeing yourself as dead	28	23.8	1	Death-murder	<b>0.642</b>	0.034	0.024	-0.011	-0.033	0.054	0.090	0.088	0.001	0.118	0.157	0.136	0.182	-0.126	-0.051	-0.036
2. physically attacked (beaten, ... raped)	2	42.4	1	Death-murder	<b>0.626</b>	0.131	-0.011	0.032	0.139	0.053	0.041	0.029	0.152	-0.011	0.000	-0.039	0.055	0.215	-0.024	-0.005
36. a person now alive as dead	36	54.1	1	Death-murder	<b>0.457</b>	-0.033	0.148	0.137	0.081	0.205	0.008	0.184	0.130	-0.211	0.019	0.179	-0.028	-0.082	0.071	0.108
42. killing someone	42	24.3	1	Death-murder	<b>0.420</b>	0.051	0.109	0.138	0.240	0.001	0.166	0.073	0.076	<b>0.338</b>	-0.083	-0.157	-0.071	0.019	0.069	-0.119
43. lunatics or insane people	43	20.0	1	Death-murder	<b>0.301</b>	0.104	-0.033	0.014	0.029	0.203	<b>0.294</b>	0.024	0.272	0.208	-0.035	-0.062	-0.012	0.004	0.135	-0.048
22. tornadoes or strong winds	22	17.7	2	Disaster	0.001	<b>0.708</b>	0.076	0.124	0.078	0.020	0.021	0.058	0.035	0.009	0.030	0.087	0.076	0.076	-0.030	-0.050
23. earthquakes	23	10.8	2	Disaster	0.113	<b>0.704</b>	0.064	0.030	0.000	0.068	-0.034	0.083	0.137	0.081	0.137	0.087	0.006	0.014	0.104	0.000
21. floods or tidal waves	21	12.4	2	Disaster	0.008	<b>0.576</b>	0.135	-0.076	0.094	0.043	0.154	-0.065	0.052	-0.083	0.051	-0.076	-0.059	-0.122	0.116	0.241
34. fire	34	27.3	2	Disaster	0.262	<b>0.490</b>	0.123	0.061	-0.072	-0.053	0.086	0.057	0.110	0.040	-0.062	0.041	0.194	0.182	0.105	-0.056
54. seeing a flying object crash	54	12.8	2	Disaster	0.186	<b>0.397</b>	0.053	0.272	0.070	0.030	0.008	0.208	0.026	0.085	0.104	0.092	0.085	-0.221	0.145	-0.091
5. eating delicious foods	5	30.7	3	Positive themes	0.002	0.066	<b>0.606</b>	0.027	0.248	-0.044	-0.028	0.113	0.095	0.131	0.011	0.078	-0.015	0.009	0.045	0.058
41. being at a movie	41	16.9	3	Positive themes	0.012	0.098	<b>0.532</b>	0.149	-0.054	0.079	0.092	0.064	0.030	0.110	0.068	0.145	0.017	-0.075	0.112	-0.049
10. finding money	10	25.7	3	Positive themes	0.045	0.115	<b>0.516</b>	0.119	0.133	0.041	0.002	0.024	-0.020	0.273	-0.012	0.137	0.115	-0.069	-0.280	0.012
19. seeing yourself in a mirror	19	15.9	3	Positive themes	0.098	0.133	<b>0.410</b>	0.004	0.007	0.243	0.111	-0.074	-0.011	0.139	0.037	0.008	0.071	0.156	0.007	-0.219
7. swimming	7	34.3	3	Positive themes	0.115	0.141	<b>0.404</b>	0.070	0.085	-0.053	0.041	0.072	0.202	-0.022	-0.054	-0.118	0.096	0.134	0.282	<b>0.368</b>
50. being a child again	50	36.7	3	Positive themes	0.024	0.087	<b>0.402</b>	-0.016	-0.017	0.090	0.217	0.112	0.026	0.013	0.201	0.131	0.061	-0.072	<b>0.313</b>	-0.037
35. a person now dead as alive	35	38.4	3	Positive themes	0.198	-0.043	<b>0.314</b>	0.139	0.084	0.226	-0.012	-0.138	0.149	-0.264	<b>0.304</b>	-0.030	0.035	0.079	-0.030	0.205
46. seeing a UFO	46	7.7	4	Alien life	0.069	0.125	0.095	<b>0.825</b>	0.020	0.022	0.061	0.045	0.015	-0.010	0.011	0.033	0.015	0.055	0.010	0.001
47. seeing extra-terrestrials	47	9.5	4	Alien life	0.094	0.011	0.113	<b>0.803</b>	0.011	0.032	0.123	-0.020	0.068	0.112	0.043	-0.057	0.027	0.110	0.059	0.014
48. traveling to another planet	48	12.3	4	Alien life	0.025	0.126	0.029	<b>0.385</b>	0.048	0.136	0.161	0.024	0.051	<b>0.339</b>	0.145	0.110	-0.021	-0.185	0.123	0.078
13. inappropriately dressed	13	32.5	5	Nudity-sex	0.076	-0.018	0.035	0.015	<b>0.681</b>	-0.019	0.057	-0.022	0.050	0.051	0.079	0.264	0.025	0.109	0.091	0.057
14. being nude	14	32.6	5	Nudity-sex	0.067	0.105	0.073	0.083	<b>0.673</b>	0.043	0.134	0.052	0.011	0.017	0.012	0.070	0.023	0.157	-0.021	0.000
30. unable to find ... toilette	30	19.2	5	Nudity-sex	0.046	0.067	0.201	-0.124	<b>0.486</b>	0.269	-0.029	0.000	-0.095	-0.124	-0.004	0.021	0.141	-0.204	0.112	0.023
32. sexual experiences	32	76.5	5	Nudity-sex	0.210	0.023	0.147	0.089	<b>0.335</b>	0.124	0.028	0.033	0.102	0.067	0.020	0.195	-0.257	<b>0.332</b>	-0.036	-0.171
44. half awake and paralyzed	44	27.2	6	Paralysis-presence	0.035	0.023	-0.021	-0.001	0.164	<b>0.624</b>	-0.023	0.063	0.045	0.045	-0.044	0.107	0.203	-0.033	0.027	0.049
29. vividly sensing a presence	29	48.3	6	Paralysis-presence	0.107	0.067	0.064	0.039	0.005	<b>0.592</b>	0.084	0.066	0.062	0.144	0.085	0.016	-0.016	0.158	0.039	0.011
45. seeing a face very close	45	23.5	6	Paralysis-presence	0.082	0.110	0.266	0.115	-0.194	<b>0.454</b>	0.054	0.122	0.030	-0.054	0.209	-0.081	0.028	0.176	-0.087	-0.057
3. trying again and again	3	53.5	6	Paralysis-presence	-0.043	0.047	0.138	0.051	0.165	<b>0.329</b>	0.006	0.157	-0.178	0.136	0.091	0.219	0.179	0.177	0.123	0.046
26. being an object (e.g., tree)	26	3.5	7	Self-transformation	0.009	0.075	0.054	0.125	0.010	-0.098	<b>0.694</b>	-0.024	-0.044	0.037	0.078	0.128	0.103	0.051	-0.066	-0.053
49. being an animal	49	8.0	7	Self-transformation	0.071	0.082	0.020	0.140	0.009	0.096	<b>0.635</b>	-0.009	0.019	0.059	0.130	0.072	0.109	-0.003	0.004	0.208
25. being member of opposite sex	25	11.9	7	Self-transformation	0.108	-0.084	0.151	-0.068	0.243	0.065	<b>0.568</b>	0.137	-0.096	0.087	-0.042	-0.159	-0.091	0.019	0.108	-0.119
12. falling	12	73.8	8	Falling-flying	0.085	0.038	0.083	-0.004	0.038	0.029	0.005	<b>0.755</b>	0.034	-0.037	0.051	-0.037	0.025	0.184	-0.041	0.005
37. being on the verge of falling	37	57.7	8	Falling-flying	0.075	0.080	0.076	-0.016	-0.046	0.130	0.068	<b>0.698</b>	0.139	-0.065	0.028	0.160	0.040	0.070	0.013	-0.018
11. flying or soaring through the air	11	48.3	8	Falling-flying	0.031	0.040	0.004	0.159	0.173	0.077	-0.016	<b>0.456</b>	-0.034	0.198	0.005	-0.064	0.061	0.034	0.167	<b>0.343</b>
24. insects or spiders	24	33.8	9	Snakes-insects	0.006	0.128	0.087	-0.019	-0.026	0.092	0.030	0.096	<b>0.730</b>	0.020	0.036	0.106	0.034	0.091	0.008	-0.065
9. snakes	9	22.1	9	Snakes-insects	0.028	0.006	0.059	0.096	0.043	-0.023	-0.077	0.035	<b>0.630</b>	0.001	0.070	0.060	0.129	0.041	-0.017	0.081
16. superior ... mental ability	16	24.4	10	Magic-myth	0.076	0.053	0.225	0.003	-0.029	0.133	0.018	-0.083	-0.047	<b>0.678</b>	0.097	0.046	-0.028	0.046	0.049	0.074
20. magical powers (not flying...)	20	24.9	10	Magic-myth	0.096	0.001	0.165	0.142	0.041	0.055	0.150	0.028	0.120	<b>0.602</b>	0.096	-0.068	0.083	0.009	-0.016	0.159

Table 2. (Continued)

52. encountering God	52	11.2	11	0.059	-0.022	0.028	0.100	0.005	0.024	-0.003	0.031	0.142	<b>0.791</b>	-0.013	-0.011	0.054	0.096	-0.030	
51. seeing an angel	51	12.4	11	0.112	0.149	0.056	-0.022	0.102	0.142	0.103	0.076	0.038	<b>0.730</b>	-0.008	0.044	-0.033	-0.036	0.031	
38. failing an examination	38	45.0	12	0.115	0.006	0.172	-0.029	0.069	0.059	0.074	0.094	0.000	-0.051	<b>0.689</b>	-0.041	0.217	0.055	-0.017	
6. arriving too late, e.g.,... a train	6	59.5	12	0.053	0.087	0.081	0.067	0.202	0.041	-0.006	0.166	0.067	-0.003	0.017	<b>0.617</b>	0.114	-0.065	0.046	-0.025
15. being tied, unable to move	15	21.4	13	0.141	0.008	0.109	0.055	0.130	0.156	0.152	0.011	0.127	-0.063	0.035	0.012	<b>0.626</b>	0.131	0.015	-0.079
39. smothered, unable to breathe	39	24.2	13	0.217	0.212	0.019	-0.062	0.035	0.193	0.023	0.139	0.065	0.007	0.003	0.017	<b>0.512</b>	0.068	0.108	0.056
8. being locked up	8	24.0	13	0.234	0.122	0.165	0.037	-0.020	0.026	0.053	-0.009	0.269	0.170	0.009	0.105	<b>0.413</b>	0.044	0.065	-0.060
31. school, teachers, studying	31	67.1	13	0.148	0.100	0.153	-0.124	0.102	0.140	0.078	0.029	0.163	-0.063	-0.012	<b>0.391</b>	-0.405	0.153	0.249	-0.020
4. being frozen with fright	4	40.7	14	0.001	0.035	-0.100	0.003	0.200	0.265	-0.008	0.166	0.087	0.021	0.089	0.068	0.241	<b>0.528</b>	-0.026	-0.009
1. chased or pursued, not injured	1	81.5	14	0.045	0.008	-0.005	0.079	0.045	0.088	0.030	0.173	0.062	-0.011	-0.022	0.130	0.036	<b>0.513</b>	0.101	0.102
53. discovering a new room	53	32.3	15	0.018	0.031	0.066	0.139	0.051	0.283	0.017	-0.058	-0.026	0.051	-0.028	0.100	-0.033	0.004	<b>0.604</b>	0.015
33. losing control of a vehicle	33	32.0	15	0.199	0.085	0.165	0.008	0.059	-0.203	0.026	0.083	-0.053	0.014	0.118	0.111	0.165	<b>0.314</b>	<b>0.500</b>	0.026
18. teeth falling out/flosing teeth	18	18.8	15	-0.107	0.010	-0.083	0.006	<b>0.310</b>	-0.030	-0.086	0.113	<b>0.303</b>	0.079	0.082	-0.007	0.119	-0.051	<b>0.381</b>	-0.095
55. someone having an abortion	55	5.1	16	0.145	0.060	0.120	0.114	0.069	0.105	0.112	-0.035	0.189	-0.141	-0.019	-0.044	0.105	-0.134	0.136	-0.583
17. creatures, part animal/human	17	16.8	16	0.077	0.054	0.094	0.102	0.026	0.218	<b>0.350</b>	0.008	0.156	0.122	-0.028	-0.058	0.048	-0.043	0.037	<b>0.490</b>
40. wild, violent beasts	40	15.9	16	0.151	0.222	-0.147	0.171	0.063	0.175	0.269	0.074	0.267	0.109	0.093	-0.004	-0.122	-0.052	0.066	<b>0.325</b>
<b>% of Variance</b>		<b>4.397</b>	<b>3.862</b>	<b>3.850</b>	<b>3.519</b>	<b>3.461</b>	<b>3.387</b>	<b>3.314</b>	<b>3.046</b>	<b>2.981</b>	<b>2.961</b>	<b>2.852</b>	<b>2.828</b>	<b>2.743</b>	<b>2.525</b>	<b>2.491</b>	<b>2.409</b>		
<b>Cumulative %</b>		4.397	8.259	12.110	15.629	19.090	22.477	25.791	28.837	31.818	34.779	37.631	40.459	43.202	45.727	48.217	50.626		

<sup>a</sup>TDQ: Typical Dreams Questionnaire item number.

<sup>b</sup>Prev: Lifetime prevalence of TDQ item.

**Table 3.** Principal components average factor scores for 16 factors by gender

PC factor <sup>a</sup>	Factor prevalence <sup>b</sup>	Men M	Men SD	Women M	Women SD	F <sup>c</sup>	P <sup>c</sup>	Gender effect favors:
1. Death-murder	78.9	-0.0306	0.9636	0.0124	1.0147	0.45	0.503	
2. Disasters	45.3	0.0188	1.0626	-0.0076	0.9740	0.23	0.633	
3. Positive themes	79.0	-0.0093	1.0699	0.0038	0.9708	0.09	0.763	
4. Alien life	19.7	0.2769	1.2457	-0.1124	0.8566	<b>36.38</b>	<b>&lt;0.000001</b>	<b>Men</b>
5. Sex-nudity	84.5	0.0633	0.9588	-0.0257	1.0157	2.19	0.139	
6. Paralysis-presence	76.6	-0.0853	0.9579	0.0346	1.0151	3.86	0.050	Women
7. Self-transformation	18.3	0.0277	1.0913	-0.0112	0.9609	0.46	0.499	
8. Falling-flying	85.2	-0.0113	0.9903	0.0046	1.0044	0.07	0.798	
9. Snakes-insects	42.7	-0.1902	0.9431	0.0772	1.0126	<b>15.06</b>	<b>&lt;0.00001</b>	<b>Women</b>
10. Magic-myth	37.0	0.4619	1.0595	-0.1875	0.9109	<b>106.92</b>	<b>&lt;0.0000001</b>	<b>Men</b>
11. Epiphany	18.0	0.0146	1.0485	-0.0059	0.9802	0.62	0.430	
12. Failure	70.6	-0.1956	0.9882	0.0794	0.9944	<b>20.94</b>	<b>&lt;0.00001</b>	<b>Women</b>
13. Inhibition	78.9	-0.0656	0.9978	0.0266	1.0002	2.44	0.119	
14. Chase-fear	84.8	-0.0704	1.0093	0.0286	0.9954	2.53	0.112	
15. Loss of control	57.8	-0.1599	0.9549	0.0649	1.0111	<b>10.52</b>	<b>&lt;0.0001</b>	<b>Women</b>
16. Beasts	30.1	0.1009	0.9221	-0.0410	1.0276	4.73	0.030	Men

<sup>a</sup>PC factor: Principal components factor score identified by factor analysis with Varimax rotation.

<sup>b</sup>Factor prevalence: Percent of participants endorsing at least one of a factor's component items (see Table 2).

<sup>c</sup>F,P: F-score and probability for factor score mean comparisons between men and women.

each accounted for relatively small portions of variance, from a high of 4.4 (Factor 1: **Death-murder**) to a low of 2.4 (Factor 16: **Beasts**). A more liberal calculation of prevalence, in which the presence of any component item of a factor signaled presence of that factor (Table 3), revealed that whereas no factor attained a prevalence of 100%, **Falling-flying (8)**, **Chase-fear (14)** and **Sex-nudity (5)** each attained a prevalence of approximately 85%.

The observed factor structure indicates that, within individuals, there is an inclination to endorse clusters of typical themes that share a common quality. The first three factors (**Death-murder**, **Disasters**, **Positive themes**) account for the largest clusterings of themes while remaining quite coherent in their content. Specifically, Factor 1, **Death-murder**, groups 6 themes dealing with harm to the self (2, 27, 28, 43) and to others (36, 42). Factor 2, **Disasters**, incorporates 5 themes, including all of the natural disasters (21, 22, 23, 34) as well as human accidents (54). Factor 3, **Positive themes**, includes 7 clearly pleasurable themes (5, 7, 10, 19, 35, 41, 50).

Smaller clusterings of themes also reflected highly consistent content. To illustrate:

- Factor 4 (**Alien life**) groups 46-seeing a UFO, 47-seeing extra-terrestrials and 48-travelling to another planet;
- Factor 5 (**Nudity-sex**) groups 4 themes about nudity (13, 14), sexual experiences (32) and the use of toilets (30);
- Factor 7 (**Self-transformation**) groups 26-being an object (e.g., tree), 49-being an animal and 25-being a member of the opposite sex;
- Factor 8 (**Falling-flying**) clusters 3 prevalent themes that share the attribute of intense vestibular involvement: 11-flying or soaring through the air, 12-falling and 37-being on the verge of falling;
- Factor 9 (**Snakes-insects**) links 2 moderately prevalent themes about common animal phobias: 9-snakes and 24-insects or spiders;

- Factor 11 (**Epiphany**) groups *51-seeing an angel* and *52-encountering God in some form*.

The 5 items from our SP scale loaded on three different factors: 6 (**Paralysis-presence**), 13 (**Inhibition**) and 14 (**Chase-fear**). Two of these 5 (44, 29) were among 4 themes comprising Factor 6 (44, 29, 3, 45) and confirm a significant association we previously observed between paralysis and presence hallucinations among university students (Simard, et al., submitted). Another 2 of the 5 loaded on Factor 13 (15, 39) as did *Item 8-being locked up*, all clearly reflecting the theme of movement inhibition (a fourth item loading on this factor, *31-school, teachers, studying*, is at best suggestive of inhibition). The fifth SP scale item (*4-frozen with fright*) loaded on Factor 14 and appears to reflect a fear dimension since the only other item loading on this factor is *Item 1-chased/pursued*. Understandably, the 5-item SP subscale correlated more highly with these 3 factors than with any of the other 13: i.e., Factor 6 ( $r = .622, p < .001$ ), Factor 13 ( $r = .496, p < .001$ ), Factor 14 ( $r = .302, p < .001$ ).

### Discriminant Validity

To evaluate discriminant validity of the observed factor structure, separate stepwise multiple regressions (probability in: 0.01, probability out: 0.10) were calculated between factor scores and the 4 continuous variables described earlier. Factors scores were associated with all 4 of these variables:

1. Eight factors were independently and positively associated with *frequency of recalled nightmares* ( $R = 0.377, F_{8,927} = 19.15, p < .0001$ ). In order of importance these were **Death-murder (1)**, **Chase-fear (14)**, **Inhibition (13)**, **Self-transformation (7)**, **Paralysis-presence (6)**, **Snakes-insects (9)**, **Failure (12)** and **Disasters (2)**. The highest zero-order correlation was for **Death-murder** ( $r = 0.213, p < .00000001$ ). Note that all 3 SP-related Factors were associated with nightmare recall.
2. Eight factors correlated positively with *frequency of recalled dreams* ( $R = 0.341, F_{8,951} = 15.66, p < .0001$ ). Four of these (Factors 1, 6, 7 and 14) were also correlated with nightmare recall; the remaining 4 were associated exclusively with dream recall: **Sex-nudity (5)**, **Positive themes (3)**, **Loss of control (15)** and **Falling-flying (8)**. The highest correlation was for **Sex-nudity** ( $r = 0.182, p < .00000001$ ).
3. Two factors correlated negatively with *age* ( $R = 0.146, F_{2,1168} = 12.65, p < .0001$ ), indicating lower prevalence with increasing age: **Failure (12)**, and **Death-murder (1)**. The highest correlation was for **Failure** ( $r = -0.124, p < .0001$ ).
4. Two factors correlated negatively with the *age of earliest theme* ( $R = 0.219, F_{2,885} = 22.29, p < .0001$ ), indicating higher prevalence among participants who report typical themes earlier in life; these were **Loss of control (15)** and **Paralysis-presence (6)**. The highest correlation was for **Loss of control** ( $r = -0.181, p < .00000001$ ).

To assess relationships with demographic variables, factor scores were entered as multiple dependent measures into a  $2 \times 3$  MANOVA with Gender (Men, Women) and Region (McGill, Trent, Alberta) as independent variables. Gender, Region and Gender  $\times$  Region effects were all highly significant ( $p < 0.002$ ). For the Gender effect, 5 Factors (4,



9, 10, 12, 15) significantly (all univariate  $p < 0.0001$ ) discriminated groups (Table 3); two Factors (6, 16) demonstrated weak trends ( $p < .05$ ). Men were more likely to report items reflective of **Alien life (4)**, **Magic-myth (10)** and **Beasts (16)**, whereas women were more likely to report items reflective of **Paralysis-presence (6)**, **Snakes-insects (9)**, **Failure (12)** and **Loss of control (15)** (Table 3). All 4 factors characterizing women involve themes with a negative, even nightmarish, emotional valence, whereas factors characterizing men involve extraordinary and fantasy themes, mostly suggestive of a positive emotional valence.

For Region, 5 Factors (1, 10, 11, 12, 15) significantly discriminated groups; two others (3, 5) showed trends (all  $p < .02$ ). Alberta participants were more likely to report items reflective of **Positive themes (3)** and **Magic-myth (10)** and less likely to report items reflective of **Death-murder (1)** and **Loss of control (15)**. Trent participants were more likely to report items reflective of **Epiphany (11)** but less likely to report items reflective of **Failure (12)**. McGill participants were more likely to report items reflective of **Sex-nudity (5)**. For Gender  $\times$  Region interactions, only two trends ( $p = 0.030$ ) were observed: **Epiphany (11)** and **Loss of control (15)**.

## DISCUSSION

The results of our analyses demonstrate the value and potential of this questionnaire for characterizing the nature, prevalence and thematic constellations of diverse typical dream themes. The results suggest (1) consistency of prevalence profiles in relation to common demographic variables, (2) some variability in specific typical themes in relation to demographic variables, and (3) the existence of at least 16 typical factors or dimensions.

### Consistency of Prevalence Profiles

The high degree of consistency in prevalence profiles across regions, gender, age and time supports the contention that many themes are common to large segments of the population and that their prevalences are relatively unvarying despite numerous other influences. The historical consistencies are particularly remarkable considering that the comparison samples are separated by over 40 years of social and cultural change. These consistencies further generalize the high inter-cultural consistencies previously reported by Griffith, et al. (Griffith et al., 1958) and ourselves (Nielsen et al., 1999a). The consistencies support the notion that some typical themes may be near-universal. However, the failure to observe any item or factor with greater than 85% prevalence fails to support the notion of *complete* universality of these themes.

It is noteworthy that the diversity of themes, i.e., the number of themes that participants report, remains highly constant over gender and region. The average diversity score of about 16 (out of 55) themes per questionnaire was the same for men and women and for the 3 regions studied. Theme diversity is also consistent over cultures; Griffith, et al. (1958) noted virtually no differences in diversity scores between Japanese ( $M = 14.9$  out of 34) and American ( $M = 15.0$ ) samples. This degree of consistency is perhaps surprising in light of the finding that a similar measure is related to several psychological variables: e.g., self-awareness, introspection, insight and pathology on the MMPI (Griffith, 1950). Although our between-regions consistencies were somewhat higher for women than for men, this may be due to our additional finding that, relative to men, women's typical themes are more likely to be nightmarish and thus, possibly, less variable in nature.

Four specific themes from the questionnaire (*1-chased or pursued, not physically injured, 12-falling, 31-school/studying, 32-sexual experiences*) stand out by virtue of their prevalences exceeding 60% and by constituting the principal four themes of both male and female participants. At least two of these themes (*31-schools, teachers, studying, 32-sexual experiences*) reflect directly the predominant concerns of new students in a University program. However, it is less clear why the *chase/pursuit* and *falling* themes should also be so prevalent in this population. These two are, in fact, among the most prevalent themes in all of the different samples that we have studied to date. For example, the two most prevalent themes among sleep-disordered patients are also *falling* (58%) and *chase/pursuit* (55%) (Nielsen et al., 1999b). One possible explanation of these high values is an evolutionary theory of dreaming (Revonsuo, 2000) which supposes that themes are transmitted genetically because of their survival value. For example, the *chase/pursuit* theme may have such a widespread occurrence because it has had a proven survival advantage, i.e., virtual, first-person practice in escaping predators (Revonsuo, 2000). However, more elaborate theories are needed to explain themes such as falling or flying in evolutionary terms (Germain, Nielsen, Zadra, & Montplaisir, 2000). Another possible explanation is that the themes may be so prevalent because they are highly salient—perhaps because of the involvement of motor imagery—and thus more memorable (cf. Cohen, 1979 and see below).

In general, evidence of consistency over ages, genders, regions, historical cohorts and cultures supports the notion that some typical themes are near-universal in occurrence. It also supports the claim that such themes are linked to biological, psychological and/or socio-cultural events common to human beings regardless of culture, gender and other mediating circumstances. The findings do not, of course, indicate that typical dreams are necessarily frequent (although some are) nor that they constitute a major proportion of all dream experience. They may, however, constitute a major proportion of the dreams that are initially recalled and that individuals continue to recall and reflect upon over time.

### Variation of Themes by Gender, Region and Age

In addition to evidence for general theme consistency, some findings for specific TDQ items reveal important variations. Many of the regional, gender and age differences that we observed may be plausibly interpreted as due to differences in developmental milestones or personality attributes. Our findings for age clearly support this contention since the two largest samples, from Alberta and Trent Universities, differed slightly but significantly in age (Alberta participants were younger) and on several themes for which age was found to be a distinguishing factor. Some of the items characterizing either the Trent or the Alberta participants (*32-sexual experiences; 35-a person now dead as alive; 38-failing an examination; 45-seeing a face very close; 51-seeing an angel*) also differentiated the younger ( $\leq 18$ ) from the older ( $\geq 19$ ) age groups. Clearly, the probability of experiencing several of these themes in waking life increases with increasing age, e.g., *failing an examination, sexual experiences, a person dying*. In fact, when these themes were reported as being the *earliest* themes that participants could recall, their mean ages of onset were nevertheless *later* in childhood than most of the other themes. For example, *18-teeth falling out* and *32-sexual experiences* as first themes occurred later ( $M = 9.7$  and  $13.1$  yrs respectively) than did *17-creatures, part animal, part human* ( $M = 4.9$  yrs) or *13-being inappropriately dressed* ( $M = 7.6$  yrs). Thus, our observed variations in prevalence with age support Freud's (1955) notion that typical themes derive from important childhood experiences that are typical

for a large segment of the population. It remains unknown whether individuals do, in fact, first dream a given theme, such as *sexual experiences*, shortly after having experienced its counterpart in waking life, but such a possibility could explain many of our findings for prevalence as well as many of our gender and age differences. Moreover, the hypothesis is feasible in light of widespread evidence that dream content incorporates current waking life experience (Hall & Nordby, 1972; Schredl, 2000).

Other observed differences may be related to regional variations in psychological or sociocultural factors that warrant closer study with appropriate instruments. In our study, Trent students were distinguished from the other two groups by several TDQ items (e.g., *51-seeing an angel*, *38-failing an examination*) and by loadings on two associated Factors (i.e., high on 11 **Epiphany**, low on 12 **Failure**). Such findings suggest the possible value of evaluating attributes such as religious/spiritual orientation and level of academic stress as possible sources of typical theme dreaming. Alberta participants were distinguished by high loadings on pleasant Factors (3 **Positive themes**, 10 **Magic-myth**) and low loadings on unpleasant Factors (1 **Death-murder**, 15 **Loss of control**). Such a profile might warrant further study of prevailing social or economic conditions as possible sources of typical themes. McGill students were distinguished from the others by two TDQ items, one of which (*44-being half awake and paralyzed in bed*) is a key component of SP experiences (Nielsen et al., 2000b for review). Prevalence of SP experiences is known to vary by region within Canada and to be associated with sociocultural beliefs within the region (Hufford, 1982; Firestone, 1985). Surprisingly, other features also thought to define sleep paralysis experiences (*29-vividly sensing. . . a presence*, *39-being smothered, unable to breathe*) were not characteristic of McGill students but were more prevalent among Trent students. Such inconsistencies indicate the need for further study of whether conditions such as SP—and the sociocultural factors that may be associated—differentially affect the typical dreams of participants in different regions of the country. Our preliminary analyses of a large sample of sleep-disordered patients indicate that TDQ responses vary as a function of sleep symptoms; however, regional variations have not yet been evaluated (Simard, et al., submitted).

Viewed historically, we replicated many, but by no means all, of the gender differences reported by Griffith et al. (1958). There was evidence that gender differences obtained in their 1950's cohort are still present in contemporary student populations. One of these themes, *32-sexual experiences*, was the 2nd most prevalent theme in the present study (77%) and demonstrated a 12% difference between men (85%) and women (73%). In this respect, our findings are consistent with known gender differences in both quantity and quality of sexual dream themes that have been identified with a variety of methodologies (Hall et al., 1966; Hall, Domhoff, Blick, & Weesner, 1982). However, our observed gender difference for the *sexual experiences* theme (12%) was substantially less than the 56.3% difference observed in the Griffith et al. cohort (men: 92.5% vs. women: 36.2%) primarily because the percentage of women in our cohort who endorsed the item was much larger than in theirs. This difference lends some support to the argument that known gender differences in dream content are due to differences in social role and not biology (Lortie-Lussier, 1991; Lortie-Lussier, Simond, Rinfret, & De Koninck, 1992).

Some of the gender differences that we observed but that Griffith et al. did *not* observe may also be explained as due to personality or sociocultural factors that have changed since the earlier study. For example, in our study consistently higher prevalences among men than among women for the *flying* theme may reflect current gender differences in frequency or fear of air travel, whereas consistently higher prevalences among women than men for items

reflecting academic concerns (*31-school, teachers, studying; 38-failing an examination*) may reflect recent increases in the preponderance of women in post-secondary programs.

However, it bears reiterating that the lack of complete consistency of our results with the Griffith, et al. study, including the fact that we observed 6 gender differences that were not present in their study, underscores the need for replication of the findings with larger samples. The Griffith et al. study was limited in that it examined relatively small samples, which is a particularly acute problem when attempting to characterize themes with low prevalences in the population. Notwithstanding this caveat, our findings indicate that variations in the prevalence of typical dream themes are a fertile source of hypotheses about the probable personality and sociocultural sources of dream content.

### Evidence for Typical Dream Dimensions?

Results from our exploratory factor analyses support the notion that groups of similar themes are expressions of more general underlying dream dimensions. Sixteen potential dimensions were identified in this sample, although some of these may be attributable to the co-occurrence of multiple themes *within the same dream*. For example, a **Death-murder** dream (Factor 1) could conceivably include a scene in which the components of Factor 1, *2-physically attacked (beaten . . . raped)*, *27-being killed*, and *28-seeing yourself as dead*, are all present in a sequence. Similarly, a single **Paralysis-presence** dream (Factor 6) could well contain components *44-half awake and paralyzed*, *29-vividly sensing a presence and 45-seeing a face very close* in some combination. Such constellations of themes do, in fact, correspond to some descriptions of nightmares and sleep paralysis experiences in the literature (Hufford, 1982; Powell et al., 1998). To the extent that the TDQ detects such combinations of themes, the factors we have uncovered would appear to describe either the closely related attributes of a single dimension of dreaming, or the components of some process of *narrative organization* within a dream.

On the other hand, many of the Factors we observed include themes that occur only infrequently in a single dream. For example, it is rare that one and the same **Disaster** dream will contain *tornados, earthquakes, floods and fire*. Similarly, it is rare that a single **Positive theme** dream will encompass *swimming, finding money, eating delicious foods and being at a movie*. Rather, for many of the TDQ Factors where within-dream groupings are rare, it appears that groupings of themes tend to occur across dreams, i.e., *within individuals over time*. In this case, the TDQ would seem to be sensitive to dimensions of dreaming whose final forms of expression are quite distinct.

In either case—the grouping of themes within dreams or within individuals—the findings support to some extent the notion that the factors index underlying mechanisms that determine their shared content. Such mechanisms are likely affected by developmental milestones, personality attributes, sociocultural influences, demographics, and other influences that are common to sizeable segments of the population. Emotions constitute a set of such common influences that clearly seem to have affected many of our observed factors. Embarrassment would appear to be common to 3, and possibly all 4, of the items comprising Factor 5, **Nudity-sex**. Positive emotions would appear to be common to all 7 items in Factor 3, **Positive themes**. Negative emotions of varying types and degrees of intensity would seem to characterize 6 Factors: 1 **Death-murder**, 2 **Disaster**, 9 **Snakes-insects**, 12 **Failure**, 14 **Chase-fear** and 15 **Loss of control**. Although fear is likely the emotion common to several of these Factors, they are nevertheless distinguished by differences in the types of ‘objects’

that trigger the fear. The constellations of typical themes around such emotional invariants is roughly consistent with the notion that dreams serve to 'contextualize' emotions, particularly negative emotions (Hartmann, 1998).

Other identified Factors may be determined by components of personality that are linked to fundamental imagery processes. Factor 7, **Self-transformation**, includes many themes involving transformation of the dreamed self into another form, such as an object, an animal or a member of the opposite sex. Such imaginal changes are rare, but occur especially in dreams with a myth-like structure (Kuiken, Nielsen, Thomas, & McTaggart, 1983). It is possible that themes in this category are shaped, in susceptible individuals, by a deep-seated instability or flexibility of self-representation. A similar explanation may account for Factor 2, **Disaster**, which includes many items involving rapid transformations of images of the environment, such as tornadoes, earthquakes and the crashing of flying objects. This factor may reflect a similar instability or flexibility of the imagination as applied to *non-self* images. One might expect the occurrence of dream imagery with either self- or non-self transformations to be differentially associated with measures of self-esteem, body image boundaries, neuroticism, or other personality features.

Still other Factors identified by our analyses share cognitive or sensory attributes that may have primarily physiological origins or for which physiological factors may interact in unknown ways with sociocultural and personality determinants. For example, Factor 8, **Falling-flying**, clearly involves themes with vestibular sensation, but flying dreams have also been linked with the desire for freedom (to remain in the United States) among newly-landed Mexican immigrants (Brink, Brink, & Hunter, 1977). Similarly, Factor 13, **Inhibition**, which involves themes of actions appearing thwarted (being tied; unable to move; being smothered, unable to breathe; being locked up) may be linked to the ubiquitous muscle atonia present in REM sleep (Liddon, 1967). However, the negative loading of the *school, teachers, studying* theme on this Factor suggests that such an inhibitory process may also interact with personality features such as learning aptitude, scholastic achievement or openness to experience.

In sum, observed clusters of TDQ themes support the existence of fundamental dream dimensions that, in turn, imply underlying mechanisms of imagery organization and expression. Emotional, cognitive, personality and physiological processes may all be implicated in this organization, but more specific investigations of typical themes and their correlates is needed to clarify the relationships.

### Other Questions Raised by the Existence of Typical Dream Themes

Our findings raise several additional questions about relationships between dreaming, neurophysiology and personality that warrant further investigation and discussion. These include questions about nightmares among women, the role of motor imagery, the nature of sleep paralysis experiences, and the personal importance of typical themes.

#### *Are Nightmare Themes More Typical of Women?*

Women in our sample reported experiencing more nightmares in a typical month (about 2 on average) than did men (about 1.5). They also had higher prevalences of primarily nightmarish themes and loaded higher than did men on 4 negatively-toned typical dream factors. In fact, 7 of 8 (87.5%) individual TDQ themes that were more prevalent for women

are nightmarish in character whereas only 4 of 10 (40.0%) themes more prevalent for men are. Signs of a gender difference in disturbed dreaming appear as early as age 16 (Nielsen, Laberge, Tremblay, Vitaro, & Montplaisir, 2000a) and may be due to any of several factors differentially affecting girls of this age: trauma, stressful life events, depression, anxiety symptoms, sleep problems in general. Our analyses of TDQ factors found no gender differences for factors depicting the most severe negative themes (i.e., 1 **Death-murder** and 2 **Disaster**), seemingly ruling out extremely stressful events, such as accidents or trauma, as the source of young women's nightmares. Rather, in the present study women were differentiated from men by their reporting of themes involving phobias (Factor 9 **Snakes-insects**), performance anxiety (Factor 12 **Failure**) and control problems (Factor 15 **Loss of control**). These factors appear to reflect the influence of moderately stressful life events, or perhaps anxiety disorders such as Overanxious Disorder, as our previous study suggests (Nielsen et al., 2000a).

#### *Are Early Themes Shaped by Motor Imagery?*

For the four most prevalent 'earliest themes' reported (i.e., 1-*chased or pursued, not physically injured*, 3-*trying again and again to do something*, 11-*flying or soaring through the air*, 12-*falling*) vigorous motor activity or movement is clearly central to the theme. Two of these items (1, 12) were also found to be the most prevalent themes independent of their 'earliest' status. It is possible that the presence of vigorous activity in this imagery rendered it more memorable and thus more likely to have been recalled at a younger age, a situation which would be expected if motor imagery is, in fact, a central attribute of dreaming as has been postulated (Porte & Hobson, 1996). Another possible explanation is that the typicality of these themes derives from an early developmental change in some common physiological, perceptual or personality process related to heightened motor drive.

#### *What Components of Sleep Paralysis Experiences Differentiate Gender?*

Our *a priori* SP subscale replicated the previous finding that women more often report SP dreams than do men (Fukuda, Miyasita, Inugami, & Ishihara, 1987; Nielsen et al., 2000b) and was validated to some extent by evidence of high correlations between SP score and Factor scores on 3 of the 16 principal components factors (i.e., 6 **Paralysis-presence**, 13 **Inhibition** and 14 **Chase-fear**). The first of these factors suggested a Gender difference ( $p = .050$ ) but not the others. Further, individual SP-related themes on the TDQ did not all clearly differentiate women from men in our study. Only the "paralysis with fear" theme (4-*being frozen with fright*) distinguished the two robustly ( $p = .0002$ ). The more central "paralysis with consciousness" theme (44-*being half awake and paralyzed in bed*) did not ( $p = .335$ ); nor did the sensed presence theme (29-*vividly sensing... a presence in the room*) ( $p = .081$ ) or the choking theme (39-*being smothered, unable to breath*) ( $p = .113$ ). These findings suggest that it may be the association of paralysis with fear, as often occurs in nightmares, which may differentiate women's SP experiences from men's. We have, in fact, observed elsewhere that SP is more prevalent among nightmare sufferers than among control participants or among other types of sleep disorders patients, including those with narcolepsy (Simard, et al., submitted).

### *Are Important Themes Determined by Their Prevalence/Frequency?*

The personal importance that some participants attribute to typical themes was highlighted by the present findings. The findings suggest that a theme's importance is only roughly related to its prevalence or its frequency. The most prevalent and frequent themes (*1-chased or pursued, not physically injured, 32-sexual experiences*) were also two of the most important. Yet, some of the themes involving death (*35-a person now dead as alive, 36-a person now alive as dead*) were much less prevalent but nevertheless rated as important as often as were the more prevalent themes. The personal importance of typical dream themes varies considerably from individual to individual, even though the same theme may be dreamed by many people.

### **Limitations of the Study**

There are limitations inherent in the use of this type of methodology. While such an easily administered questionnaire<sup>7</sup> may well broaden the scope of participant sampling, its validity may also be questioned. It may be argued, for instance, that the retrospective responses are heavily influenced by memory biases or social and cultural stereotyping, and are not representative of individuals' actual dream experiences. Recall for dreams may be distorted or impoverished over time, possibly as a function of the person or persons to whom the dreams are related, whether the themes are culturally acceptable (e.g., sex/violence vs. eating), whether an individual's memory is reliable and many other factors (see Cohen, 1979 for review). It might even be argued that questionnaires purporting to assess responses from as far back as childhood reflect what university students *believe* they have dreamed rather than their true dream experiences. To illustrate this problem, one study found poor correspondence between what participants reported they dreamed about on a general questionnaire and what they actually reported dreaming about in home diaries (Bernstein, Belicki, & Gozalez, 1995).

Such criticisms are fundamental to promoting progress in this type of research. However, as in any domain where construct validation is at stake, the most constructive reply is to follow up the research with replication and the use of complementary methods. For example, to the extent that existing research suggests that retrospective questionnaires tend to *underestimate* the frequency of some types of dream experience (e.g., nightmares) relative to daily sampling methods (Wood & Bootzin, 1990; Salvio, Wood, Schwartz, & Eichling, 1992; Zadra & Donderi, 2000), the present results might be seen to underestimate the prevalence of typical dreams. Additional study with daily sampling methods is clearly called for. Further, daily sampling within a cross-sectional design with several age groups might respond to questions about the fallibility of memory for dreams that occurred many years ago. And, of course, personality questionnaires, including those containing scales for exaggeration and deception, should be administered to determine whether participants are truthful, whether memory and sociocultural factors are associated with recall of typical dreams and whether typical dreams simply reflect the reporting of culturally sanctioned stereotypes. In general, however, it should be noted that most of the themes evaluated in the TDQ are quite

<sup>7</sup>The most recent version of the Typical Dreams Questionnaire contains 56 items and uses a continuous, Likert-type (1-5) response scale rather than a binary scale and takes slightly longer to complete. A French or English copy may be obtained by contacting the first author.

salient and impactful (e.g., flying, sexual encounters, attack) and are thus more likely than mundane dreams to be resistant to distortion and distinguishable from cultural stereotypes. Studies such as that by Bernstein & Belicki (1995), which assess very general attributes of dreaming (e.g., aggression, friendliness), are therefore perhaps ill-suited for comparison with results from the TDQ.

Memorable themes tend to be objects of self-reflection and social exchange and are frequently referred to in determining the personal and sociocultural significance of dreams. A more complete understanding of the breadth and nature of typical themes thus remains key to appreciating how people—individually and collectively—ultimately draw meaning from their dreams.

## REFERENCES

- Andresen, J. J. (1985). The motif of falling: falling and the loss of the mother. *Psychoanalytic Review*, 72, 403–419.
- Armor, D. J. (1974). Theta reliability and factor scaling. In H.L. Costner (Ed.), *Sociological methodology* (pp. 17–50). San Francisco: Jossey-Bass.
- Bernstein, D. M., Belicki, K., & Gonzalez, D. (1995). The development and assessment of the reliability and validity of a dream content questionnaire (DCQ). *Sleep Research*, 24, 138.
- Brink, T., Brink, G. S., & Hunter, K. (1977). Flying dreams: Four empirical studies of manifest dream content. *International Journal of Symbolology*, 8, 73–76.
- Cohen, D. B. (1979). *Sleep & dreaming: Origins, nature & functions*. New York: Pergamon.
- Darlington, H. S. (1942). The tooth losing dream. *Psychoanalytic Quarterly*, 29, 71–79.
- Domhoff, G. W. (1996). *Finding meaning in dreams. A quantitative approach*. New York: Plenum.
- Feldman, S. (1955). The symbolism of teeth in dreams. *International Journal of Psychoanalysis*, 36, 145–161.
- Firestone, M. (1985). The “Old Hag”: Sleep paralysis in Newfoundland. *Journal of Psychoanalytic Anthropology*, 8, 47–66.
- Freud, S. (1955). *The interpretation of dreams*. New York: Basic Books.
- Fukuda, K., Miyasita, A., Inugami, M., & Ishihara, K. (1987). High prevalence of isolated sleep paralysis: Kanashibari phenomenon in Japan. *Sleep*, 10, 279–286.
- Fukuda, K., Ogilvie, R., & Takeuchi, T. (1998). The prevalence of sleep paralysis among Canadian and Japanese college students. *Dreaming*, 8, 59–66.
- Gahagan, L. (1936). Sex differences in recall of stereotyped dreams, sleep-talking, and sleep-walking. *Journal of Genetic Psychology*, 48, 227–236.
- Garfield, P. (2001). *The universal dream key: The 12 most common dream themes around the world*. New York: Harper Perennial.
- Germain, A., Nielsen, T. A., Zadra, A., & Montplaisir, J. (2000). The prevalence of typical dream themes challenges the specificity of the threat simulation theory. *Behavioral & Brain Sciences*, 23, 940.
- Griffith, R. M. (1950). Typical dreams, a statistical study of personality correlates. *PhD Dissertation, University of Kentucky*.
- Griffith, R. M. (1951). Dreams of finding money. *American Journal of Psychoanalysis*, 10, 521–530.
- Griffith, R. M., Miyagi, O., & Tago, A. (1958). The universality of typical dreams: Japanese vs Americans. *American Anthropologist*, 60, 1173–1179.
- Hall, C. & Van de Castle, R. I. (1966). *The content analysis of dreams*. New York: Appleton-Century-Crofts.
- Hall, C. S., Domhoff, G., Blick, K. A., & Weesner, K. E. (1982). The dreams of college men and women in 1950 and 1980: A comparison of dream contents and sex differences. *Sleep*, 5, 188–194.
- Hall, C. S. & Nordby, V. J. (1972). *The individual and his dreams*. Winnipeg, Canada: New American Library.
- Hartmann, E. (1998). *Dreams and nightmares: The origin and meaning of dreams*. New York: Plenum.
- Hufford, D. J. (1982). *The terror that comes in the night: An experience-centered study of supernatural assault traditions*. Philadelphia: University of Pennsylvania Press.
- Hunt, H. T. (1989). The multiplicity of dreams. In *Memory, imagination and consciousness*. New Haven: Yale University Press.
- Kafka, E. (1979). On examination dreams. *Psychoanalytic Quarterly*, 48, 426–447.
- Kuiken, D. L., Nielsen, T. A., Thomas, S., & McTaggart, D. (1983). Comparisons of the story structure of archetypal dreams, mundane dreams, and myths. *Sleep Research*, 12, 196.



- Liddon, S. C. (1967). Sleep paralysis and hypnagogic hallucinations. Their relationship to the nightmare. *Archives of General Psychiatry*, *17*, 88–96.
- Lortie-Lussier, M. (1991). A new look at dreams of females [Fre]. *Journal of Psychiatry & Neuroscience*, *16*, 154–159.
- Lortie-Lussier, M., Simond, S., Rinfret, N., & De Koninck, J. (1992). Beyond sex differences: Family and occupational roles' impact on women's and men's dreams. *Sex Roles*, *26*, 79–96.
- Myers, W. A. (1989). The traumatic element in the typical dream of feeling embarrassed at being naked. *Journal of the American Psychoanalytic Association*, *37*, 117–130.
- Nielsen, T. A., Laberge, L., Tremblay, R., Vitaro, F., & Montplaisir, J. (2000a). Development of disturbing dreams during adolescence and their relationship to anxiety symptoms. *Sleep*, *23*, 727–736.
- Nielsen, T. A. & Zadra, A. (2000b). Dreaming disorders. In M. Kryger, N. Roth, & W. C. Dement (Eds.), *Principles and practice of sleep medicine, 3rd Edition* (pp. 753–772). Philadelphia: W.B. Saunders Co.
- Nielsen, T. A., Zadra, A. L., & Fukuda, K. (1999a). Changes in the typical dreams of Japanese students over 40 years. *16th International Conference of the ASD, Santa Cruz, CA, July 6–10*.
- Nielsen, T. A., Zadra, A. L., Germain, A., & Montplaisir, J. (1998a). The 55 typical dreams questionnaire: assessment of 200 sleep patients. *Sleep*, *21*(Suppl), 286.
- Nielsen, T. A., Zadra, A. L., Germain, A., & Montplaisir, J. (1998b). The 55 typical dreams questionnaire: assessment of 200 sleep patients. *12th Annual Conference of the Association of Professional Sleep Societies, New Orleans, June*.
- Nielsen, T. A., Zadra, A. L., Germain, A., & Montplaisir, J. (1999b). The typical dreams of sleep patients: consistent profile with 284 new cases. *Sleep*, *22* (Suppl 1), S177–S178.
- Porte, H. S. & Hobson, J. A. (1996). Physical motion in dreams - one measure of three theories. *Journal of Abnormal Psychology*, *105*, 329–335.
- Powell, R. A. & Nielsen, T. A. (1998). Was Anna O.'s black snake hallucination a sleep paralysis nightmare? Dreams, memories, and trauma. *Psychiatry*, *61*, 239–241.
- Renik, O. (1981). Typical examination dreams, "superego dreams," and traumatic dreams. *Psychoanalytic Quarterly*, *50*, 159–189.
- Revonsuo, A. (2000). The reinterpretation of dreams: An evolutionary hypothesis of the function of dreaming. *Behavioral & Brain Sciences*, *23*, 877–901.
- Salvio, M. A., Wood, J. M., Schwartz, J., & Eichling, P. S. (1992). Nightmare prevalence in the healthy elderly. *Psychology and Aging*, *7*, 324–325.
- Saul, L. J. (1966). Embarrassment dreams of nakedness. *International Journal of Psycho-Analysis*, *47*, 552–558.
- Saul, L. J. & Curtis, G. C. (1967). Dream form and strength of impulse in dreams of falling and other dreams of descent. *International Journal of Psycho-Analysis*, *48*, 281–287.
- Schredl, M. (2000). Continuity between waking life and dreaming: are all waking activities reflected equally often in dreams? *Perceptual & Motor Skills*, *90*, 844–846.
- Schredl, M., Ciric, P., & Götz, S. (2001). Typical dreams: stability and gender differences. *Eighteenth Annual Conference of the Association for the Study of Dreams, Santa-Cruz, CA, July 10–15*.
- Ward, C. H., Beck, A. T., & Rascoe, E. (1961). Typical dreams. Incidence among psychiatric patients. *Archives of General Psychiatry*, *5*, 606–615.
- Winget, C. & Kramer, M. (1979). *Dimensions of dreams*. Gainesville: University Presses of Florida.
- Wood, J. M. & Bootzin, R. R. (1990). The prevalence of nightmares and their independence from anxiety. *Journal of Abnormal Psychology*, *99*, 64–68.
- Zadra, A. & Donderi, D. C. (2000). Nightmares and bad dreams: Their prevalence and relationship to well-being. *Journal of Abnormal Psychology*, *109*, 273–281.
- Zadra, A. L. & Nielsen, T. A. (1997). Typical dreams: a comparison of 1958 versus 1996 student samples. *Sleep Research*, *26*, 280.
- Zadra, A. L. & Nielsen, T. A. (1999). The 55 typical dreams questionnaire: consistencies across student samples. *Sleep*, *22* (Suppl 1), S175.

**APPENDIX 1—THE TYPICAL DREAMS QUESTIONNAIRE**

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Age: \_\_\_\_\_ Sex: \_\_\_\_\_ Occupation: \_\_\_\_\_

**For the following items, please check all of the boxes [ ] that apply.**

**Have you ever dreamed of . . .**

- |   |  |
|---|--|
| 1. [ ] being chased or pursued, but not physically injured                    | 29. [ ] vividly sensing, but not necessarily seeing or hearing, a presence in the room |
| 2. [ ] being physically attacked (beaten, stabbed, raped, etc)                | 30. [ ] being unable to find, or embarrassed about using, a toilette                   |
| 3. [ ] trying again and again to do something                                 | 31. [ ] school, teachers, studying   |
| 4. [ ] being frozen with fright   | 32. [ ] sexual experiences   |
| 5. [ ] eating delicious foods   | 33. [ ] losing control of a vehicle  |
| 6. [ ] arriving too late, e.g., missing a train                               | 34. [ ] fire   |
| 7. [ ] swimming   | 35. [ ] a person now dead as alive   |
| 8. [ ] being locked up  | 36. [ ] a person now alive as dead   |
| 9. [ ] snakes   | 37. [ ] being on the verge of falling  |
| 10. [ ] finding money   | 38. [ ] failing an examination   |
| 11. [ ] flying or soaring through the air                                     | 39. [ ] being smothered, unable to breathe   |
| 12. [ ] falling   | 40. [ ] wild, violent beasts   |
| 13. [ ] being inappropriately dressed   | 41. [ ] being at a movie   |
| 14. [ ] being nude  | 42. [ ] killing someone  |
| 15. [ ] being tied, unable to move  | 43. [ ] lunatics or insane people  |
| 16. [ ] having superior knowledge or mental ability                           | 44. [ ] being half awake and paralyzed in bed  |
| 17. [ ] creatures, part animal, part human                                    | 45. [ ] seeing a face very close to you  |
| 18. [ ] your teeth falling out/losing your teeth                              | 46. [ ] seeing a UFO   |
| 19. [ ] seeing yourself in a mirror   | 47. [ ] seeing extra-terrestrials  |
| 20. [ ] having magical powers (other than flying or floating through the air) | 48. [ ] travelling to another planet or visiting a different part of the universe      |
| 21. [ ] floods or tidal waves   | 49. [ ] being an animal  |
| 22. [ ] tornadoes or strong winds   | 50. [ ] being a child again  |
| 23. [ ] earthquakes   | 51. [ ] seeing an angel  |
| 24. [ ] insects or spiders  | 52. [ ] encountering God in some form  |
| 25. [ ] being a member of the opposite sex                                    | 53. [ ] discovering a new room at home   |
| 26. [ ] being an object (e.g., tree or rock)                                  | 54. [ ] seeing a flying object crash (e.g., airplane)                                  |
| 27. [ ] being killed  | 55. [ ] someone having an abortion   |
| 28. [ ] seeing yourself as dead   |  |

Other (please describe):

Which theme occurred *most often* in your life (please specify number from 1–55)? \_\_\_\_\_

Which theme occurred *earliest* in your life (please specify number from 1–55)? \_\_\_\_\_ At what age? \_\_\_\_ years

How many dreams of any kind do you recall *in an average month*? \_\_\_\_\_ How many nightmares? \_\_\_\_\_

**Thank you for your assistance.**