

Biases in the relationship between dream threats and the level of anxiety upon awakening

Iñigo Saez-Uribarri*

Objectives. Controlling for report length in dream content analysis comprises a significant methodological problem. Individual differences occur in report length which can influence category coding and rating scales. Differences are also found in dream content by sex and age. The aim of this study is to determine the bias of certain variables in dream content analysis when using rating scales, coding systems and questionnaires. As such, an evaluation was performed of the bias of these variables on the relationship between anxiety upon awakening, social threats and terrifying threats established in a previous study (1).

Methods. The sample consisted of 215 dreams collected by means of questionnaires in dreamers' homes on the same day. 63 belonged to

men and 152 to women. The dreamer's level of anxiety upon awakening from the dream remembered on that day was assessed with the CEAD (2). The level of Social Threat (TS) and Terrifying Threat (TT) in the dream content was also assessed (3). Subjects were asked at what time they had gone to sleep and what time they had woken up in order to calculate the number of hours' sleep. They were also asked at what time they were completing the questionnaire in order to calculate how long had passed since they had woken up. Nightmare frequency was measured on a 6-point scale with values ranging from almost never to every day. Other variables entered into the analysis were sex, age, and the number of words and number of dream characters in the dream report. The dreamers themselves were excluded from the number of dream characters.

Relationship between anxiety upon awakening, dream threats and various sources of bias

	Anxiety upon awakening	Social Threats	Terrifying Threats
Sex	$z^1 = -1.886, p = .059, n = 182$	$z^1 = -1.206, p = .228, n = 182$	$z^1 = -2.031, p = .042, n = 182$
Age	$\rho^2 = -.204, p = .006, n = 177$	$\rho^2 = -.29, p < .001, n = 209$	$\rho^2 = -.375, p < .001, n = 209$
Hours' sleep	$\rho^2 = -.091, p = .224, n = 179$	$\rho^2 = .024, p = .727, n = 209$	$\rho^2 = .080, p = .252, n = 209$
Nightmare frequency	$\rho^2 = .258, p < .001, n = 182$	$\rho^2 = .107, p = .117, n = 205$	$\rho^2 = .150, p = .028, n = 205$
Hours before answering (<24)	$\rho^2 = .129, p = .096, n = 167$	$\rho^2 = -.130, p = .070, n = 194$	$\rho^2 = -.056, p = .440, n = 194$
Number of words	$\rho^2 = -.099, p = .186, n = 181$	$\rho^2 = .221, p = .001, n = 213$	$\rho^2 = .160, p = .020, n = 213$
Number of dream characters	$\rho^2 = -.035, p = .637, n = 182$	$\rho^2 = .367, p < .001, n = 215$	$\rho^2 = .175, p = .010, n = 215$

Note: Two-way significance levels with $p < .05$ are highlighted in bold.

¹ Mann-Whitney U; ² Spearman's rho

Results. Use of the Mann-Whitney U found significant differences by sex in dreamers' nightmare frequency ($z = -2.53, p = .011, n = 209$) and hours' sleep ($z = -2.51, p = .012, n = 209$). A significant correlation was also found between the number of dream characters and the number of words in dream reports ($\rho = .54, p < .001, n = 213$). Furthermore, dreams with a greater number of characters or with more extensive reports presented a higher level of Social or Terrifying Threat. However, the relationship between report length (RL) and Threats turned out to be spurious: on eliminating the effect of the number of characters, the relationship disappeared ($r_{RL-TS} = -.006, p < .937, df = 178$; $r_{RL-TT} = .043, p = .563, df = 178$).

Possible biases due to sex, age, the number of words and the number of characters were therefore statistically controlled for by means of partial correlation. When calculated in this way, the significant relationships between anxiety upon awakening and Social and Terrifying Threats in the dream were maintained ($r_{CEAD-TS} = .17, p = .025, df = 170$; $r_{CEAD-TT} = .19, p = .011, df = 170$).

Conclusions. Word counts of dream reports are often controlled for in research into dream content. An attempt is made to avoid the bias introduced by dreamers by expressing the events which they remember in greater or lesser length, or in greater or lesser detail. If we statistically control for the number of characters, it is not necessary to control for report length. However, elimination of the effect of length or characters can disregard important information from dream content. Dreams with more characters have longer reports and have more threatening content. Eliminating the effect of the number of words in the report means that the effect of the complexity of the report and the threatening content of the dream is partially eliminated. Although there are individual differences, the length of reports is not just a whim on the part of subjects.

In spite of everything, once biases due to sex, age, and number of people and number of words in the report have been eliminated, a significant relationship is shown to exist between threats which appear in the dream and the level of anxiety with which the dreamer awakes.

References:

- (1) Saez-Uribarri, I. (2008). Anxiety upon Awakening and Attributes of Dream Characters. <http://www.cogprints.org/7069>
- (2) Saez-Uribarri, I. (2006). Evaluación de la ansiedad en despertares con actividad onírica. <http://www.cogprints.org/5324>
- (3) Saez-Uribarri, I. (2012). Evaluación de amenazas sociales y terroríficas en sueños cotidianos. Actas de la XXI reunión anual de la Sociedad Española de Sueño. Vigilia y Sueño, 24(1), 20. <http://jbah.es/ojs/index.php/vigilia-sueno/article/view/29/35>

* **Correspondence:** Iñigo Saez-Uribarri, Avda. Sabino Arana 33 2^o dd, 48012 BILBAO, SPAIN. Email: inisaezu@bilbao.com

The average number of words per dream, social threats and terrifying threats increase with the number of characters

