Dream reflecting cultural contexts: Comparing Brazilian and German diary dreams and most recent dreams

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Summary. The continuity hypothesis states that waking life experiences, e.g., personal concerns and cultural environment, are reflected in dreams. The present study's goal was to compare written dream reports from Brazilian and German samples. Overall, 97 Brazilian participants were included; two German samples from previous studies (N=89 and N=4197) were selected for comparison. The Brazilian participants reported 328 and the German participants 348 diary dreams. In addition, 86 Brazilian to 2893 German most recent dreams were compared. For both types of collected dreams, we found more bizarreness in German reports, and more depression-related topics in Brazilian reports. Germans reported more aggression in diary dreams and both more problems and more extreme emotions in most recent dreams. Brazilians reported more work- and leisure-related topics in diary dreams. Several similarities in dream content, e.g., no differences in verbal and physical interaction, number of male and female characters, and death-related themes, hint at universal characteristics of dreaming across cultures. We consider the clear group differences in dream content to reflect basic patterns of Brazilian and German cultures, which is exemplified through some core topics of the respective cultural sets. Concerning Brazil, the themes of miscegenation, emotional culture, and "saudade" ("longing") are discussed. For German culture, the area of conflict between long-standing high-performance in science and arts and the contrasting twentieth century history is addressed. Future research should study the relation between dream content and culture in representative samples; to this purpose dream diaries, sampling daily average dreams, seem preferable to most recent dreams.

Keywords: Dream content, dream report, ethnopsychology, Brazil, Germany, cultural comparison, continuity hypothesis

Young girls cherish their dreams very much, almost as much as mothers usually cherish their first babies. The reason is because dreams are the first children of a girl's imagination that reaches adolescence. The vague desires, the shy hopes, the fragrances of the heart, which do not dare to exhale during the day, give off their odor at night, in the surrender to sleep, like the scent of certain flowers that only open with dew. (Alencar, 1872, p. 177)

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1. Introduction

Dreams have fascinated humans since ancient times (Artemidorus Daldianus, 1864; Tribl, 2011; Webb, 1990). The introductory citation from the Brazilian writer José de Alencar in his novel, "Golden Dreams" is an example for both a culture-specific perception of dreaming and the conviction that activities that the dreamer experiences in real life are reflected in dream content. This presupposition of a relatively tight nexus between daily life and dream content is the basis of the continuity hypothesis (Schredl, 2003a), which has been repeatedly supported by results from systematic dream research.

For instance, Schredl & Hofmann (2003) found a relation of waking activities such as using the telephone, watching TV, using public transportation, writing, calculating, and taking a walk with the occurrence of the same activities in dreams. Activities like spending time with a significant other, work, reading, and driving a car showed a positive correlation with the dream content (Schredl & Hofmann, 2003). Mota-Rolim et al. (2013) also found that nightmare contents are mainly related to more probable waking life experiences (e.g.,

being chased, accidents) and rarely to less probable ones (e.g., environmental catastrophes). These findings therefore support the hypothesis that the activities a person engages in during waking hours influence themes of dreams during sleep (Schredl, 2003a).

These observations lead to the question whether or not other waking life variables like social and cultural environments also have an effect on the dream content. Several studies have examined the way dreams are a reflection of the dreamer's culture (Kracke, 2012). Domhoff (1996, chapter 6) describes that both overall similarities and also differences exist concerning dream content across cultures. For example, male dreamers show a higher percentage of physical aggression than females in Dutch, Swiss, and US American samples, but the total amount of aggression in dreams differs between each sample of the three countries (Domhoff, 1996; Hall & Van de Castle, 1966; Waterman, de Jong, & Magdeliyns, 1988). Moreover, in cultures like the USA, Canada, and Germany men tend to have a higher percentage of male dream characters whereas women tend to dream equally about male and female dream characters (Domhoff, 1996; Schredl, Sahin, & Schäfer, 1998). On the other hand, in the Latin American countries of Peru and Mexico it is the male gender that shows an equal gender percentage for their dream characters whereas women show a higher percentage of male dream characters (Domhoff, 1996; Urbina & Grey, 1975). These variations in dream content between cultures could reflect "unique cultural patterns" (Domhoff, 1996). Therefore research comparing dream content between cultures could offer new insight into cultural differences (Kracke, 2012; Lohmann, 2007).

For example, Krippner, Winkler, Rochlen, & Yashar (1998) compared the dream content of people from Argentina, Brazil, and the USA. They did not only find gender differences in dreams of each of these cultures, but also observed corresponding differences between the cultures. Brazilian females reported more dreams about sexuality, but participated less in acts of aggression within dreams than females from the USA or Argentina. Argentine males reported more successful outcomes within dreams than US American or Brazilian males, whereas Brazilian men reported fewer total aggressive interactions and more sexual interactions (Krippner et al., 1998). In a sample of Brazilian dreamers, overlapping with the prior study, both genders demonstrated an equal percentage of male dream characters but no gender differences for aggressive or sexual interactions, although women reported more friendly interactions in their dreams (Krippner & Weinhold, 2001). In a Brazilian sample, the prevalence and content of lucid and non-lucid dreams were similar to those of US American and European samples, demonstrating overall similarities across those cultures (Mota-Rolim et al., 2013).

There have been no studies comparing the dream content of German and Brazilian dreams so far that the authors are aware of. A bilateral comparison is of particular interest due to various differences between these two populations, among others on the historical, linguistic, ethnical, climatic, and economic levels (Janssens, 2017). Differences in philosophy, science, arts, and music have been discussed under the antagonism of rationality versus emotion, considering the distinctly different admixture of these two constituents of human identity in both cultures (Finger, Kathöfer, & Larkosh, 2015, p. 1). The affective dimensions in human existence and behavior is receiving increased interest in recent research in cognitive science (Pham, 2007) and social theory (Verweij, Senior, Dominguez, & Turner, 2015), as awareness of the need of a balance between rationality and emotion in human life is increasing (Damásio, 1994).

While there are innumerous definitions of "culture", we rely on the broad, classical definition in anthropology from Edward B. Tylor, especially because of its highly universal approach: "Culture or civilization, taken in its wide ethnographic sense, is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society" (Tylor, 1871, p. 1). As our studied material consists of texts, transcripts from experienced dreams, we add two definitions concerning language from Wilhelm von Humboldt, eminent scholar in cultural and linguistic theory and author of numerous grammars, including grammars on indigenous American languages like Guaraní from Brazil and Náhuatl from Mexico (Ringmacher and Tintemann 2016, p. 15): "Language is, as it were, the outer appearance of the spirit of a people; the language is their spirit and the spirit their language" (Humboldt, 1836, p. 37; 1988, p. 46). And referring to the diversity of human languages: their "difference is not one of sounds and signs, but a diversity of weltanschauungen (existential outlooks) themselves" (Humboldt, 1905, p. 27). Here a direct link between verbal expression, existence, and culture is addressed. It seems reasonable to suppose that dreams, expressed in written texts, show a relationship to the culture of the dreamer, certainly through the used language. But as dreaming is an emotionally highly charged, an existentially deeply rooted (D'Andrade, 1961, p. 308), and primarily a pictorial cognitive phenomenon (Tribl, 2011), also nonverbal links between dream and culture are probable.

The goal of this study was to compare both most recent dreams and diary dreams of Brazilians and Germans. In accordance with the continuity hypothesis, we expected that dream contents would reflect aspects of daily life of the respective culture, especially in basic existential characteristics like the approach to emotions, relationships, social activities, and identity. Considering the cultural differences, we also hypothesized that dreams of Brazilians would comprise more affective and social themes and dreams of Germans more rationality and problem-oriented contents.

2. Method

2.1. Participants

For the Brazilian sample, we recruited participants working in the health-care system through personal contacts (by G.G.T and M.C.T.) at the University of Sao Paulo from March 2013 through July 2014 (90% of the dream reports were collected until the end of 2013). The participants were definite or potential healthy controls for a medical study (Tribl et al., 2016) which had been approved by the local ethic board of the University of Sao Paulo, Brazil. The sample consisted of students (mainly of medicine), doctors, psychologists, nurses, administrative employees, and other professionals. The educational level in this sample was high. Originally, the total sample included 100 participants; however, three participants had to be excluded due to sleep apnea syndrome confirmed by a polysomnography. In the remaining sample of 97 participants (35 men, 62 women), the mean age was 34.03 ± 10.62 yrs. (range from 17 to 58 yrs.). One partici-

pant did not keep a dream journal. 86 participants (33 men, 53 women; mean age 33.47 ± 10.52 yrs., range from 17 to 58 yrs.) reported a most recent dream, and 89 subjects (30 men, 59 women; mean age 33.85 ± 10.78 yrs., range from 26 to 58 yrs.) recorded at least one dream in the diary.

To compare the Brazilian sample with German dreams, we used two different German samples: one German sample to compare the most recent dreams and a second sample to compare the dream diaries.

The German sample for the comparison of the dream and the nightmare recall frequencies included a total of 4197 participants (1532 men, 2665 women; mean age 34.34 ± 14.78 yrs., range from 11 to 86 yrs.) (Schredl, Lahl, & Göritz, 2010). In this sample, 2893 participants (878 men, 2015 women; mean age 34.24 ± 14.69 yrs., range from 14 to 86 yrs.) reported a most recent dream (Mathes, Schredl, & Göritz, 2014). Participants were recruited through an online survey that was voluntary, unpaid, and distributed through three websites (www.yougov.de, www.panopia.de, www.studivz.de) from October to November 2008 (Mathes et al., 2014).

The German sample for the dream diary analysis consisted of 89 participants (28 men, 61 women; mean age 31.20 ± 7.10 yrs., range from 25 to 61 years). These participants were selected out of 425 participants of a previous study, performed in the year 2000 (Mathes & Schredl, 2014). In order to obtain comparable age means between the two samples, the oldest participants were selected. Mean age and gender distribution did not differ significantly between the 89 Brazilian and the 89 German participants (age t = 1.9, p = .0545; gender χ^2 = 0.1, p = .7491); the numbers of reported diary dreams were 328 and 348, respectively.

2.2. Measurement Instruments

2.2.1   Dream questionnaire

To measure the dream and the nightmare recall frequencies, we used the MADRE questionnaire (Schredl, Berres, Klingauf, Schellhaas, & Göritz, 2014). To obtain the dream frequency, we presented a 7-point scale (coded as 0 = never, 1 = less than once a month, 2 = about once a month, 3 = about 2 to 3 times a month, 4 = about once a week, 5 = several times a week, 6 = almost every morning). To obtain units of mornings per week, the scale was recoded using the class means (0→0, 1→0.125, 2→0.25, 3→0.625, 4→1.0, 5→3.5, 6→6.5). For measuring the nightmare frequency, we used an eight-point scale (0 = never, 1 = less than once a year, 2 = about once a year, 3 = about 2 to 4 times a year, 4 = about once a month, 5 = about 2 to 3 times a month, 6 = about once a week, and 7 = several times a week). To obtain units in frequency per month, the scale was recoded using the class means (0→0, 1→0.042, 2→0.083, 3→0.25, 4→1.0, 5→2.5, 6→4.0, 7→18.0). For the nightmare item, we used the definition of nightmares based on the ICSD-3 (International Classification of Sleep Disorders) (American Academy of Sleep Medicine, 2014): "Nightmares are dreams with strong negative emotions that result in awakening from the dreams. The dream plot can be recalled very vividly upon awakening". The retest reliability for the dream recall frequency is r = .756 and for the nightmare recall frequency r = .751 (Schredl et al., 2014).

2.2.2   Most recent dream

For collecting the most recent dreams, the instructions by Domhoff (1996) were used: The participants were asked to describe their dream as exactly and fully as they remembered it and to include descriptions of the settings, the people, animals, feelings, and actions within the dream.

2.2.3   Dream diary

We asked the participants to record their dreams over a period of 14 days during which they could record up to five dreams. The dreams were to be described as detailed as possible after waking up in the morning. All dreams of one night were defined as an analysis unit (Mathes & Schredl, 2014).

2.2.4   Dream Content Analysis

The dream content analytic scales in this study were adopted from Schredl et al. (1998): realism/bizarreness (1 = realistic to 4 = three or more bizarre elements within the dream), positive and negative emotions (two 4-point scales: 0 = none, 1 = mild, 2 = moderate, 3 = strong), number of male and female dream characters as well as the total number of persons in the dream. The presence of verbal and physical interaction were each rated on a binary scale of 1 (verbal/physical interaction) and 0 (no verbal/physical interaction). Verbal and physical aggression coming from or targeted at the dreamer was rated in the same way as verbal and physical interaction. Moreover, the occurrence of health-, work-, and leisure-related topics, as well as depression- and death-related topics in a dream were coded binary (1 = present, 0 = not present). The problem scale was a 3-point scale (0 = no problem, 1 = mild problem, and 2 = severe problem that the dreamer has to face within the dream). The interrater reliabilities for the nominal scales (verbal and physical interaction, aggression) has been shown to be above 87% (Schredl, Burchert, & Grabatin, 2004). The interrater reliabilities for the ordinal and interval scales (bizarreness, positive and negative emotions, dream persons, problems) range from r = .642 for positive emotions to r = .926 for total dream characters (Schredl et al., 2004).

2.3. Procedure

The Brazilian sample was recruited through personal contacts (G.G.T and M.C.T.) at the University of Sao Paulo. We instructed all Brazilian participants in a personal interview. They were asked to fill out the dream questionnaire, to write down a most recent dream, and to return the materials to the experimenter. Subsequently, they received the instructions to fill out the dream diary for 14 days. Originally 278 participants were asked to fill out the questionnaires. The response rate in the sample was 66.6% for participants that were examined within a medical study (N = 75) and 24.6% for participants that were only interviewed (N = 203).

The online German sample was recruited through different internet websites and completed the dream and nightmare recall frequency scales. Secondly, they were asked to report a most recent dream. The diary sample recorded their dreams over a two-week period as part of a larger study on dream recall (Schredl, Wittmann, Ciric, & Götz, 2003).

For the rating procedure, the dreams were typed, and all information not related to the dream report (age, gender,

personal information) was removed. Then the dreams were randomly sorted and rated by "blind" raters, a Portuguese researcher for the Brazilian dreams and a German student for the German dreams. Both raters used the same dream manual as a rating system, in German and Portuguese respectively. The German version of the dream manual had been translated into Portuguese by the authors (G.G.T and M.C.T.). All procedures performed involving human participants were in accordance with the ethical standards of the institutional and national research committees and with the 1964 Helsinki declaration and its later amendments.

2.4. Statistical procedures

Statistical procedures were carried out with the SAS 9.4 software package for Windows.

To test the dream and nightmare recall frequencies for significant group differences, we computed an ordinal logistic regression.

For the most recent dream analysis (one dream per participant), logistic regressions were computed for the binary variables. An ordinal regression was computed for the ordinal variables and a linear regression for the interval variables. Age, gender, and word count were introduced in the analysis as covariates.

To compare the male dream character percentages of the most recent dreams between groups, we applied the method of Domhoff (1996). After computing the h effects sizes for the difference between the male percentages of the two samples, the h effect size can be tested for significant group differences using the z statistic.

For the dream diaries (multiple dreams per participants), we applied mixed models since there was the possibility for repeated measures within participants. According to the variables' measurement levels, general linear mixed models were computed for Gaussian data and generalized linear mixed models for ordinal data (ordinal logistic regression with mixed effects). According to the variables' measurement levels, a binary mixed model, an ordinal mixed model or a linear mixed model was computed. For the numbers of all dream characters, of male characters as well as of female characters, a mixed Poisson model was applied which is appropriate for skewed count data. Moreover, the number of dreams per person was analyzed with an analysis of variance (ANOVA), because there were no repeated measures within participants for this variable. Age, gender, and word count were entered as covariates for all analyses.

For the purpose of testing the male percentages of the dream diaries, the mean male percentage per person was

Table 1. Dream and Nightmare Recall Frequencies (Means ± SD)

Variable	Brazilian (N = 97)	German (N = 4197)
Dream recall frequency (original scale values)	3.84 ± 1.70	4.09 ± 1.63
Dream recall frequency (per week)	2.34 ± 2.30	2.64 ± 2.24
Nightmare recall frequency (original scale values)	3.03 ± 1.79	3.35 ± 2.10
Nightmare recall frequency (per month)	1.04 ± 1.70	1.80 ± 2.96

computed in order to get a mean distribution for the sample. Since this distribution of mean male percentages for each dream had local maxima and was not a normal distribution, ordinal levels were set to 0 = 0%, 1 = 1-49%, 2 = 50%, 3 = 51-99%, 4 = 100%, and tested with an ordinal logistic regression with mixed effects.

3. Results

Table 1 shows the comparison of dream and nightmare recall frequencies between German and Brazilian participants. Two ordinal regression analyses with the group variable (Brazil vs. Germany), age, and gender were computed. Overall the groups did not differ significantly in dream (standardized estimate = .0207, X^2 = 1.8, p = .1818) or nightmare recall frequencies (standardized estimate = .0150, X^2 = 0.9, p = .3302). There was a significant gender difference in dream (SE = .0960, X^2 = 3.6, p = .0283, one-tailed) and nightmare recall frequencies (standardized estimate = .0827, X^2 = 2.7, p = .0494, one-tailed), i.e., women tended to report higher dream and nightmare recall. No significant interaction between gender and group for dream (standardized estimate = .0329, X^2 = 0.4, p = .5144) or nightmare recall frequencies (standardized estimate = .0578, X^2 = 1.3, p = .2507) was found. There was a significant age effect for dream (standardized estimate = -.2299, X^2 = 2128, p < .0001) and nightmare recall frequencies (standardized estimate = -.2776, X^2 = 306.1, p < .0001) with older participants reporting lower dream and nightmare recall.

Table 2 depicts the percentages for male dream characters between groups and between genders according to the formula given by Domhoff (1996). The statistical analysis for the most recent dreams showed no significant group differences between the male percentages of Brazilian and German men (h = .220, z = 1.3, p = .2017) or between the female participants of both groups (h = -.038, z = -0.3, p = .7742). However, the German participants showed a significant gender difference with the German women reporting a higher male percentage than German men (h = -.338, z = -8.4, p<.0001). In contrast, there was no significant gender difference for the Brazilian participants with male and female Brazilians reporting an equal percentage of male dream characters (h = .044, z = 0.2, p = .8383). In contrast to the figures presented in Table 2, the mean male percentage per person was computed for the diary dreams, as explained

Table 2. Percent of Male Dream Characters ("male percent")

Sample	Men	Women
Brazil[1] (MRD)	53.3%	51.1%
Germany[1] (MRD)	42.4%	59.2%
Brazil[1] (diaries)	55.8%	51.3%
Germany[1] (diaries)	53.0%	53.9%
Brazil[2]	60%	56%
Peru[3]	51%	55%
Mexico[3]	50%	61%
Argentina[3]	70%	50%
United States[3]	67%	48%

[1]present study; [2]Krippner & Weinhold, 2001; [3]Domhoff, 1996; MRD = most recent dreams

Table 3. Dream Content and Regression Analysis for Most Recent Dreams (MRD) (Means ± SD)

Variable	Brazilian (N = 86)	German (N = 2893)	Group effects		
			SE	X^2 or t	p
Word count[a]	116.36 ± 73.01	75.63 ± 83.68	.1691	5.9	<.0001
Bizarreness[a]	2.06 ± 1.12	2.11 ± 0.83	-.0970	25.6	<.0001
Positive emotions[1,a]	0.67 ± 1.03	0.85 ± 1.14	-.0433	4.2	.0395
Negative emotions[1,a]	1.20 ± 1.21	1.36 ± 1.23	-.0420	5.0	.0247
Number of persons[a]	1.71 ± 1.49	1.48 ± 1.33	-.0305	-2.0	.0487
Male characters[a]	0.64 ± 0.78	0.56 ± 0.75	-.0184	-1.1	.2725
Female characters[a]	0.58 ± 0.91	0.45 ± 0.70	-.0061	-0.4	.7284
Verbal interaction[b]	41.9%	26.7%	.0178	0.7	.4074
Physical interaction[b]	17.4%	16.8%	-.0233	0.7	.3900
Aggression[b]	9.3%	10.4%	-.0472	1.8	.1798
Work-related topics[b]	9.3%	11.9%	-.0292	0.7	.4065
Problems[a]	0.64 ± 0.75	0.88 ± 0.86	-.0726	13.5	.0002
Depression-related topics[b]	27.9%	2.0%	.2699	101.4	<.0001
Death-related topics[b]	12.8%	10.0%	.0075	0.1	.8076

[1]Rated by external judge; [a]Regression analysis; [b]Logistic regression. SE = standardized estimate. Age, gender, and word count were entered as covariates (only group effect depicted).

in the statistical procedures, and the resulting distribution was recoded to an ordinal scale (see method section). For the diary dreams, the mean male percentage for the male Brazilians was 55.67 ± 40.1% and for the female Brazilians 54.03 ± 41.26%. In the German sample, males had a mean male percentage of 52.83 ± 41.14% and females of 53.97 ± 37.18%. The ordinal mixed model analysis showed no significant group difference (t = -0.1, p = .9121) and no significant gender differences (t = 0.1, p = .9364).

The results of the group differences in the most recent dream analysis are presented in Table 3. There was a highly significant difference in the logarithm of word count of the most recent dreams; the Brazilian participants reported longer dreams than the German sample. Brazilians reported less bizarre most recent dreams than Germans. Moreover, the Brazilian dreams contained less positive emotions than Germans, but also less negative emotions. While there was no significant difference in the amount of male or female characters within the dreams, there was a significant difference between groups in the total number of dream characters. In spite of the fact that Brazilians reported a higher number of total dream characters than German participants, this difference is reversed because of the significant longer dreams reported by the Brazilians, i.e., word count was entered as a covariate. Germans reported a higher amount of problems occurring in dreams, but showed less depression-related themes than Brazilians. No significant differences between groups were found for verbal or physical interaction, aggression, and work- and death-related themes in the most recent dreams.

Table 4 shows the differences between groups for the diary dreams. There was no significant group difference for the dream count per person (mean of dreams reported per person). For the self-rated emotions, some data were missing in both samples: In the Brazilian sample, three participants provided no self-ratings for the positive and negative emotions for all of their reported dreams. Therefore, the Brazilian sample for the self-rated emotions contained only

86 participants instead of 89. In total, there were 15 missings for the self-rated positive emotions and 14 missings for the self-rated negative emotions in the Brazilian sample. In the German sample there was no participant who reported no self-rating for all of his dreams. Therefore, the German sample still consisted of 89 participants who had provided at least one self-rating per dream. In the German sample, there were 12 missings for both the positive and negative self-rated emotions. Brazilian dream diary entries were significantly shorter than dreams from the German diaries. Brazilians also reported less bizarre dreams than Germans. Brazilian dream reports contained significantly less aggression than German dreams. Moreover, Brazilian dreams included more work- and leisure-related themes than the German sample. Finally, in German dream reports there were less depression-related topics than in the Brazilian reports. All other variables showed no significant group effect.

Dream examples from the Brazilian cohort

Dream 1: Female, age 40, diary dream. I was thinking of calling Dona Rita all day long, but I did not call her the whole day. I, my children, Dona Rita, her son, and especially her daughter Cristine, we were all together at her house over the weekend. We were all talking, laughing; it was as if we were all one family. As we were getting ready to go home, Dona Rita became sad. I asked what was happening to her having got such a face. She said that she already had saudade*. We hugged each other and both cried, but it was because of joy. I woke up.
* Typical Portuguese term, for explanation see Discussion.

Dream 2: Female, age 21, diary dream. It was in the street, everything seemed somehow old, it was in the past, I think in 1960, by what the clothes of the people looked like. It was carnival, people in the street were costumed, and there were confetti all over the place. I felt a

little lost; people looked at me in a strange way. A group of girls approached me and asked me questions, about my age, where I was from, and how I had gotten there. They were sisters and I knew them, but this was from my time. We stayed together, walking all around as if we were longtime friends. Suddenly, it was in a steep street and at the end of it there was a kind of a gateway. One of the girls gave me a bracelet and she said that when I would wear it, she would know how to find me. I laughed and crossed the doorway.

Dream 3: Male, age 27, most recent dream. I have a girlfriend who lives in Curitiba. And in that dream, I left work and went straight to the bus station to go see her. When I arrived there, I was walking along the avenue and I passed a footbridge where there were many people, and one of them told me that my girlfriend's ex had shot her. I ran to her house, and when I got there, she was alive, but her ex was there, and he shot her in front of me ... I was desperate, and I stabbed him and did not have the strength to go on hitting him, and he ran away ... I went to see my girlfriend, and she was dead ... I felt very bad and I woke up crying and with a "tightness" in my chest. That day, I had this bad and sad sensation all day long.

4.   Discussion

4.1. Positioning of the study findings within dream research

Overall, the findings of the present study indicate that there are significant differences between the dreams of the Ger-man and the Brazilian samples. Germans reported more aggression and problems and less depression-related themes than Brazilians, and Brazilians reported less bizarre dreams than Germans. These results are in accordance with the continuity hypothesis, they confirm earlier findings in dream research, and they expand the knowledge on the relationship between dream content and culture.

Looking at the results, the present study found several similarities between the groups. The Brazilian and German samples did not differ in dream and nightmare recall frequencies. On the background of known high urban violence in Brazil, similar nightmare frequencies are a finding of particular interest. In addition, there were also no differences in the dream count per person in the dream diary sample, which means that Germans and Brazilians showed no significant differences in the amount of dreams they remembered. These findings suggest that there are no cultural effects on dream and nightmare recall frequencies. In order to test this concept, future research could look at potential cultural influences on hitherto identified factors that affect dream and nightmare recall frequencies like stress (Armitage, 1992; Schredl, 2003b) or creativity (Schredl et al., 2003). In addition, there was a significant age effect with older participants reporting a lower dream and nightmare recall which is in accordance with previous studies (Giambra, Jung, & Grodsky, 1996; Schredl et al., 2010) and thus supporting the validity of the present findings. Moreover, the significant gender difference in both samples with females reporting higher dream and nightmare recall is also consistent with previous meta-analytic findings (Schredl & Reinhard, 2008, 2011) and again supporting the validity of the findings.

Table 4. Dream Content and Mixed Models Analysis for Diary Dreams (Means ± SD)

Variable	Brazilian (N = 89)	German (N = 89)	Group effects	
			t	p
Dream count[a]	3.68 ± 1.60	3.91 ± 1.34	0.6	.4360
Positive emotions[1,b]	1.29 ± 0.78 (N= 86)	1.33 ± 0.75	0.7	.4999
Negative emotions[1,b]	1.46 ± 0.78 (N = 86)	1.46 ± 0.80	-0.4	.7000
Word count[c]	100.16 ± 60.48	135.24 ± 103.17	-2.1	.0420
Bizarreness[b]	1.71 ± 0.58	2.29 ± 0.59	7.2	<.0001
Positive emotions[2,b]	0.45 ± 0.67	0.45 ± 0.50	1.6	.1220
Negative emotions[2,b]	0.75 ± 0.73	0.90 ± 0.62	1.7	.0929
Number of persons[d]	2.10 ± 1.41	2.72 ± 1.74	-1.2	.2465
Male characters[d]	0.87 ± 0.80	1.02 ± 0.89	-0.2	.8307
Female characters[d]	0.69 ± 0.78	0.86 ± 0.69	-1.4	.9470
Verbal interaction[e]	52.17 ± 37.16%	63.77 ± 30.64%	-1.3	.1810
Physical interaction[e]	15.65 ± 22.13%	14.74 ± 18.85%	1.3	.2107
Aggression[e]	11.51 ± 22.47%	20.40 ± 25.23%	-2.3	.0235
Health-related topics[e]	3.47 ± 9.76%	3.46 ± 13.08%	1.1	.2693
Work-related topics[e]	20.82 ± 25.71%	12.13 ± 16.46%	2.0	.0443
Leisure-related topics[e]	36.14 ± 32.59%	28.56 ± 25.85%	2.5	.0118
Problems[b]	0.48 ± 0.41	0.58 ± 0.41	1.1	.2929
Depression-related topics[e]	11.80 ± 22.56%	0.67 ± 4.72%	4.4	<.0001
Death-related topics[e]	5.04 ± 12.49%	8.21 ± 16.03%	-0.8	.4070

[1]Self-rated by dreamer, [2]rated by external judge; [a]ANOVA, [b]Mixed ordinal logistic, [c]Mixed linear, [d]Mixed Poisson, [e]Mixed binary logistic. Age, gender, and word count were entered as covariates (only group effect depicted).

In addition, the percentage of male dream characters ("male percent") in dreams did not differ between Brazilians and Germans in the diary sample. But there was a significant gender difference for the German most recent dream sample: German women reported a higher male percentage whereas Brazilian men and women reported an equal amount of male dream characters. The present findings are not in accordance with previous research insofar that in dreams from the US American, Canadian, and German cultures men usually report a higher male percentage than women (Domhoff, 1996; Hall & Van de Castle, 1966; Schredl et al., 1998); however, most of these samples consisted of young students. This discrepancy might be explained by the differences in mean ages as the samples of the present study had a higher mean age than the previous student samples; older women report a higher male percentage than young women and at some point even a higher male percentage than men (Schredl, Paul, Lahl, & Göritz, 2010-2011). Therefore the present German diary sample showed an equal male percentage; and in the German most recent dream sample, having a slightly higher mean age, women even reported a higher male percentage than men (cf. Schredl et al., 2010-2011). Moreover, the similar male percentage for Brazilian women and men in both diary dreams and most recent dreams is in accordance with findings of Domhoff (1996) that some Latin American cultures report an equal percentage of male dream characters for both genders, for example in Peru and Mexico (see Table 2). Krippner & Weinhold (2001) also reported an equal male percentage for Brazilian men and women.

There were two highly significant group differences across both most recent dreams and diary dreams. Firstly, Brazilians reported less bizarre dreams than Germans. A potential explanation could be that Brazilians dream about more specific themes relating to waking life, since the present study also found that Brazilians reported more leisure- and work-related themes in the diary sample. Secondly, Brazilians reported more depression-related themes in their dreams than Germans. To interpret this result, we will consider some aspects of the Brazilian cultural context (further interpretation see chapter 4.2).

In our present study, the Brazilian most recent dream sample, but not the diary dreams, contained less positive and negative emotions than the German sample; this could be a methodological effect of the most recent dreams as Germans might have selected more dramatic and emotional dreams than Brazilians. In addition, Brazilians reported a lower number of total dream characters when the different dream lengths between the groups are taken into account. Furthermore, Brazilians reported fewer problems in their most recent dreams than German participants but not in the diary samples. This difference between methods could be explained by German participants reporting more dramatic most recent dreams than Brazilians (see also Table 3 and 4 for a comparison of German emotions in most recent dreams and diary dreams). However, as it is improbable that Brazilians would have less problems in daily life than Germans, the presence of fewer problems in Brazilian dreams might also reflect a mode of dealing with problems, i.e., less problems in dreams would reflect a generally more easy-going attitude in dealing with problems. Furthermore, problems in dreams might be more influenced by the dreamer's private life than by their cultural environment (Ullman, 1987).

Moreover, Germans showed significantly less work- and leisure-related themes in diary dreams than Brazilians, but these differences were not found for the most recent dream method. The German diary sample consisted mostly of young psychology students who tend to report a lower percent of work-related dreams (Schredl et al., 1998). On the other hand, the Brazilian sample included only about 23% students; the rest of the sample were full-time working employees. This line of reasoning is also supported by the findings of Schredl & Hofmann (2003) that there are more occupational-related themes within dreams, if the dreamer spends more of his waking life time working.

Brazilian most recent dream reports were longer than German most recent dream reports, but German diary dreams showed a higher word count than Brazilian diary dreams. As the differences in word count are reversed, this finding is not likely to be explained by linguistic differences alone. The longer diary dreams in the German sample might be due to the fact that the German diary sample consisted mostly of psychology students who tend to report longer dreams than other students, for example sport students (Erlacher & Schredl, 2004), and employees. The Brazilian sample consisted mostly of medical students and employees in the health-care system who are likely to report shorter dreams. On the other hand, in the most recent dream sample Brazilians provided handwritten reports, whereas Germans provided typed reports. It could be hypothesized that typed reports might be shorter than hand-written reports; future research could test this hypothesis. Moreover, the German online sample was more anonymous than the Brazilian sample which was obtained through personal contacts; this might have motivated the latter to write longer reports.

Lastly several dream content variables did not differ for both methods (most recent dreams vs. dream diaries) between Brazilians and Germans: verbal and physical interaction, frequency of death-related themes, and the number of male and female dream characters. These similarities hint at overall universal dreaming patterns across cultures (Garfield, 2001).

4.2. Interpretation of the study findings in the respective cultural contexts

To summarize the results in a very condensed way: highly significantly different dream contents were more depression-related topics in Brazilian reports and more bizarreness and problems in German reports. On a lower statistical level of significance, the Brazilian reports showed more work- and leisure-related topics and German reports more aggression and stronger emotions (more extreme positive as well as negative emotions).

As there is no Cartesian origo (point zero) of objectivity in cultural and anthropological comparisons, looking at "the other" has inevitably two directions (Damásio, 1994). This means in the present case that we will cautiously attempt to put the dream content findings into both a Brazilian and a German cultural perspective.

Due to the complexity in describing cultures, possible parallelisms between dream content and cultural characteristics can neither be proven by empirical testing nor can they be deduced from a priori reasoning. Therefore, considering Plato's epistemological anamnesis theory (Plato, 1966, 72e-75c; Lee, 2001), we will pursue a phenomenological approach of not free, but of – as we would like to

call it – "educated associations". In doing so, we will also rely on statements of personalities that have proven deep knowledge of their own culture; some of them even possessing intercultural competence between the German and the Brazilian cultures.

The high ratings in depression-related topics in Brazilian reports may be explained and interpreted in a cultural sensitive way. A review on the worldwide prevalence of depression (Kessler & Bromet, 2013) reported a higher prevalence for the City of Sao Paulo (Brazil), than for Germany. Contrary to this bilateral finding, the main result of this survey was that depression is generally associated with high-income societies throughout the world. The methodological imbalance of comparing a city and a whole state may have influenced this particular finding. A recent meta-analysis of 59 studies, screening for mental health problems among medical students in Brazil, reported a high prevalence of depression (30.6%), but the symptom load was mainly in a low range (Beck Depression Inventory rating < 15) (J. P. Pacheco et al., 2017). Neither is "depression" a particularly typical attribute in the general self- and hetero-perception of Brazilian culture (with the stereotypes but also realities of "football, dance, and beaches") nor do WHO suicide statistics hint on a higher prevalence of depression in Brazil. Indeed, the suicide rates in Germany are clearly higher (WHO, 2016). Our Brazilian cohort was recruited through personal contact; the participants were personally instructed by a board certified neurologist and psychiatrist (G.G.T.). We have no convincing indication that a statistically significant percentage of the participants in this cohort suffered from a clinically relevant depression.

According to our rating manual, "depression-related topics" were scored for: sentiments of low spirits, melancholy, sadness, hidden aggression, lack of strength, mentioning dark colors. That these themes appeared in increased numbers in Brazilian reports may reflect the Brazilian typical cultural phenomenon of "saudade". This term means longing for something very dear, remote or inaccessible, – humans, relationships, and things –, and is primarily felt as at times overwhelming loneliness. Etymologically the word probably stems from Latin "solitas", solitude (Freitas, Lourenço, & Pitta, 2014). It might be translated into "melancholy" or "longing", although the general conviction is that this phenomenon and word is unique to lusophone cultures and cannot be properly translated. Suffering this state of lack is at the same time the impetus to communicate it by different means, in daily life communication as well as in artistic expressions of music, poetry, dance, and others (M. d. A. Pacheco, 2014). And here comes the paradox: the "sad and lonely" reality of saudade is in fact the basis of a vibrant, very communicative, and hilarious social life (see Dream 1). Saudade is a generally prevalent basic mood in Brazil and for outsiders a difficult to understand essential integrant of its identity. However, it seems that different characteristics of saudade are perceptible also from a germanophone background. Recently arrived in exile in 1940, the Austrian novelist Stefan Zweig describes in a monograph on his new homeland, "Brazil – Land of the Future": "The Brazilian is a quiet person, dreamy and sentimental, sometimes with a touch of melancholy" (Zweig, 1941a; 1941b, p. 139).

The scale for "depression-related topics" in dreams was originally developed for a sample of German psychiatric patients; there the scale correlated with symptoms of clinical depression (Schredl & Engelhardt, 2001). Applied to dream reports in Portuguese language, this scale apparently rated also dream contents that should be attributed to saudade and not to a clinically relevant depression. At the same time, this methodological impreciseness inadvertently produced the result that saudade is a theme in Brazilian dream reports and probably also in dreams of Brazilians. This means that the present study documents for the first time that the eminent cultural reality and concept of saudade has impact on and can be traced in dreams (see Dream 1 and 2).

In trying to define Brazilian identity, sociologist and historian Sérgio Buarque de Holanda elaborated the concept of "the cordial man" ("o homem cordial") in his seminal analysis "Roots of Brazil" (Buarque de Holanda, 1995, pp.139, 146-148, 205; 2012, p. 111). Being a young journalist of the renowned Brazilian newspaper, "O Jornal" in Berlin from 1928-31, the then student Buarque was heavily influenced by the founders of modern German historiography, Leopold von Ranke, and of German sociology, Max Weber. As part of his elaborate response to Weber's "The Protestant ethic and the spirit of capitalism" (Weber, 1905; 1930), Buarque developed his characterization of Brazilian people as showing "affability in relationships, hospitality, and generosity" (Buarque de Holanda, 2012, p. 117), while declaring that this designates "fundamentally the very opposite of politeness" (see Dream 2). "A polite attitude consists precisely of a kind of deliberate mimicry of manifestations spontaneous in the 'cordial man' ". He also made clear that this does not mean that Brazilians have "good manners" or that they are good or nice in a moral sense, but that in the Brazilian "ethos of emotion" (Buarque de Holanda, 2012, p. 119) loyalty is primarily based on "concord" of sentiments and not on "abstract reasoning". This does not exclude hate and violence, as also these entities are especially rooted in the human heart (Buarque de Holanda, 2012, p. 177) (see Dream 3).

Another fundamental characteristic of the Brazilian culture is its miscegenation between native Indians, Portuguese, Africans, and later from almost all over the globe. Being a historical fact since the arrival of the Portuguese in the year 1500, it has been a subject of perennial discussion, having found far more support than critique in the theoretical discourse (Freyre, 1986, 2003; Ribeiro, 1995, 2000). This historical process of a unification in what has been termed a "democracy of races" (Souza, 2000) is certainly not a linear one (Rezende, 2001) and laden with innumerous obstacles (Freyre, 1986, 2003). A vision of what the deep meaning of this unique melting pot of mankind might be was given by anthropologist Darcy Ribeiro: "If the truth be told, we are the new Rome – a tardy, tropical Rome. Brazil is already the largest of the neo-Latin nations in population size and it is beginning to be so in artistic and cultural creativity also" (Ribeiro, 1995, p. 454; 2000, p. 322).

While working and studying in the Berlin of the pre-World War II Weimar era, Buarque de Holanda had the opportunity to interview the then, 1929, recently Nobel laureate of literature Thomas Mann (republished in Buarque de Holanda, 1987). Curious to address the novelist on at that time roving rumors about his parentage, Buarque was able to document in this publication that Mann's mother was a Brazilian of Portuguese and indigenous ancestry. While Mann never made an explicit reference to Brazil in his oeuvre (Weise, 2012, p. 4), an ambivalence towards his bipolar origins is clearly reflected in his work (e.g. in the novel "Tonio Kröger") (Weise,

2012, p. 24). His Brazilian background has been heavily discussed in the German (Weise, 2012, p. 30) and even more in the Brazilian literary reception (Paulino & Soethe, 2009).

Both the self-definition of Thomas Mann ("Where I am, there is Germany" (New York Times, 1938, Feb 22)) and his public perception is that of one of the most eminent, modern German writers ("Greatest German novelist of the 20th century" (Pascal, 2017)). His novel "Doctor Faustus – The life of the German composer Adrian Leverkühn" (Mann, 1948a, 1948b) has been repeatedly discussed as "the Germany novel" (Lämmert, 2001); Mann called it the "confession of his life" (Mann, 1949, p. 33; 1961, p. 32). It tells the fictitious biography of a genius dodecaphonist composer in the period from late nineteenth century until World War II, on the background of German cultural development and music tradition since the Reformation. Depicting the still young boy Adrian, Mann describes him as: "Yet always it was the extreme that drew him" (Mann, 1948a, p. 23; 1948b, p. 38). To fully develop his doubtless talent and to achieve writing compositions of utmost novelty, Leverkühn, who is characterized as a musician-philosopher in a Nietzsche-like way, contracts a pact with the devil, whose victim he becomes in the end, just at the point when the composer has accomplished his incomparably avant-gardist opus magnum. The infernal condition under which the desired artistic performance is granted to Leverkühn is described by Mann as: "Love is forbidden you, insofar as it warms" (Mann, 1948a, p. 249; 1948b, p. 375).

Modern German culture showed the paradox ranging from the highest humanitarian visions and engagement to a "catastrophe on an unprecedented scale" (MacGregor, 2014, p. 377). The first is testified by personalities like Wilhelm von Humboldt and his Humboldtian ideal of education, a holistic culture model, integrating arts and sciences into an almost Classical Greek perfection (UNESCO, 1993), the other by the totalitarianisms of the twentieth century. The impact of aspects of this cultural breakdown on dreams has been documented in large scale (Beradt, 1966, 1968).

Is there a parallelism to be found between such Brazilian and German cultural characteristics and the both sets of dreams, whose content we have summarized in a quantitative approach? To our amazement, the particularities of the collected German dream content, being a statistically mirrored image of the Brazilian set of dreams, i.e., more bizarreness, more problems and aggression, and more extreme emotions, seem to make an astonishing good fit with certain characteristics that are often associated with the more recent German history, as we have tried to expound. The prevalence of affective contents, which we perceive as a correlate of the cultural phenomenon of saudade, and the higher frequency of social interactions in the Brazilian dreams seem to reflect typical features of Brazilian culture. While the reported German dream contents might be summarized as "more extreme", the Brazilian dreams could be designated as "more equilibrated", reflecting indeed basic existential characteristics of the respective cultures.

4.3. Limitations and Future Directions

Some methodological considerations have to be addressed regarding the present study. Firstly, the participants of the two groups were not equal in their professional level. The German group consisted of more students and the Brazilian group of more full-time working participants. This might have had some influence on the more frequent work-related themes in the Brazilian reports, but it would not necessarily explain other differences, e.g. the more leisure-related topics among Brazilians.

Secondly, there were two different raters for the Brazilian and German samples; one was a Portuguese native speaker and the other was a German native speaker. Since the samples were rated by different raters, interrater reliability indices could not be determined. Previous studies (Domhoff, 1996; Schredl et al., 2004) have shown that interrater reliabilities are in general satisfactory, especially for those scales used in the present study. In order to rule out that group differences, e.g., in aggression and depression, might be explained by different coding styles, systematic research investing interrater reliabilities between judges from different cultural backgrounds should be conducted. The advantage of the approach in the present study is that the dreams were not translated into another language (e.g. English) as in Krippner et al. (1998), so that the meaning of the dream texts was preserved.

Moreover, it should be noted that the samples were not representative. The Brazilian most recent dream and diary samples were obtained through personal contact and from a specific group of people (university setting, well educated, interested in dreams). The German diary sample consisted mostly of psychology students; the German most recent dream sample was obtained online and contained no information about the psychological health of the participants. In both cases the samples were self-selected, and it can be assumed that participants were interested in the topic of dreams. While the samples are linguistically consistent, i.e., a lusophone sample from Brazil and a germanophone sample from Germany, an ethnic uniformity and representativeness may be assumed only for the German cohort. Contrastingly, Brazilians are a people of global origins with a long history of strong miscegenation (Kehdy et al., 2015). The sample of the present study represents this mixed ancestry, but is skewed in showing a higher percentage of descendants from non-Portuguese Europeans (i.e. from Italy, Spain, and to a lower extent also from Germany) as well as from Japan (Kent, 2006). Today the German share in the population and culture of Brazil is of lower magnitude, because of its relative small size in comparison to the total population and due to restrictions of German language use during World War II (Luna, 2000). However, we believe the minor German share causes no significant autocorrelation between the two samples. In order to corroborate the present findings, representative studies will be necessary.

Finally, the two different sampling methods (diary and most recent dream) yielded different results regarding the comparison between Brazilian and German dreams in several variables, e.g., aggression, emotions, and leisure- and work-related dreams. Previous research (Krippner & Weinhold, 2001; Krippner et al., 1998) has noted that when participants are asked to report a most recent dream, they might select a particularly interesting or dramatic dream (see Tables 3 and 4 for higher emotional intensity ratings for most recent dreams compared to diary dreams). Diary dreams are probably more representative of the person's dream life and, thus, preferable over the most recent dream method (Schredl, 2008).

5. Conclusions

The results of the present study support the concept of a reflection of different cultural characteristics in dream content,

hence providing vivid evidence for the continuity hypothesis of dreaming also at the cultural level. Several differences between dream contents from Brazilian and German participants seem to reflect paradigmatic differences between these two cultures. An especially interesting result for the Brazilian culture is that the specific cultural concept of saudade was represented in dream contents. Studying relations between dream contents and their cultural contexts should respect the very particularities of the respective cultures. The findings encourage further studies in dream research, comparing larger, representative, and more detailed characterized cohorts of these two and of other cultures.

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