

Comparing the Content of Sleep Paralysis and Dream Reports

Jennifer D. Parker^{1,2} and Susan J. Blackmore¹

Hall and Van de Castle's method of content analysis, which has been extensively applied to dream content, was used to analyse SP reports. 64 males and 52 females each contributed one SP report. These were content analysed and compared with dream norms, revealing the similarities between dreams and SP. Findings indicate that, emotionally, SP is a more uniform state than dreaming, and that interactions between characters are more aggressive, with the "dreamer" being the victim of the attacks. SP reports contained more cognitive and auditory experiences, and four times as many references to parts of the body. Only one difference was found between males' and females' SP reports; that females reported more sexual activity. A description of a "typical" SP episode is presented, based upon the content analysis system. It was concluded that while SP and dreams share some subjective similarities, they can be identified as separate sleep states by the content of written reports. Furthermore, Hall and Van de Castle's system may provide the foundations for systematic comparisons of other sleep mentation and fantasy states.

KEY WORDS: sleep paralysis; dreams; content analysis.

INTRODUCTION

Sleep paralysis (SP) has been described as "a brief episode of partial or total paralysis occurring at the beginning or end of a sleep period, which may be accompanied by extreme fear, and hypnagogic or hypnopompic hallucinations" (Thorpy, 1990). SP has been found in many cultures and historical periods (Hufford, 1982). Surveys show that up to 58% of people experience SP at least once during their lives, and the experience has been implicated in supernatural and ghostly visitations (Hufford, 1982), alien abductions (Spanos, McNaulty, DuBreuil, Pires and Burgess, 1995; Blackmore, 1998), and in the construction of false memories of sexual assault (Hays, 1992). In the light of these social issues an understanding of the subjective nature of SP is important to sleep researchers, psychiatrists, and the dream community. Several methodologies have contributed to our understanding of SP. The psychoanalytic approach treated SP as a form of neurosis (Payn, 1965) but has

¹Department of Psychology, University of the West of England, Bristol, United Kingdom.

²Correspondence should be directed to Jennifer Parker, Department of Psychology, Faculty of Applied Sciences, St. Matthias Campus, University of the West of England, Oldbury Court Road, Bristol BS16 2JP, United Kingdom.

now largely been abandoned (Kryger, Roth and Dement, 1994). Physiological studies (in patients or healthy subjects) have explored the state in which SP occurs. Surveys have provided information about the frequency and associated symptoms of SP, and there is research highlighting cultural differences in phenomenology. Finally, SP has been used to provide a naturalistic explanation for apparently paranormal or supernatural phenomena. From these different approaches core components of SP have emerged despite differing methods of data collection and analysis. However, there has so far been no systematic analysis of the content of SP reports themselves, or comparison with other sleep mentation states. This study was conducted to fill this gap.

Physiological studies show that SP is associated with rapid eye movement (REM) sleep, and Dahlitz and Parkes (1993) point out common features between SP and REM sleep. For example, both occur during a change in the degree of wakefulness, and both are associated with loss of muscle tone. However SP usually occurs before, rather than after, a period of non-REM sleep; i.e. in sleep onset REM (Fukuda, 1994). Like false awakenings and hypnagogic or hypnopompic imagery, SP may be a dissociative state combining features of wakefulness and sleep (Mahowald and Schneck, 1992). Initially it was thought that SP occurred only in narcoleptic patients (Hishikawa and Kaneko, 1965), but surveys show that one or two episodes are common in people with no pathology (Spanos, et al, 1995; Fukuda, Ogilvie, Chilcott, Vendittelli and Takeuchi, 1998) especially in those with disturbed sleep.

Takeuchi, Miyasita, Sasaki, Inugami, and Fukuda (1992) attempted to elicit SP by interrupting normal sleep patterns. Sixteen subjects were woken, either during the first or third sleep cycle, kept awake for 60 minutes, then allowed to return to sleep. This produced SOREM in 72% of awakenings. Both polysomnographic measurements and questionnaires about the nature of SP were used. Of the 64 elicited SOREM's, six episodes of SP were induced, and four of the reports described dreams occurring immediately after SP. Two participants found it hard to distinguish SP from their dreams. All six reports mentioned inability to move and five included auditory hallucinations. Using polysomnographic measures, Takeuchi et al. (1992) showed that SP is physiologically distinct from lucid dreams, nocturnal panics and REM sleep behaviour disorder. They found that SP is characterised by alpha trains, which intrude into REM sleep, accompanied by arousal response, and muscle atonia that continues even though the EEG pattern is very similar to waking. SP episodes usually end with a major body movement. In many ways Takeuchi *et al's* study used a superior method to our own because of the physiological information it provided and the links made between subjective and objective parameters of the experience. However, the findings were based on only 6 episodes of induced SP rather than many cases of spontaneous SP.

Surveys have been widely used to find the frequency and symptoms of SP in large samples. Table I shows the incidence of SP in seven recent studies. It ranges from 21% to 58% but since there were no standardised methods of data collection, the findings may reflect the differing definitions of SP that were used (Fukuda, 1993). Nevertheless, SP is clearly a common occurrence. Several surveys asked how many times respondents had experienced SP. 83% of Japanese respondents said that it had occurred no more than several times in their life (Fukuda, Miyasita, Inugami, Ishihara, 1987). In Spanos et al's study, 21% had experienced SP. Of these 33% ($n = 126$) reported a single episode, 46% ($n = 178$) two to five episodes, and 20% ($n = 78$) had experienced SP more than five times. This suggests that

Table I. Studies Detailing Incidence Rates of Sleep Paralysis by Country, Year, and Number of Participants

Country	Author and year	Number of respondents	Percentage incidence rate
China	McLenon (1988)	314	58%
Japan	Fukuda, et al (1987)	635	40%
China	Wing, Lec & Chen (1994)	603	37%
Nigeria	Ohaeri, et al (1992)	95	44%
Canada	Spanos et al (1995)	1798	21%
Canada vs. Japan	Fukuda et al (1998)	86 vs. 149	52% vs. 44%
England	Blackmore (1998)	224	46%

once SP has occurred once it is likely to occur again. This recall rate is not comparable with dreams where individuals on average recall a dream every other day (Webb and Kersey, 1967) but recall of both dreams and SP is likely to be affected by their salience, with recall being easiest for bizarre or emotionally intense experiences (Goodenough, Witkin, Lewis, Koulack, Cohen, 1974). Spanos et al (1995) make the interesting suggestion that SP may be underreported because people will only recognised the paralysis if they try to move and find that they cannot. Otherwise they may remember only a dream or false awakening.

What is SP like? The “symptoms” or common features have been documented in surveys, but not from reports of the experiences. Spanos et al (1995) found that 63% of respondents ($n = 382$) reported a sense of presence, 35% felt pressure upon their chest, 66% were afraid, 30% heard unusual noises and 56% had unusual body sensations. In a study by Fukuda, et al (1987) ($n = 273$), 30% of participants felt someone was present, 40% felt pressure on their chest, 72% were terrified, 29% had auditory hallucinations, and 15% experienced tactile hallucinations. Wing, Lee and Chen (1994) reported slightly lower rates; of 223 respondents 59% felt terror and 31% anxiety, 11% sensed a presence, 50% felt pressure on their chest, 23% had auditory experiences and 8% tactile hallucinations.

Fukuda, Ogilvie, Chilcott, Vendittelli and Takeuchi (1998), compared SP in Canadian and Japanese students and found many similarities. For example (giving results in parentheses for Japanese vs. Canadian students respectively) both samples reported a similar frequency of feeling terror or anxiety (55%, 56%), a sense of pressure on their chest (20%, 29%), sensed someone else was present (26%, 27%), saw (17%, 13%), or heard (29%, 29%) someone or something, and were touched by someone (5%, 2%). Two notable differences were that Japanese students reported that they were unable to speak more often than Canadian students (49%, 21%) and when asked “Was the experience a kind of dream for you” far fewer of the Japanese students said “yes” (15%, 56%).

These results suggest that there are consistent components of the SP experience but how it is labelled may depend on cultural factors (see Takeuchi et al, 1998; Blackmore, 1998). Hufford (1982) provides the only in depth cultural analysis of SP, which he aptly describes as “The Terror That Comes In The Night.” From numerous interviews he provides a phenomenological account of “The Old Hag” phenomenon in Newfoundland, together with an index of its experiential components. Amongst the “symptoms” he lists are paralysis, perceiving the bedroom setting as real, intense fear, sensing a presence, hearing sounds, feeling like the victim of an assault, feelings of pressure on various areas of the body, and having the impression of being fully awake (p. 267). He concludes that this cross-cultural phenomenon has played a major role in the cultural construction of supernatural assaults

during sleep, including incubus attacks and ghostly visitations, and that culture affects the way the experience is described and rationalised.

This review of the literature shows that SP and dreams share many similarities. Yet, the subjective experience of dreams has been widely studied, while SP has not. For example, content analysis has been extensively used to study descriptive accounts of dreams (Hall and Van de Castle, 1966; Van de Castle, 1994; Domhoff, 1996) and lucid dreams (Gackenbach, 1988), and rating scales have been used to study reports from NREM sleep (Rechtschaffen, Verdone, and Wheaton, 1963).

After reading many accounts of SP, we concluded that their structure was sufficiently similar to the structure of a dream report to make a proper comparison possible. Symptoms of SP such as fear, auditory and tactile events, also correspond with categorisation of dream content (Winget and Kramer, 1979; Hall and Van de Castle, 1966). The preferred method for analysing dream reports has long been the content analysis devised by Hall and Van de Castle (1966), and Domhoff (1996) has called for it to become the universal method of dream analysis. The study reported here extends this method from analysis of dream reports to SP.

The content analysis system takes the report and, using operationally defined units of verbal behaviours, calculates the frequency with which they occur. The categories used are social interactions, setting, emotions, misfortunes and good fortunes, objects, and actions. In Hall and van de Castle's original study dreams were collected from 100 male and 100 female students, aged 18 to 25 years, in the USA. Each participant contributed 5 randomly selected dreams which were then content analysed. Normative dream content was extracted and norms constructed separately for males and females. These norms have recently been replicated by Domhoff (1996) and norms have also been calculated for the Netherlands (Waterman, DeJong, and Magdelins, 1988), Switzerland (Meier and Strauch, 1990), India (Prasad, 1982) and Japan (Yamanaka, Morita, and Matsumono, 1982). These have shown subtle differences in dream content between cultures, but little difference was found when comparing college students between 1950 and 1980 (Hall, Domhoff, Blick, and Weesner, 1982).

A notable feature of SP, especially when first experienced, is intense fear (Hufford, 1982; Ohaeri, Adelekan, Odejide, and Ikuesan, 1992; Fukuda et al, 1987; Spanos et al, 1995). During dreams emotion is only mentioned in about a third of reports, with two thirds of emotions being described as unpleasant (Hall and Van de Castle, 1966). The frequency of recalled emotion can be increased significantly if the dreamer is asked specifically about the emotional content of the dream (Merritt, Stickgold, Pace-Schott, Williams, and Hobson, 1994). The comparison of SP with the dream state provides an opportunity to investigate whether more emotion is reported in SP than during dreams.

The aim of our study was to find out how reports of SP differ from reports of dreams, using Hall and Van de Castle's content analysis system (Hall and Van de Castle, 1966). No formal predictions were made, although previous research does suggest that fear may be reported more often during SP reports, and that the experiencers may show more awareness of their internal environment by making more references to parts of the body and to cognitive activity and auditory events, but show less awareness of other characters present. These tentative predictions are based on survey studies where such correlates have been reported. In addition we aimed to provide a prototypical description of SP based upon content analysis of the reports.

METHOD

Participants

64 males (age range = 13–78) and 52 females (age range = 16–59) contributed SP reports. All were volunteers, who were unaware how their letters would be used at the time of writing. None of them was personally known to the researchers.

Procedure

An advertisement asking for descriptions of sleep paralysis and other experiences was placed in a number of specialist magazines (The Skeptic (UK), The Skeptic (USA), The Australian Parapsychology Review, ASPR Newsletter, External Affairs News, Nightlight, ASD Newsletter, Promises and Disappointments, Parapsychology Association News, and UFO Magazine, and the X Factor). There was no standardised method of data collection. It was not possible to tell which advertisement the respondents replied to. However, two “waves” of letters were received. The first set was from all sources listed above except “The X Factor.” The second data set was derived solely from replies to the X factor. Only British reports were included in the study. There were no statistically significant differences between the two sets of data.

In total 220 letters were received which contained reports of SP and other sleep mentation phenomenon (including false awakenings, lucid dreams, out of body experiences and other anomalous experiences). SP reports were included in 116 letters. In total two hundred and thirty nine SP reports were extracted from these letters. Reports were excluded if the writer indicated any illness (mental or physical), drug misuse, or sleep disorders. Only one person’s submission was excluded on these grounds. There was no evidence of, or admittance to, psychopathology, sleep disorders such as narcolepsy, or substance misuse in any of the other letters.

For each participant, only one SP report was used. For those participants who sent in sound reports, one was chosen randomly. 25 males’ and 44 females’ reports were excluded because the participant had submitted more than one report. The length of reports was also controlled. Only reports between 50 and 300 words long were included (Hall and Van De Castle 1966; Domhoff (1996). As a result a further 21 reports were excluded. Thirty three reports were also excluded because it was not possible to identify the writer’s gender, making allocation to a “norms group” impossible. In total 123 SP reports were rejected.

Some reports contained annotation, including attempts at rationalisation, relating information to past and present life events, and attempts to explain the events which had occurred. These were not included in the analysis or in the word count, and are not discussed in this paper. The remaining SP reports were transferred to a word processing program so that they could be collated in a form suitable for analysis. The reports were coded using standardised instructions given by Domhoff (1996). All the reports were put together and coded, one category at a time, for the following categories: characters, social interactions including aggression, friendliness and sexual activity, settings, emotions, and successes and failures. Findings that are reported here are male and female comparisons with dream norms for the following standard categories (Schneider, 1998): setting, characters, emotions, interactions, success and failure, body references and activities. We used the findings of previous research

(both SP and dreams) to restrict the comparisons that were made. This was for three reasons: there were time constraints on the project, we wanted to reduce the familywise error rate (Howell, 1998) and, most importantly, we wanted to compare the categories which previous research indicated may show differences.

The data were collated using Dreamsat.xls -Version. 2 (Schneider, 1998). Results were analysed using the H statistic suited to nominal data (Cohen, 1977). Examples of a female and a male report give an idea of the form the reports took.

Examples of "Typical" Male and Female Sleep Paralysis Reports

*Male, Aged 24. As I drifted off to sleep I felt someone climb up on the bed and lie spoon fashion against my back. I could feel this "Being" against the full length of my body and with its hand resting on my right shoulder. I could also feel its breath on my neck as well as hearing it breathe. I had a large pimple on the back of my neck and I felt the "Being" press its lips against this and begin to suck. As it did so my whole body especially the muscles in my upper back began to spasm and convulse. I was unable to move and found it difficult to breathe. The sucking would stop for a moment as the "Being" took a breath. The spasms also stopped although I was paralysed, but would recommence along with the sucking. This lasted for what seemed like an eternity, during which time I tried to call for help but couldn't make a sound. I fought to break the paralysis by concentrating my will, after some time I snapped out of it. *I felt my self almost immediately fall back to sleep even though my heart was still racing from terror.**

*Female, Aged 24. I was woken as I heard my bedroom door open and someone/thing walked to my bed, it stepped over my clothes and leaned over me. I thought I could feel it breathing on me. All this time I couldn't move, or cream, or see and I was very scared. The presence said to me "Don't worry, Clare (a friend in the same room) will be OK." Then the presence turned, stepped back over my clothes and walked out without shutting the door. I didn't hear it shut anyway. As soon as it left I was able to move, see, scream, when I turned the light on I was able to see that the door was shut! *I went straight back to sleep.* Italics were not coded or included in results.*

RESULTS

Length of the Reports

The average word length of the reports was calculated for each gender. The average word length of females' SP reports was 112.6 ($SD = 41.8$) whilst males' reports were 126.0 words long ($SD = 61.3$). This difference in word length was not significant ($t = 0.182$ df 110.83 (for unequal variances), $p = >0.05$), although comparisons of the standard deviations indicate that the length of males' reports was more variable than females.

Male Sleep Paralysis Reports vs. Male Norms for Dream Reports

Males' SP reports were compared with dream norms. Males' SP reports contained significantly fewer groups of people than dreams ($p = <0.01$). There were no significant differences for any of the other character categories such as the number of reports of animals, friends, and gender specific references.

Analysis of social interactions present in reports showed that SP reports contained significantly more aggressive interactions with other characters ($p = <0.001$). The aggression was more often physical aggression ($p = <0.001$). The “dreamer” was more often the victim of the aggression ($p = <0.05$) and not the aggressor ($p = <0.05$). Analysis of other types of social interaction showed that there were fewer sexual ($p = <0.05$), and fewer friendly interactions ($p = <0.001$) with other characters. The frequency with which the dreamer attempted to befriend other characters present in the reports did not differ significantly from dream norms.

Categories taken as indicators of “self concept” showed that SP reports contain a higher percentage of self negativity than dream norms ($p = 0.001$), more negative emotion ($p = 0.05$), and the dreamer was less frequently involved in a success ($p = <0.05$).

Overall there was no significant difference in the number of reports that contained at least one aggression, or a “success.” However, there were fewer SP reports containing at least one friendly ($p = 0.001$), and sexual reference ($p = <0.001$). There were significantly more SP reports that contained at least one failure ($p = <0.001$).

The settings that were reported were significantly more often familiar ($p = <0.001$) and indoors ($p = <0.001$). SP reports also contained more references to negative emotion ($p = <0.05$).

Female Sleep Paralysis Reports vs. Females Norms for Dream Reports

Females’ SP reports were compared with dream norms. When the characters present in SP reports were analysed it was found that SP reports contained significantly fewer familiar characters ($p = <0.001$), and fewer friends ($p = <0.001$). Most of the characters identified by women were creatures, and therefore “genderless” in that they were not identified as male or female. There were no significant differences in the frequency of reporting animals, male or females, or groups of people.

Analysis of social interactions showed that females’ SP reports contained significantly more aggressive ($p = <0.001$), and less friendly interactions ($p = <0.05$). The aggression reported in SP was more frequently physical ($p = <0.001$). More often the “dreamer” reported being the victim of this aggression ($p = <0.001$), and made significantly fewer reports of being the aggressor ($p = <0.001$). There were significantly more sexual interactions ($p = <0.05$) between “the dreamer” and other characters.

Analysis of the self concept categories showed that in SP reports females were significantly more self negative ($p = <0.05$), reported more negative emotion ($p = <0.001$) and made more references to the torso and anatomy than during dreams ($p = <0.001$).

There were also more reports containing at least one aggression ($p = <0.05$), success ($p = <0.001$), and failure ($p = <0.001$). But fewer reports containing at least one friendliness. There was no difference in the number of reports containing at least one sexual reference.

Male vs. Female Sleep Paralysis Reports

Male and female SP reports were compared but only one difference was found. This was that females’ SP reports contained more references to sexual activity than males’ ($p = <0.05$).

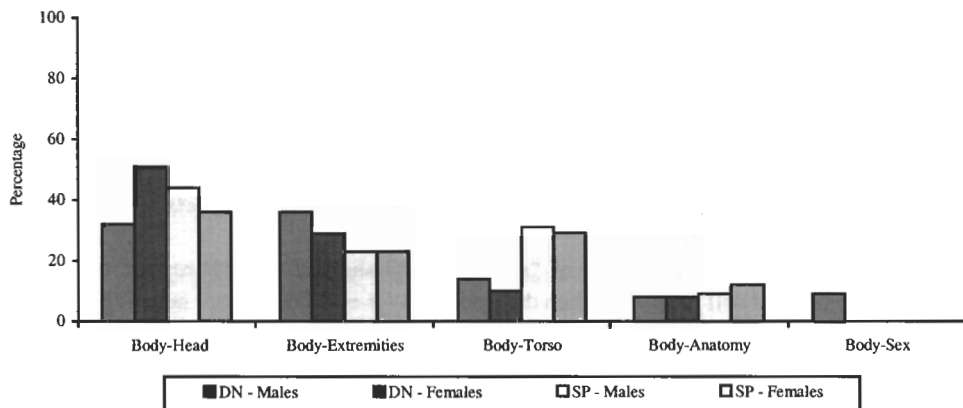


Fig. 1. The percentage of body parts in sleep paralysis (SP) reports compared with Hall and Van de Castle's dream norms (DN).

"The Body" in Sleep Paralysis Reports Compared With Dreams

Reading the SP reports suggested that there may be more references to body parts, compared with dream reports. Hall and Van de Castle's (1966) dream norms show that the average number of times a body part was mentioned in any one dream was 0.49 and 0.63 times, for males and females respectively. In SP the average number of times that the body was mentioned in each report was 3.0 in males' reports and 2.4 in females'; an increase in references to body parts of over 600% for males and 150% for females, indicating that internal orientation and perception of the internal environment was a major factor in describing this experience. The percentage results for each body category appear below in Fig. 1.

The percentage results in Fig. 1 were compared using "h" statistics. Men's SP reports were found to contain significantly more references to the head ($p = <0.05$), and torso ($p = <0.01$), but significantly fewer references to the extremities ($p = <0.01$) and sexual organs ($p = <0.01$).

When females' SP reports were compared with female dream norms no significant differences were found in the number of references to the extremities, or anatomy. However, females' SP reports contained fewer references to the head ($p = <0.05$) and sexual organs ($p = <0.05$) and more reports of the torso ($p = <0.01$) compared to the female norms.

When males' and females' SP reports were compared using this method no significant differences were found. However, males tended to make more references to their head and torso but fewer to their sexual organs during SP.

Activities

The Hall and Van de Castle system (1966) also categorises the types of activities that are undertaken during dream events. The Activities category has 8 subcategories: physical activities, movement, location changes, visual, auditory, verbal, expressive and cognitive. The average number of activities in male dreams was 4.7, and 5.1 for females. In

Table II. The Percentage of Activities in Sleep Paralysis Reports Compared With Hall and Van de Castle's Dream Norms

Category	DN Males (<i>n</i> = 500)	DN females (<i>n</i> = 500)	SP males (<i>n</i> = 64)	SP females (<i>n</i> = 52)
Dreamer involved	61%	52%	81%*	78%*
Physical	60%	56%	47%	34%*
Dreamer physical	61%	52%	32%	14%*
Physical	27%	20%	36%	30%
Movement	25%	25%	11%*	18%
Location change	8%	7%	1%*	1%*
Visual	12%	12%	9%	9%
Auditory	2%	1%	15%*	10%*
Verbal	22%	26%	6%*	10%*
Expressive	2%	3%	2%	2%
Cognitive	3%	5%	19%*	15%*

* $p = <0.05$ level.

SP reports males reported 4.7 activities per report and females 4.9. Therefore, the average number of activities during each type of report was very similar. A closer analysis of the dream subcategories is given in Table II alongside percentages calculated from SP reports.

Results in Table II show that during SP the "dreamer" was significantly more likely to be involved in activities than during dreams (Males— $p = <0.001$; Females— $p = <0.001$). However, dreamer involved physical activities occurred significantly less frequently than during dreams (M— $p = <0.001$; F— $p = <0.001$). Of most interest were activities which could also be classified as evidence of using the senses. When SP reports were compared with dream norms there were similar percentage of references to visual events and expressive reactions. SP contained significantly fewer verbal events (M— $p = <0.001$; F— $p = <0.001$) but significantly more auditory events (M— $p = <0.001$; F— $p = <0.001$), and cognitive activities (M— $p = <0.001$; F— $p = <0.001$). There were no significant differences between male and female SP reports.

The Emotional Content of Sleep Paralysis Reports

Male and female dream norms contain 0.56 and 0.84 references to emotion per report. The average number of emotional references in SP reports was 0.95 and 0.92. Thus male and female SP reports both contained more emotion compared with dream norms. The distribution of types of emotion was compared across reports using Hall and Van de Castle's 5 emotional categories. Table III below shows the results.

Table III. The Percentage of Emotions in Sleep Paralysis Reports Compared With Hall and Van de Castle's Dream Norms

	Apprehension	Anger	Sad	Confused	Happy
Female DN	37%	13%	13%	18%	20%
Male DN	34%	16%	9%	22%	20%
Female SP	88%	4%	4%*	2%*	2%*
Male SP	79%*	6.5%	0%*	6.5%*	8%*

* $p = <0.05$ level.

The percentage results in Table III were tested using "h" statistics. Males' SP reports contained significantly more fear ($p = <0.001$), and less anger ($p = <0.01$), sadness ($p = <0.01$), confusion ($p = <0.01$) and happiness ($p = <0.01$) than dream reports.

Females' SP reports were significantly more fearful ($p = <0.001$) and contained less sadness ($p = <0.01$), confusion ($p = <0.01$), and happiness ($p = <0.01$) than dream reports. However, no significant differences were found in references to anger, although this category did tend towards significance with males SP reports containing less anger than dream reports ($p = 0.07$).

One further type of analysis of emotion was undertaken. This was in relation who experienced emotion during the reported events. During males' dreams, 85% of all emotion was experienced by the dreamer and 15% by other characters; during females' dreams 84% of all emotion was experienced by the dreamer and 16% by other characters. In males' SP reports, 99% of emotion was experienced by the dreamer and 1% (anger) by another character. In females' reports, 95% of emotion was experienced by the dreamer and 5% by other characters (anger and happiness). For both genders 100% of the references to fear were made by the dreamer and not imputed to other characters.

DISCUSSION

The aim of the study was to use Hall and Van de Castle's content analysis system to compare descriptions of SP with dream reports, using norms constructed in 1966, and to identify the similarities and differences between the two types of report. The results indicate that this method of content analysis is a useful way of describing and analysing reports of both types of experience.

However, the study suffers from several weaknesses. First, there was no standardisation of data collection. Some might argue that the results of an ex- post-facto study such as this are unreliable, especially since it uses self-selected volunteers who may be extraordinary in some way. Perhaps, however, the focus should instead be placed on the ecological validity of the letters that were received, and see these findings as providing a natural harvest of SP experiences, which is uncommon in dream or sleep research. Hunt (1989) supports this view and states "the spontaneous recall of a dream is a psychological event in its own right" (p 50). We feel that this justifies our use of these rich reports despite the lack of standardisation of data collection.

We would also like to reiterate that this was an exploratory study and although we have identified statistical differences between the two data sources our main aim was to generate further research and discussion in this area.

Second, only one person coded the reports. Ideally, inter-rater reliability should have been calculated. However, the scorer (JP) has worked on other (unpublished) studies and reached similar reliability levels as those stated by Hall and Van de Castle (Hearne, 1997; Dequemin, 1997). One final area of concern is the issue of norms. Unfortunately, there has been no research using Hall and Van de Castle's method to provide norms for dream content in England. Thus the norms table provided by Hall and Van de Castle and Domhoff for American students was used, and the conclusion must be that this study compares British SP reports with American dream reports. English dream norms are currently being constructed and this issue will then be addressed.

There were also age differences between the participants in this study and those who took part in Hall and Van de Castle's original work. It is fair to say that because the age differences are so notable (19 to 25 vs. 13 to 78 for males and 19 to 25 and 16 to 58 for females) differences in the content of reports could have been due to age differences. This issue would probably have held more weight had it been dream sets that were being compared. As has been shown, there was remarkable consistency in the content of the SP reports when they were compared using gender as the independent variable, so differences due to age, although relevant and worthy of future study were not obviously apparent in the coded SP reports.

The subjective experience of SP was found to be different from dreams. The predictions made prior to the study were also supported. Fear was the predominant emotion felt during the experience and reports of SP did contain more references to internally directed activity.

This was most apparent in the way participants reported bodily awareness. It is the individual's awareness of his or her body that defines the boundaries between self and the world, and as such is an important part of how the self is perceived. It has been argued that during dreaming bodily awareness (Mavromatis, 1987) is generally unavailable or only mentioned when the body image is disturbed in some way (Domhoff, 1996). Our findings show that SP is a state with high internal orientation, with frequent references to parts of the body. In other words, bodily awareness is much greater than during dreams. In addition, there are high levels of cognitive activity directed at what is going on in the immediate surroundings. A similar quantity of emotion is reported in both states. However, SP is far more uniform emotionally than dreams, with fear being most commonly reported. Nearly all emotion was felt by the "dreamer" and not recognised in other characters, as is common in dreams.

The theme of similar quantity but different quality runs through the study's findings, and was particularly true of the social interactions category. There were no significant differences in the percentage of SP reports which contained at least one reference to aggression. The Hall and Van de Castle aggression scale has 8 subcategories; ranging from an aggression that results in the death of a character, to covert feelings of hostility. Aggressions make up the highest percentage of social interactions in dreams (Domhoff, 1996). During SP, aggression was predominantly physical, initiated by another character, and directed towards the dreamer. Domhoff (1996) states that men have a higher frequency of aggressive interactions in their dreams than women. He also asserts that male aggression will be physical (such as fighting). Results here showed that females and males gave a similar percentage of reports with at least one aggressive act (60% vs. 59% respectively). SP also contained similar levels of physical aggression (82% vs. 85%). Domhoff operationally defines dreamers as being "victimised" if the victimisation percent is above 50. In both male and female SP reports, victimisation levels did exceed this point (78% and 86% respectively). Domhoff tentatively suggests that a high level of victimisation is an indicator of psychopathology (p 58; 1996), although he presents no firm empirical evidence.

Friendliness during dreams is another type of social interaction that the system analyses. According to Domhoff (1996) there are three relevant aspects of friendliness that are specific to dreams. First, dreamers are almost always involved in this type of interaction, second the dreamer is rarely friendly towards themselves, and finally the degree to which friendliness is initiated occurs equally by the dreamer and other characters. Women have more friendly interactions during dreams than men. Our results showed that compared with

dreams, SP reports contained significantly fewer friendly interactions for both males and females. Domhoff's assertions regarding point one and two were supported. During SP dreamers are always involved in friendliness, and are not friendly towards themselves, but the degree to which they either initiated or reciprocated friendship was not equal. In both male and female SP reports they were most often befriended rather than the befriender. Domhoff states that the level of victimisation, and the level of befriending indicates how assertive the dreamer is during a dream. It can be concluded from these results that "dreamers" are unable to assert themselves, with any degree of usefulness during SP.

The issue of psychopathology, the dream state and comparison with SP reports raises some important issues. Domhoff (1996) states, albeit tentatively, that there are content categories which may indicate the presence of psychopathology in waking life. The indicators are the frequency of: friends, friendly interactions, aggression/friendliness percent, aggressive interactions, victimisation percent, misfortunes, success rates, the number of negative emotions, and bodily misfortunes. SP reports differ significantly from dream norms on almost all of these categories in the direction indicating pathology. However, we do not believe that SP is an abnormal "dream," rather that on average the person who is experiencing the event perceives it as an attack which fulfils many of the content criteria that Domhoff suggests is an indication of psychopathology. There may be several reasons for this.

Spanos et al. (1995) in a study investigating correlates of SP found that scores on various tests of psychopathology were higher in SP sufferers. However, this finding contradicts other research that has shown no relationship between the occurrence of SP and psychopathology (Bell, Shakoor, Thompson, Dew, Hugley, Mays, and Shorter-Gordon, 1984). Spanos et al. (1995) found that while psychopathology is an indicator of the intensity of sleep pathology symptoms, it is not related to the frequency with which SP occurs. He interprets these findings as showing that SP is mediated through other variables like "stress and overwork" (p 300). Thus this finding is not unequivocal or uncomplicated. However, what this study adds to Spanos et al's findings is that if SP were literally a dream it would be an indicator of psychopathology on several of the key categories identified by Hall and Van de Castle (1966), and Domhoff (1996). We cannot be sure if the people who submitted data had disturbed sleep due to some other factor as we did not directly ask them about this. So prior psychopathology was not accounted for and may be a confounding variable when discussing any links between SP and psychopathology. Further study is required regarding this aspect of the SP experience, before any firm conclusions can be drawn. These will include the replication of these findings, its relationship to dream recall and waking psychological state, and the origins (pathological vs. nonpathological) of any sleep disturbance.

This issue is important because we suspect that some clinicians and therapists treat SP as a symptom of psychopathology when it may not be. We have many letters from people who were scared by an episode of SP, consulted a doctor or therapist and were either prescribed unnecessary medication or made to feel they were ill or abnormal. We need more research so that we can know whether treatment is ever required or whether simple information and reassurance is the best medicine.

Activities during dreams and SP were also compared. Domhoff states that dreamer-involved physical activities and talking account for 74% of males', and 71% of females' total activities (p 61; 1996). The analysis of the activities reported during SP showed that the type of activities undertaken were different for dreams. For example, during dreams the

dreamer will commonly report changing location or making other physical movements like sitting down, standing up or scratching. During SP participants frequently report moving their eyes, fingers, legs, clenching their jaws: again it appears that activities are qualitatively different between the states.

Only one significant difference was found between male and female SP reports. This was that women had significantly more reports with at least one reference to sexual activity. Three other categories tended towards significance. These were that females' reports contained more friendliness towards other characters ($p = 0.08$), and more sexual interactions ($p = 0.065$).

The finding that more women's reports contain sexual activity may link with a study reported by Hays (1992) who discusses case studies of narcoleptics and their "false but sincere accusations of sexual abuse." We feel that this is an important area for future research. The reports we received containing sexual interactions were indicative of sexual assault. When this occurred the women felt powerless to stop what was happening to them and indicated that the sexual advances were unwanted. The question remains however as to whether SP is involved in some respect in cases of false memory of sexual assault. As this is potentially such a volatile topic we do not wish to comment further until this issue is investigated further. Many of the findings presented here show face validity when using Hall and Van de Castle's system on SP reports. The system quantitatively describes what has until now has only been discussed qualitatively (Hufford, 1982). For example, the findings show that SP is a frightening state, the dreamer tries to move but cannot, and may be aware of a presence which is usually perceived as threatening. This occurs with a high level of cognitive activity by an internally orientated "self," which feels victimised and powerless to change the experience. However when the attack is challenged by "the dreamer" it is overcome with equal degrees of success and failure.

These results show that SP is significantly different from dreams, but is a remarkably uniform state, regardless of "the dreamer's" gender. Based on the category system used here, a typical or archetypal SP event could be described as follows:

Sleep paralysis takes place in a familiar, indoor setting (the bedroom). Often a presence or person not known to the dreamer is present. The presence is more often male (if gender is reported), but most common of all is that a sexless "creature" or "form" is sensed. Interactions with the presence are predominantly aggressive (although men do attempt to befriend it more often than women do). "Dreamers" often feel victimised by these interactions. They also report a much greater awareness of their body, particularly the torso, which is accompanied by increased reports of negative emotion (fear). They often struggle to overcome the situation (paralysis) and meet with equal degree of success or failure (sometimes they are able to overcome the paralysis, sometimes not).

Other common features of SP include vibrations, humming, and buzzing noises, pulling and touching sensations on the skin and hearing voices. (Rose, Hogan and Blackmore, 1996).

The question remains over the physiological state of people experiencing SP. Although participants often state they are fully awake and able to look around the real environment, it is possible that they are experiencing some kind of false awakening—that is, dreaming they have woken up. The vivid hallucinations reported here are certainly compatible with this interpretation. This would also explain the similarities in the structure of reports whilst allowing for the content differences. A further physiological study is planned to investigate this possibility. Methods have also been improved to systematically structure the process of

data collection. A within subjects comparison of SP reports and dreams is currently taking place and the results will be made known as soon as possible.

We conclude that SP reports bear a similarity to dreams in their basic structure. However, they are different in the pattern and frequency of occurrence in several key categories. Between male and female reports of SP there are few differences. Women reported feeling more victimised and experienced more sexual activity. Emotionally SP is more uniform than dreams, more attention is also paid to various parts of the body, and activities during the event are more internally orientated than those reported during dreams. It must be stressed again that this study was conducted ex-post-facto and polysomnographic control of sleep states was not conducted. However our findings are comparable with others that have been conducted in the sleep laboratory. The research material is totally dependent upon respondent's agreement with the definition of SP given in the advertisement. This affects the validity of the material and also constrains the types of conclusions that can be reached from our findings. We strongly urge that our conclusions in this study are treated with caution until we have completed the cultural norms for the UK. What we have shown is that Hall and Van De Castle's system can be used to analyse other sleep states as well as dream: a promising contribution to methodological approaches to dream and sleep state research for the future.

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