

Lucid Dreams: The Content of Conscious Awareness of Dreaming During the Dream

Visual-nonvisual cognitive style and response to behavior therapies

Michael Wald and Jefferson M. Fish

The use of imagery in short-term psychotherapy

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Is story image? Reflections of a storyteller

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Adults were recontacted after having participated in a month-long day-by-day dream recording project and asked to provide additional information about their *lucid dreams*, that is, awareness of the dream while still in the dream. Two data sources - daily dream tally sheets and the Lucid Dreaming Questionnaire - were then factor analyzed. Several multiple analyses of variance were also computed in order to determine possible structural and contextual differences between lucid dreams and two types of nonlucid dreams, namely, vivid and ordinary. Lucid dreams were found to be structurally distinct phenomena from vivid or ordinary dreams and were primarily characterized by a sense of control and balance. Regarding content differences between these dreams, it was concluded that lucid dreams are more perceptual, emotional and cognitive than their counterparts.

Book Reviews

Lucid dreams, by Celia Green Reviewed by Peter McKellar

In a *lucid dream* the dreamer's waking consciousness surfaces into the dream in a manner that he feels he is suddenly in possession of his normal waking memories and thoughts but knows that he is actually asleep and dreaming. This dream has a rich historical heritage among those interested in altered states of consciousness (Arnold-Forster, 1921) and in recent years it has been receiving long overdue scientific consideration (Gackenbach, 1978; Hearne, 1978; LaBerge, 1980). Although recognized among sleep researchers, lucid dreaming has been dismissed as an artifact of the arousal process or as an intriguing, though unlikely,

possibility (Schwartz & Lefebvre, 1973). However, LaBerge (1980) and Hearne (1978) both recently demonstrated that subjects could signal, with eye movements, in an unequivocal REM sleep that they were experiencing lucidity. The focus of the present investigation is consideration of the content of these dream experiences; beyond the obvious difference of awareness of dreaming, do lucid dreams differ from non-lucid dreams in other respects?

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following the initial emotional "high" (REM burst). **Based on these findings, it is expected that lucid dreams will be recalled as more emotionally arousing than nonlucid dreams.**

As in nonlucid dreams (Hall & Van de Castle, 1966), virtually all of the sensory modalities in lucid dreams have been reported through anecdote (Green, 1968). In general, complete visual clarity with full color is the most frequently reported sensory experience (Green, 1968). Relatedly, both Hearne (1978) and LaBerge (1980) found that dream lucidity reliably follows a REM burst and since visual imagery in nonlucid dreams is associated with REM activity, visual clarity should be especially salient with these dreams.

Cognitive faculties in the lucid dream have been characterized as relatively rational (Garfield, 1974) and critical (Baker, 1977). By way of comparison, Hall and Van de Castle (1966) found that among adults, females had more cognitive activities than males in ordinary dreams. Assuming that dream lucidity is a relatively thoughtful rather than emotional state, Hall and Van de Castle's finding would predict a sex difference in the incidence of lucidity with females reporting more of such experiences. This has been reported by both Hearne (1978) and Gackenbach (1978).

There is general agreement that lucid dreams are not as bizarre as nonlucid dreams (Green, 1968). In a study by McCarley and Hoffman (1980), the recognition of oddity or strangeness about the dream or dream elements and, at its extreme, the dawning of consciousness during the dream was highly correlated with the presence of bizarre elements in dreams preceding the dawning of awareness

of dreaming. Bizarreness or dream oddities seem to be a major component in the process of becoming lucid, but not a primary component of the lucid dream itself. Therefore, it is hypothesized that lucid dreams will be less bizarre and more thoughtlike and realistic than nonlucid dreams.

The emotional quality of the lucid dream has been described as exciting and pleasurable (Garfield, 1974), vivid (Hart, 1959), filled with deep bliss and gratitude (Van Eeden, 1913), ecstatic (Rapport, 1948), and sexual (Garfield, 1974). Despite such feelings of joy being associated with this experience, several authors note that detachment from one's emotions is necessary in order to maintain dream lucidity (Gackenbach, 1978; Garfield, 1974; Green, 1968).

Given that the emotional content of lucid dreams is predominately positive, to what extent does this reflect the state of affairs in normal dreams? Hall (1951) notes that 64% of all dreams are negative and unpleasant when classified by judges. Highly affective dream content has been positively correlated with REM density (Verdone, 1965) and REM length (Goodenough, Witkin, Koulack, & Cohen, 1975; Verdone, 1965). As noted earlier, both Hearne (1978) and LaBerge (1980) reported that dream lucidity is reliably preceded by REM bursts. This would correspond to the initial emotional "high" reported by lucid dreamers. However, since lucid dreams have not been found to differ in density as compared to control dreams, this may indicate the necessity for emotional stability

Method In the present investigation, 181 members of the Association of Research and Enlightenment (A.R.E.) who were subjects in a dream project in 1975 were asked to participate on the follow-up study. Since data obtained from the original A.R.E. dream research project conducted by Reed (1978) are analyzed and reported here, this previous research project will be briefly reviewed.

The research purposes of the A.R.E. dream project were to determine factors which affect dream recall, how these factors are influenced by a period of concentrated study and the feasibility of exercises in journal writing. Subjects were sent several personality and dream recall questionnaires as well as a dream tally sheet for summarizing dream reports. Before starting the dream project, participants were asked to fill out several of the questionnaires and return them to the A.R.E.

The subjects began the 28-day dream research project after they had familiarized themselves with the dream recall tally sheet, which was developed to facilitate summarizing a dream's characteristics. The tally sheet asked for information regarding the amount of dream recall; positive and negative dream emotions;

and visual, color, sound, voice, taste smell, and palpable dream sensations. Subjects were also asked to indicate whether the dream was lucid and whether the dreamer was an observer-of-the-dream experience.

The dream study manual as explained by Reed (personal communication, 1976) states:

The dream study manual outlined four sequential, week long, problem solving cycles of dream recording and self reflection, dream incubation and dream interpretation using the methods of self-expository writing in a diary and the dream psychology of Carl Jung and Edgar Cayce.

Through the 28-day period, subjects were asked to maintain daily ratings of dream recall observations. Following the 28-day period, subjects were requested to complete once again the questionnaires they filled out prior to the dream journal exercises.

Only a portion of the data from the dream project has been analyzed to date. Reed (personal communication) states that participants reported no change in anxiety, but a significant drop in problems over the course of the project. Overall dream recall improved, dream life was intensified, dreams had an increased sense of meaning and meditation was positively associated with lucid dreaming (Reed, 1977, 1978).

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inquiry were mailed but prior to the cut-off date of data collection, All participants were appraised of the major findings of the study five months after their participation.

Subjects

Subjects in the present study were drawn from members of the A.R.E. who had completed the dream tally sheets for the 28-day dream research project and showed neither logical inconsistencies in the ratings nor departure from the standard recording procedure; 181 protocols met these standards. Of these, 99 agreed to participate in the present study. Of these, 68 women and 22 men between the ages of 24 and 71 ($x = 45$ years) returned completed packets.

Results The results of this research are presented in two sections. The first section presents the factor structure of the different dreams while the second section compares the types of dreams in terms of the three specific content areas upon which the hypotheses are based.

Instrument

Lucid Dreaming Questionnaire (LDO). The LDQ (Gackenbach, 1978)

consists of a series of 30 questions developed from information already known about lucidity. The first administration of the LDQ was with these subjects. For most questions the subjects were asked to compare lucid with *vivid dreams*, that is, dreams that are highly recallable or salient and *ordinary dreams*. The perceptual texture of lucid and other types of dreams was addressed by asking the extent to which the respondents experience various sensory modalities during the dreams. Emotional content was assessed to the extent that the subjects reported feeling positive or negative emotions in lucid/non-lucid dreams. Subjects were also asked questions in the cognitive domain which pertained to the amount of control they had over their dreams, the extent that they could suggest to themselves to have a dream, the degree of dream recall experienced, the amount of waking life recalled while in the lucid dream, the degree of realism versus bizarreness in dreams, and the extent of verbal behavior recalled in dreams.?

Structural Comparison of Dreams

The purpose of this section is to consider possible differences in factor structure between lucid, ordinary, and vivid dreams by drawing on the two sources of dream data: the LDQ and the A.R.E. dream project. Direct comparisons between lucid and nonlucid dreams could be made only by lucid dreamers. In the LDQ there were 24 instances where participants were asked to compare lucid, ordinary, and vivid dreams. Therefore, three separate factor analyses, one for each type of dream, were performed on these 24 variables. These analyses were carried out for lucid dreamers only (n=68). Additionally, the morning-after-dream tally sheets from the A.R.E. dream research project provided another set of 9 variables where lucid dreams could be compared to nonlucid dreams. Each dream from the lucid dreamers was treated as a separate case. Therefore, there were 257 lucid and 2,431 nonlucid morning-after-dream reports which were factor analyzed.

For the factor analyses in this study principal factoring with interrotation as the initial factoring method followed by a varimax rotation was utilized. This method provides the percentage of variance accounted for by each factor, which facilitates comparisons across factor analyses.

LDQ Factor Analyses. The varimax rotated factor matrix loadings for lucidity items from the LDQ are given in Table 1. Eight factors loaded above the minimum eigenvalue of 1.0. However, only those factors which accounted for 10% or more of the variance were retained for interpretation. The first four factors met this criterion and together accounted for 73.2% of the total variance. Those items with an absolute loading greater than or equal to .40 were utilized in interpretation.

For the sake of brevity only the first two factors in each analysis will be discussed.

Factor 1 accounted for 36.5% of the variance, was unipolar, and contained four items loading above criterion: a generalized volitional control of dream items as well as three specific dream control behaviors: manipulate dream scenery, travel in space or time, and change outcome of dream story. This factor is interpreted as reflecting the extent of control one perceives oneself to have during a lucid dream and is labeled "Control."

Procedure

Since subjects were self-selected, they were sent a letter of inquiry requesting their participation in an A.R.E.-sponsored research project on lucid dreaming. The letter described the study and asked the A.R.E. members to sign a subject consent form and return it to the researcher, indicating their willingness to participate in the study.

A cover letter describing the study and requesting the participants to fill out the LDQ, GEFT and 16PF within two weeks was then sent to the respondents. Twenty-one subjects who did not return the packets of materials within 3 weeks were sent a reminder 9 weeks after the letters of

1 Half of the research participants were married and 67.8% had children. The majority (71.2%) had some education beyond the high school level, with 22 bachelors, 10 masters and 2 doctoral degrees represented.

2 The *Sixteen Personality Factor Questionnaire* (16PF; Cattell, 1972) and the *Group Embedded Figures Test* (GEFT; Witkin, Oltman, Raskin & Carp, 1971) were also sent to these A.R.E. members. Results and discussion regarding the 16 PF and the GEFT can be found in Gackenbach (1978, 1981) and are not directly pertinent to the present problem.

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Factor 2 accounted for 14.1% of the variance, with four items loading above criterion: perception during the dream of hearing, the dream perception of limb movement, questioning the reality of the dream while in the dream, and positive emotions during the dream. This lucidity factor relates to the problem of psychological and physical balance often cited as necessary for lucid dreaming (Green, 1968) and is best labeled "Balance." The varimax rotated factor matrices loadings for ordinary and vivid

dreams on the same 24 variables used in the previous factor analysis are also presented in Table 1. Although eight factors exceeded the minimum eigenvalue of 1.0 in both cases, only three in the ordinary dream analysis and four in the vivid dream analysis met the criterion of accounting for 10% or more of common variance. The three ordinary dream factors retained accounted for 66.1% of the total variance. While 74.8% of said variance was accounted for in the vivid dream factor analysis by the first four factors, in both cases the first factors each accounted for slightly more than 36% of the variance. With some minor differences in content both first factors (ordinary and vivid dreams) were primarily characterized by perceptions. However, the item generally considered the dominant dream perception (visioin) showed insignificant correlation with the first factor in both cases. Thus, "Minor Perceptions" suggests itself as an

The same situation occurred for the second factor for both dream types. That is, with minor variations, volitional control, manipulation of dream appropriate label for this dimension, scenery, travel in space and time, and change of dream story outcome were signifiers in both cases. "Control" is suggested as a plausible name

In sum, due to their similarity in factor structures, vivid and ordinary dreams appear to be essentially the same phenomenon, primarily characterized by minor perceptions and secondarily by dream control. In contrast, the lucid dream is primarily characterized by control and secondarily by dream control. In contrast, the lucid dream is primarily characterized by control and secondarily by balance. It should be noted that this description of the difference between lucid and nonlucid dreams is based on subjects' long-term recall of such dreams. Short-term recall reports, or

A.R.E. Dream Project Factor Analyses. Separate factor analyses were morning-after-dream reports, were available on this subject pool through next performed for the same 68 lucid dreamers on their morning-after lucid and nonlucid dream reports from the dream tally sheets. The same factor analytic techniques were used for these two analyses as for the previous three analyses. For the lucid dreaming factor analysis, three resulting factors exceeding the 1.0 minimum eigenvalue and each of these accounted for 10% or more of the total variance. The varimax rotated factor matrix loadings on lucid dreams for all items from the dream for these two factors.

the A.R.E. Dream Research Project.

TABLE Varimax Factor Matrices for the LDQ Items from the Lucid, Ordinary, and Vivid Dreams Factor Analyses *Variable*

Factor 1

Factor 2

Factor 3

Factor 4 Lucid Ordinary Vivid Lucid Ordinary Vivid Lucid Ordinary Vivid Lucid Ordinary Vivid Lucid Ordinary Vivid Vision

0.174 0.124 0.238 0.230 0.127 0.161 0.180 0.164 0.167 -0.026 - 0.229

0.066 Color

0.256 0.305 0.288 -0.009 -0.012 0.314

0.176 0.170 -0.046

-0.011 Hear

0.063 0.582 0.619 0.538 0.299 0.094 0.383 0.223 0.072 0.149

-0.147 Smell

0.111 0.763 0.775 0.050 0.175 0.088 0.698 0.045 0.032 0.267

0.051 Taste

0.007 0.730 0.724 0.056 0.019 0.099 0.739 0.167 0.000

0.013

0.102 0.276 Touch

0.735 0.758 0.328 0.073 0.116 0.317 -0.004

0.695 -0.114

-0.013 Temperature

0.173 0.736 0.652 0.046 -0.099 0.209 0.291 -0.040 0.039 0.552

-0.030 Pain

0.151 0.677 0.592 -0.238 0.068 0.024 0.119 0.114 0.335 0.563

-0.136 Limb Movement
0.120 0.439 0.340 0.710 0.426 0.231 0.202 0.349 -0.013 0.077
-0.015 What is Real?
0.127 0.127 0.092 0.668 -0.065 0.184 -0.226 0.089 -0.128 0.094
-0.088 Volitional Control
0.616 0.027 0.135 0.277 0.703 0.711 -0.077 -0.115 0.096 0.200
0.001 Control Scenery
0.695 0.208 0.255 0.261 0.911 0.747 0.375 0.177 0.132 -0.236
0.041 Control Travel
0.471 0.079 0.080 0.300 0.546 0.557 0.223 -0.083 -0.172 -0.244
0.026 Control Outcome
0.866 -0.036 0.005 0.001 0.893 0.889 0.080 0.176 -0.123 0.093
-0.081 Positive Emotions
0.336 0.056 0.084 0.478 0.147 -0.054 0.088 0.727 -0.092 0.074
-0.160 Negative Emotions
0.006 0.080 0.111 0.004 0.013 0.040 -0.090 0.310 0.942 0.029
0.061 -0.071 Neg. Equal Pos. Emo.
0.026 0.044 0.125 0.198 0.023 0.091 0.066 0.332
0.101
0.143 Flat Emotions
0.203 -0.020 -0.142 -0.197 -0.070 -0.041 0.111 0.018 -0.038
0.916
-0.607 0.169 Meaningful Light
0.190 0.237 0.190 0.307 0.243 0.081 -0.051 -0.139
-0.044
0.314 Bizarreness of Dream **-0.024 0.031 -0.039 -0.285 0.045 -0.070 -0.360 -0.183 0.454**
-0.255
-0.029 Time of Night
0.009 -0.433 0.039 -0.214 -0.192 0.133 -0.152 -0.248 -0.044 0.261
-0.046 0.152 Similar to Hypno.
0.310 0.138 -0.145 -0.066 -0.029 0.601
0.256 0.568
-0.090
0.012 0.003 Verbal Behaviors
0.085 0.302 0.018 0.001 0.037 0.154 -0.007
-0.036 0.064
0.465 0.035 -0.136 0.039 Watching Self
0.049 0.076 0.101 -0.045 0.277
-0.059 0.001
0.062 * The variables "Vision" through "Limb Movement" compare the various was generated from Sparrow's (1976) observation of a light or an especially sensory

modalities perceived in the dream. The "What is real?" variable refers luminous quality as characterizing the lucid dream. "Time of Night" refers to to the question from the LDQ which asks, "to what extent do you ponder the the question regarding when in the course of the sleep cycle does each type of question, 'What is real during each type of dreaming?'" while the variable dream most commonly occur. The question regarding "verbal Behaviors" "Bizarreness of Dream" refers to the relative bizarreness versus realism of a asked the dreamer to indicate the incidence of a memory of words either dream. The four control variables, volitional control through control outcome, spoken or thought in each type of dream. Finally, "Watching Selt" refers to a refers to general and specific dream control abilities. The four emotion vari- question regarding the incidences in which the dreamers observe themselves in the ables deal with both positive and negative emotions in the dream as well as a dream. A high score for each variable except one means "a lot of," a high score for mixture of emotions and the absence of emotions." Meaningful Light" variable time of night, where a high score indicates early morning or late in the sleep cycle.

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tally sheets are presented in Table 2. Four variables loaded significantly on Factor 1 and created a unipolar dimension, namely, positive emotion, perception of sound, perception of voices, and kinesthetic perceptions. This first factor essentially parallels Factor 2 ("Balance") of the lucid dream LDQ factor analysis, as it also appears to represent the physical and psycho logical balance characteristic of dream lucidity. Therefore, the title "Balance" will also be used for this factor, which accounts for 67.5% of the variance.

TABLE 2 Varimax Factor Matrix for Lucid Dreams
from the A.R.E. Dream Tally Sheets

Variable Dream Recall Visual Color Positive Emotion Negative Emotion Sound Voice Taste or Smell
Kinesthetic

Factor 1

0.161 0.196 0.230 0.420 -0.018 0.815 0.605 0.108 0.645

Factor 2

0.467 0.839 0.527 0.379 0.229 0.186 0.208 0.065 0.157

Factor 3

0.163 0.184 0.305 -0.070 0.777 0.125 0.045 0.308 0.322

tional content from each of the data sources. Data were used from all 90 subjects and analyses were calculated on an unequal number of dreams per cell (i.e., nonlucid dreamers would have provided no information on lucid dreams).

***Lucid Dream Questionnaire (LDO).* In order to directly compare the three types of dreams in these analyses of variance, type of dream was treated as a within-subject independent of variable. The variables associated with dream perception include the visual aspects, the degree of color perceived, sense of hearing and smell, taste, tactile sensations, temperature, amount of pain perceived, limb movement, and the luminous quality within the dream. A one-way multiple analysis of variance comparing lucid, ordinary and vivid dreams in terms of these 10 variables reached significance, $F(20, 426) = 2.96, p < .0001$ (Hotelling-Lawley Trace). Due to the significance of the multiple analyses variance, one-way analyses of variance on each perception variable were justified. The means and F-values are summarized in Table 3. Vision, color, hearing, smell, taste, pain, touch and light showed significance. A comparison of means indicates that vivid dreams were generally perceived as more perceptually salient than lucid or ordinary dreams.**

Four variables were compared with regard to the emotional content of dreams. These include positive and negative feelings, positive and negative feelings being equal or neutral, and flat emotions or nonemotionality. Results of the multiple analysis of variance reached significance, $F(8,424) = 12.15, p < .0001$. The results of the one-way analyses of variance indicates that there was a significant difference between dreams for all variables (see Table 3). Vivid dreams were found to have significantly more positive and negative emotional content as well as a more neutral and flat emotions than lucid dreams.

Variables associated with cognition include volitional control over the dream, being able to manipulate the scenery within the dream, changing the outcome of the dream, travel in space and/or time in the dream, the extent of bizarreness perceived by the dreamer, and the dreamer asking the question, "What is real?" while the dream is taking

place. The multiple analysis of variance again showed a significant difference existing between types of dreams, $F(12, 240) = 2.65, p < .002$. Three of the four variables were found to have significant F -values, when one-way analyses of variance were performed. Lucid dreams were higher in volitional control over the dream, changing the outcome of the dream, and the dreamer

Factor 2 of this analysis had three variables with loadings above .40.

They were: dream recall, perception of vision, and perception of color. This factor supports Lloyd (1976), who notes that short-term visual memory is one of four factors which affect recall. Therefore the label

"Visual Recall" suggests itself as appropriate for Factor 2.

In the factor analysis of nonlucid dream data from the dream tally sheets, one factor accounted for 100% of the variance. All variables but taste loaded above the .40 criterion. This seems to be a general dream factor and is entitled "Nonlucid Dreams."

As in the previous analyses, two distinctly different factor structures emerged from the data collected on the A.R.E. dream tally sheet which was based on short-term memory. While there were three dimensions along which lucid dreamers characterized the lucid dreams, there was only one dimension which characterized the nonlucid dream, supporting the notion that dream lucidity is a distinctive dream experience. Interestingly, for lucid dreams, "Balance" appears to be an extremely important dimension defining the experience from both long- and short-term recall reports.

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Content Comparison of Dreams

Another way to determine whether or not lucid dreams have an essentially unique character is to compare the types of dreams in terms of their content. Consequently, lucid and the two types of nonlucid dreams were compared with regard to the specifics of perceptual, cognitive and emo

3It should be noted that for the LDQ at least, the conceptual organization of items for multiple analyses of variance parallels the factor structure for perceptual and cognitive items. This was not the case for the emotional items from the LDQ or for the items from the dream

tally sheets. This conceptual organization is justified on three grounds: partial overlap with factor structures as noted, face validity, and direct responsiveness to the hypotheses.

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Variable

-Value

Variable

F-Values

TABLE 3 Means and F-Values for Perceptual, Emotional, and Cognitive Items from the LDQ

Means as a

Function of Type of Dream Lucid

Ordinary

Vivid Perceptual Items

4.21 3.41.

4.41 3.07

3.37_a

3.805 1.68 1.30

1.69_b 1.71

1.78

TABLE 4 Means and F-Values for Perceptual Items on A.R.E. Dream Tally Sheets

Type of Dream lucid

non-lucid 1.66

1.10 1.27

0.85 0.78

0.29 1.12

0.64 0.11

0.08 0.75

0.32

3.48

vision color sound voice taste-smell kinesthetic

5.277

4.05 b 3.905

115.15

53.95* 115.49* 97.06*

2.41 92.81*

9.907

ou

1.42a

vision color hearing smell taste temp pain limb touch light

2.05b 1.77b 2.00 2.13b

5.037 7.417 5.037

*p<.0001

1.24

1.48a

1.83b

5.877

2.83

3.16

2.90 2.40 a 1.80

2.73 ab 1.83a

3.09b 2.63 b

0.90 4.037 11.447

positive emotions (t (1863) = 12.33, p < .0001), and **negative emotions** (t [1861] = 5.40, p < .0001) than nonlucid dreams.

2.43a

Emotional Items

3.01b

3.75

2.77 6

1.282

2.65b 2.51 ab 2.38b

positive negative 1.402 neg. ed. pos. flat

1.11a control scenery 1.66 volitional control 2.25 control travel 2.08 control outcome

2.05 What is real ? 2.37 bizarreness 4.08

1.44 1.69b 1.87

2.25b 1.610 1.55 1.676 1.96 1.515 1.94 3.92

13.757 25.537 14.45 20.077 0.45 5.287 0.36

4.067 8.447 0.16

1.52b 1.49b

3.92

*Duncan post-hoc tests were calculated on the means.

Subscripts which are the same indicate no difference between the means while subscripts with different letters indicate that those means differ at the .05 level. *fp* .01

Discussion The structural and contextual characteristics of lucid and nonlucid dreams were investigated. A questionnaire (LDQ) developed to investigate the content of lucid versus nonlucid dreams and morning-after dream tally sheets collected by the A.R.E. constituted the two data sources. Although all information is from the same 90 individuals, the data banks differ in several ways: the LDQ provides information on the long term recall of dreams, whereas the tally sheets provide information on short-term recall; the information from the latter source is three years older than that of the former; the LDQ compared lucid dreams with two types of nonlucid dreams - ordinary and vivid - while the tally sheets provide information only on lucid versus nonlucid dreams; information about the types of dreams gathered on the LDQ is more comprehensive than that available from the tally sheets; lucid dreams from the A.R.E. data file would not necessarily represent everyone from the subject sample who had lucid dreams if they hadn't had one during the A.R.E. dream project, and a few individuals with high frequency of dreaming lucidly are overrepresented in the A.R.E. data source.

As hypothesized, both the structure and content of lucid dreams were found to be quite different from that of nonlucid dreams. Nonlucid dreams were structurally characterized primarily by their perceptions, while lucid dreams were characterized in the LDQ data primarily by control and secondarily by balance and in the dream tally sheet primarily by balance. Subsequent work has verified the

importance of balance in lucidity ability (Gackenbach, Sachau, & Rokes, 1982).

It was hypothesized that lucid dreams would be characterized by an array of sensations with vision being experienced as especially salient. Vivid dreams were found to be perceptually more salient experiences

asking the question "What is real?" during the dream than either the vivid or ordinary dreams (see Table 3).

A.R.E. Tally Sheets. Six variables were considered perceptual in content from this data source: color, vision, taste-smell, sound, voices, and kinesthetic sensations. Results from the multiple analysis of variance showed a significant difference between lucid and nonlucid dreams for these perceptual items, $F = 36.59, p < .0001$. Findings from the subsequent one way analyses of variance showed that lucid dreams were perceived as having more vision, color, sound, voices, and kinesthetic sensations than nonlucid dreams when reported on the morning after they were experienced. The means and *F*-values for these analyses are presented in Table 4.

Positive and negative emotion and dream recall, which were not included in the multiple analysis of variance, were analyzed via *t*-tests. Lucid dreams were reported as higher in recallability ($t [1868] = 8.02, p < .0001$),

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than lucid dreams when perceived in the long term (LDQ) but when recalled the morning after the dream, the opposite was reported. That is, lucid dreams were perceived as more perceptually sensitive than non lucid dreams. Two considerations might explain this apparent inconsistency. Most people report having experienced a lucid dream at some time during their life, though few say that they have them with any regularity (Gackenbach, 1981). The average incidence of lucid dreams for this sample of dream sensitive individuals was reported as "rarely" experienced. Therefore,

when these adults were asked to look back over their dream history and compare three different types of dreams, lucid dreams in most cases were the most infrequently experienced and therefore less salient than vivid dreams, which by definition are highly recallable dreams.

Another possible explanation for these disparate findings is that in the A.R.E. data vivid and ordinary dreams are collapsed into one type of dream (nonlucid) whereas a distinction between these types of nonlucid dreams is made in the LDQ. It can be seen that if the LDQ means of ordinary and vivid dreams are combined and then compared to lucid dreams, the latter would still be characterized as less perceptual than ordinary or vivid dreams. This argues against the aforementioned explanation for the discrepant findings regarding dream perceptions.

The A.R.E. dream tally sheets appear to provide a more reliable, though incomplete, estimate of direct comparisons of lucid to nonlucid dreams. In this case the hypothesis regarding dream perceptions, especially vision, as being more salient in lucid than in nonlucid dreams is supported.

It was also hypothesized that lucid rather than nonlucid dreams would be emotionally more positive but that emotional detachment was needed to sustain lucidity. Regarding the specific content analyses, the same flip-flop occurred with emotions as was observed with the perceptual items. That is, for the LDQ data vivid dreams were reported as being more emotional than lucid dreams while the opposite was the case for the A.R.E. dream tally sheet data. The same considerations would hold here as would the same conclusion. The hypothesis is therefore supported.

For the set of cognitive variables, the hypothesis that lucid dreams would be more rational and controllable than nonlucid dreams was supported. Although contrary to prediction, no difference in bizarreness was found between the three dream types. In sum, lucid dreams were found to be structurally distinct phenomenon, with lucid dreams being experienced as more perceptual, emotional and cognitive than their counterparts.

Gackenbach, J.I. A personality and cognitive style analysis of lucid dreaming. Unpublished

doctoral dissertation, Virginia Commonwealth University, 1978. Gackenbach, J.I., Sachau, D. & Rokes, L. Vestibular sensitivity and static and motor balance as a function of sex and lucid dreaming frequency. Paper presented at the annual meeting of the Association for Psychophysiological Study of Sleep, San Antonio, TX, 1982.

Gackenbach, J.I. Lucid dreaming: Individual differences in personal characteristics. Paper presented at the annual meeting of the Association for the Psychophysiological Study of Sleep, Cape Cod, MA, 1981. Garfield, P. *Creative dreaming*. New York: Ballentine, 1974.

Goodenough, D.R., Witkin, H.A., Koulack, D., & Cohen, H. The effects of stress films on dream affect and on respiration and eye-movement activity during rapid-eye-movement sleep. *Psychophysiology*, 1975; 12: 313-320. Green, C. *Lucid dreams*. London: Hamish Hamilton, 1968. Hall, C.S. & Van de Castle, R.L. *The content analysis of dreams*. New York: Appleton-Century Crofts, 1966. Hart, H. *The enigma of survival*. London: Rider, 1959. Hearne, K.M.T. Lucid dreams: An electro-physiological and psychological study. Unpublished doctoral dissertation, University of Liverpool, 1978. LaBerge, S.P. *Lucid dreaming: An exploratory study of consciousness during sleep*. Unpublished doctoral dissertation. Stanford University, 1980. Lloyd, S.R. Factors affecting dream recall: Visual memory, repression, differentiation, and rapid eye movement. *Sleep Research*, 1976, 5, 126. McCarley, R.W. & Hoffman, E. Bizarreness and lucidity in REM sleep dreams: A quantitative analysis. Annual meeting of the Association for the Psychophysiological Study of Sleep, 1980. Reed, H. Personal communication, 1976. Reed, H. Meditation and lucid dreaming: A statistical relationship. *Sundance Community Dream Journal*. 1977, 2, 237-238. Reed, H. Improved dream recall associated with meditation. *Journal of Clinical Psychology*, 1978, 34, 150-156. Rapport, N. Pleasant dreams! *Psychiatric Quarterly*, 1948, 22, 309-317. Schwartz, B.A. & Lefebvre, A. Contacts veille/P.M.O.II. Les P.M.O. morecelees. *Revue d'Electroencephalographie et de Neurophysiologie Clinique*, 1973, 3, 165-176. Sparrow, G.S. *Lucid dreaming: Dawning of the clear light*. Virginia Beach, VA: A.R.E. Press, 1976. Van Eeden. A study of dreams. *Proceeding of the Society for Psychical Research*, 1913, 26, 431-461. Verdone, P. Temporal reference of manifest dream content, *Perceptual and Motor Skills*, 1965, 20, 1253-1268. Witkin, H.A., Oltman, P.K., Raskin, E., & Karp, S. *A manual for the embedded figures tests*. Palo Alto, CA: Consulting Psychologists Press, 1971.

REFERENCES

Arnold-Forster, M. *Studies in dreams*. New York: MacMillan, 1921. **Baker, D.M. *Practical techniques of astral projection*. New York: Samuel Weiser, 1977.** Cattell, R.B. *Manual for the 16PF*. Champaign, IL: Institute for Personality and Ability Testing, 1972.