

# Electronic Media and Lucid-Control Dreams: Morning After Reports

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*Lucid dreams, as well as control dreams, have recently been reported as associated with video game play (Gackenbach, 2006). In this study, dreams were collected from the morning after a night of rested sleep as well as electronic media use from the day before the dream. In a factor analysis, lucid and control dreams were associated with all electronic media use but most strongly with video game play.*

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**Keywords:** lucid dreams, dreams, video game play, electronic media, dream control

Lucid dreams, dreams where the dreamer is aware that he or she is dreaming while the dream is ongoing, as well as control dreams, steering the action of the dream, have recently been reported as associated with video game play (Gackenbach, 2006). Several lines of evidence would predict the video game play-lucidity-control association. Variables that have also been shown to be associated with video game play and lucid dreaming include spatial skills, such as field independence; the ability to use body references to place self in a visual field for lucid dreamers (Gackenbach, Heilman, Boyt, & LaBerge, 1985); visuospatial information processing for video game players (Sternberg & Preiss, 2005); and also a lack of motion sickness vulnerability for lucid dreamers (Gackenbach, Snyder, Rokes, & Sachau, 1986) and for gamers (Preston, 1998). Finally, meditation, as a type of focused attention, has been shown to be associated with lucid dreaming (Gackenbach & Bosveld, 1989; Mason, Alexander, Travis, Gackenbach, & Orme-Johnson, 1995), and focused attention is a center piece of serious game play (Maynard, Subrahmanyam, & Greenfield, 2005).

Video gaming is simply the higher immersive form of electronically mediated communication and, thus, was the focus of the initial inquiries into this association. However, today's youth, indeed many of us, are immersed in these virtual realities. They range from only auditory, like a cell phone or MP3 player, to auditory and visual, like TV and DVD, and the most immersive, in terms of not only auditory and visual input but also interactivity, computer/Internet use and video game play. Indeed, the home media ecology has exploded from several basic products; TV,

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radio, newspaper, telephone, and a few storage and display options; vinyl album, paper, cassette tape in 1975 to today where there are triple the products and 10 times the storage and display options (Rainie, 2006). Thus today's home media ecology essentially offers continuous access to virtual worlds that, not surprisingly, are having affects on consciousness (Gackenbach & Karpen, 2007) and, in this case, on consciousness in sleep, lucid dreams.

Thus far, the work of looking at the association of video game play and lucid/control dreaming has not examined morning-after dreams nor the broader use of electronically mediated communication. In the present inquiry using a self-report questionnaire, it was hypothesized that increased use of electronically mediated communication devices, and especially virtual immersion/interactivity experiences, would be associated with more lucid/control dreaming.

## **METHOD**

### **Participants**

Over the course of a calendar year (Spring 2006 through Winter 2007), 890 college students filled out the questionnaire both in face-to-face and online settings. Most were women (631), with 249 men and 10 with no sex identifier. Forty-two percent were 19 years of age or younger; 45% were 20 to 25 years of age. All were undergraduate students enrolled in psychology and sociology courses at a western Canadian college. Only 195 questionnaires were collected in face-to-face data collection while the remaining were collected online in introductory psychology mass testing.

### **Procedure**

Following reading and signing an informed consent, participants were told that there were six parts to the questionnaire. A recent dream was collected first with these instructions:

Please enter into the dialogue box below your most recently recalled dream. Although this is preferred to be from last night if you do not recall a dream from last night then sometime last week, month or year. Or later if that is all you recall.

Sex and age information was then gathered followed by a series of questions about their video game playing habits (i.e., frequency, length, duration of play sessions, number of games played, age first played, favorite game type, and motion sickness during play). Following these were a set of questions about their dream type experiences of the past. These questions asked about the participants frequency in retrospective recall of their dream recall incidence, their frequency of knowing they are dreaming while they are still in the dream or lucid dreams, their frequency of taking the role of an observer to the dream events, their frequency of steering the action of the dream or dream control, their frequency of having frightening dreams or nightmares, and finally their frequency of dreaming about media.

The next part of the questionnaire asked about the dream they just reported including how long ago it happened, how many hours of sleep they got that night, and how many hours of sleep they normally get in order to feel rested. These three questions allowed the selection of only dreams that occurred last night and only from nights where they were rested.

Questions about the dream just reported continued in terms of its content (i.e., recall clarity, lucidity, observer perspective, control, nightmare, and electronic media in the dream). The final part of the questionnaire inquired about their electronic media use the day before the dream. These questions inquired about the number of hours of cell or land line use; CD or MP3 player use; TV, DVD, or video use; computer or Internet use; video game use, either on a computer, a console, or a handheld device; radio, either online, on air, or by satellite; movie in a movie theater; and other electronic media use. A debriefing statement followed the submission of the questionnaire.

## RESULTS AND DISCUSSION

This analysis focuses specifically on the dream from the night just previous to filling out the questionnaire and any association(s) found in the dream to electronic media use the day before. Selection of subjects' dreams for subsequent analysis was based upon these three questions: how long ago did the dream occur; what was the number of hours of sleep on the night of the dream; and how many typical hours of sleep to feel rested. Questionnaires were used if the dream occurred "last night" and the respondent had been rested (i.e., typical hours of sleep to feel rested was equal to or shorter than the hours of sleep reported the previous night). Only 152 respondents' dreams, of the 890 submissions, met these criteria.

As with the larger group, twice as many females (106) as males (46) fit the selection criteria. Age also reflected the demographics of the larger group, 41% were 19 years of age or younger; 43% were 20 to 25 years of age. In order to investigate the relationship between dream type and media use, the data were reduced in several other ways. First, the electronic media use data were summarized creating three media variables from the day before: mean of audio media (phone, radio, CD/mp3), mean of audio-video media (TV/DVD, movie) and mean of interactive media (computer/Internet, video game play).

Due to the previous research showing an association of video game play history to self report incidence of lucid/control dreams, the same grouping variable was calculated as that used in Gackenbach (2006). That is, z-scores for video game play frequency, length of play session, number of games played, and age of first gaming experience (young start get high score) were calculated, summed, and split into thirds, with nonplayers creating a fourth group.

These two types of media experience data, day before media use plus video game play history, were entered into a factor analysis<sup>1</sup> with the six dream questions

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<sup>1</sup> Factor analysis is a statistical procedure of the correlation type, which shows how a set of variables is related. It is interpreted by examining those variables that are entered into a factor above a preset criterion. Thus, a set of variables can be said to be related in several ways. Interpretation is a verbal description of the reason why specific variables may be associated with each other on any one factor.

regarding the night before dream (i.e., recall clarity, lucidity, observer perspective with high scores, third person perspective, control, nightmare, and electronic media in the dream). The resultant principle component factor structure is portrayed in Table 1.

It can be seen that three of the five factors loaded variables of both the dream and the media use types. Factor 1 loaded all media use variables and two dream ones, lucidity and control. This supports the previous research and extends it to other types of media use. The loadings were especially strong for the two interactive media values one from the day before and one in terms of history of game play. Basically lucid and control dreams were associated with all media use as well as gaming history but especially with interactive media use experiences. As suggested in other work on this association, engagement with technologically constructed realities, as found in today's electronic media, offers experience with different realities that may be generalized to another daily alternative reality, nighttime dreams. The important point here is that the effect is not just for video game players, but rather these players simply represent the leading edge of interactive virtual reality immersion and, thus, are the best to study in such inquiries.

Given this strong media use association, it is of interest to examine how much time was spent with each media type. Respondents could answer: a) no time doing this activity; b) less than 1 hour; c) 1 to 2 hours; d) 2 to 3 hours; or e) 4 or more hours. A one-way repeated measure ANOVA was conducted to compare scores on type of media use the day before the dream. The means and standard deviations are presented in Table 2. There was a significant effect for media use type, Wilks'  $\lambda = .236$ ,  $F(7, 145) = 67.117$ ,  $p < .0005$ , multivariate partial eta squared = .764. It can be seen that some forms of media are used more than others with the most frequent being TV/DVD/Video and computers/Internet and the least frequent being seeing a movie in a theater. One might also conclude from this table of means for the 152 people with the most rest, that the reported rough average of one hour each per media type results in eight hours a day spent with some type of electronic media. This is in line with the data from the Kaiser Family Foundation for total time spent with media for 8 to 18-year-olds (8.57 hours per day; Gillespie & Gackenbach, 2007).

To return to the dream-media use factor analysis, Factor 2 loaded only one media variable, audio-video media use, with low dream clarity, low lucidity, low

**Table 1.** Factor Analysis With Principle Component Extraction of Selected Dream and Media Use Questions for Last Night Rested Dreams

|  | 1     | 2     | 3     | 4     | 5     |
|--|-------|-------|-------|-------|-------|
| Clarity of dream   | -.001 | -.446 | -.104 | .162  | .699  |
| Lucidity   | .391  | -.469 | -.292 | .208  | -.143 |
| Type of Observer (Hi # is 3 <sup>rd</sup> person)            | .121  | -.259 | .293  | .611  | -.494 |
| Control  | .527  | -.303 | -.495 | -.088 | .064  |
| Nightmare  | .185  | -.262 | .575  | .397  | .285  |
| Electronic media reference                                   | .025  | .531  | -.393 | .574  | -.013 |
| Mean of audio media (phone, radio, CD/mp3)                   | .436  | .257  | .551  | -.200 | .114  |
| Mean of audio-video media (TV/DVD, movie)                    | .413  | .518  | -.105 | .291  | .288  |
| Mean of interactive media (computer/internet, vid gm)        | .718  | .208  | .069  | -.110 | .056  |
| Gamer groups (0 = nongamer, 1 = low, 2 = moderate, 3 = high) | .653  | -.103 | -.004 | -.231 | -.273 |

**Table 2.** Descriptive Statistics for Types of Media Used

|                        | Mean | Std. Deviation | N   |
|------------------------|------|----------------|-----|
| Cell or landline Phone | 2.43 | .926           | 152 |
| CD/MP3                 | 2.51 | 1.240          | 152 |
| TV/DVD/Video           | 2.80 | 1.069          | 152 |
| Computer/Internet      | 2.71 | 1.183          | 152 |
| Video Games            | 1.41 | .887           | 152 |
| Radio                  | 1.81 | .859           | 152 |
| Movie Theatre          | 1.18 | .662           | 152 |
| Other electronic media | 1.47 | .754           | 152 |

control, but high electronic media references in the dream. One might conclude, not surprisingly, from this that watching a movie is likely to become incorporated into that night's dream. However, watching a movie is not sufficient to show an association to the dream structure variables of interest here. And in fact, in this case, it was negatively associated with dream structure variables, such as lucidity, control, and clarity. However, as above, it was also positively associated with two of these variables in the first factor. Thus a mixed association was found.

The third factor also loaded both types of variables, with audio media use the day before the dream loading positively with the dream being labeled as a nightmare but negatively with control of the dream and electronic media references in the dream. As the typical nightmare is the essence of the lack of control, this association is expected. It is interesting to note that this media use also was associated with a lack of electronic media reference. Why this is associated with the audio only media is provocative and will be investigated in subsequent dream content analysis of this data.

The final two factors only loaded dream type variables. Factor 4 is interesting as it loads taking the third person perspective as an observer in the dream with electronic media dreams and nightmares, with the last being less of a marker than the former two. The last factor loaded two of the dream variables, clarity of the dream with the observer perspective being more first person.

In conclusion, this study further supports and extends the hypothesis that daytime exposure to virtual reality through electronic media is associated with important dream structure variables, lucidity, and control. This had been previously found in self-report reflections on dream history but, in this case, was found in morning after dreams of well rested individuals. Additionally, the video game emphasis thus far in this research program has been extended to include other electronic media with much the same results. Although one could argue that there are self-selection variables for the video game player (e.g., lack of motion sickness), this argument is less tenable for the wide range of media used by today's youth. More work needs to be done to determine if electronic media immersion and interactivity causes these dreams or if there is something else accounting for this affect. This study is a step in substantiating the effect.

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