

THE FREQUENCY WITH WHICH A GROUP OF UN-  
SELECTED COLLEGE STUDENTS EXPERIENCE  
COLORED DREAMING AND COLORED  
HEARING\*

*Department of Psychology, DePauw University*

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WARREN C. MIDDLETON

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A. PROBLEM

The purpose of the author in the present study is merely to report the extent to which a group of unselected college students experience colored dreaming and colored hearing. The content of dreams has been (perforce) investigated traditionally by some form of introspection. Bentley (1) was one of the first to accumulate, by means of introspective reports, some rather meager, though valuable, data pertaining to dream phenomena. Perhaps it scarcely need be stated that introspection in dream analysis, as elsewhere, has many limitations. "It is almost impossible," suggests Morgan, "to get an experienced observer to narrate a dream without interpolating explanatory and organizing material" (9, p. 406). An introspective account of dream content is, of necessity, a retrospective account, involving faulty memory as well as varying degrees of secondary elaboration. We must, therefore, agree with Calkins, who remarks that the difficulty of remembering dreams suggests "the impossibility of an exhaustive enumeration of their peculiarities and any positive conclusions from the figures" (2, p. 312).

The extent to which normal persons (either children or adults) dream can, of course, not be stated with any degree of assurance. Investigators have not been in complete agreement with respect to dream statistics. Middleton (8), in a previous survey of the dream experiences of 170 college students (81 men and 89 women), found that 99.4 per cent of his respondents reported that they dreamed, although they differed greatly in the amount of dreaming. Witty and Kopel (14), in a study of 1,757 boys and 1,647 girls, rather evenly distributed among the eight grades and the kinder-

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garten, found that 21 per cent of the subjects reported that they dreamed *often*, 63 per cent reported that they dreamed *sometimes*, and 16 per cent reported that they *never* dreamed. In any event, we do not appear to have conclusive evidence favoring the frequently made assumption that most sleep is dreamless; as Fisher has suggested, this assumption "is really without the slightest factual basis to support it" (6, p. 379).

Middleton (8) found that a majority of his respondents reported that they did not get any color imagery in their dreams. In like manner, Bentley (1) reports that colors appeared in the dreams of his subjects occasionally but that gray imagery was the rule.

As for "colored hearing" (sometimes referred to as chromatic phonopsis), Diserens, in his discussion of the synaesthesias, comments as follows pertaining to this phenomenon:

Colored hearing is a condition in which sounds (vowels or musical tones) produce a simultaneous sensation of a definite color. For example, in nine cases studied by Claparede, colors were attributed to all or almost all the notes of the scale. A number of persons ascribed colors to musical intervals and represented sharps or flats by slight changes in tint. Entire musical selections or the work of particular composers may induce particular colors, which may also vary with the mood of the music, or the type of instruments played upon (3, p. 71).

Wells (13) presents evidence from pathological studies that sounds (e.g., the sound of a tuning fork) may elicit hallucinations of various kinds—hallucinatory experiences whose contents are frequently very complex. Singer (12) states that intensive and regular color-hearing may in many instances make it difficult for one suffering from a nervous condition to pursue a musical profession. It is quite generally supposed (in line with Bleuler's oft-expressed theory) that the synaesthesias (all types) start and stop with the primary sensation. That is to say, there is a continuity of the photism series paralleling a continuity of the induced sounds. Downey (4), however, reports a case in which a gustatory synaesthesia persisted after the cessation of the primary stimulus.

The author does not propose to summarize previously reported data on auditory synaesthesia. Suffice it to say that several investigators have found in certain subjects a photism series in the musical

scale; overtones may even appear in the series. A few very interesting individual cases have appeared in the literature. Myers (11) reports a case of colored audition in which colors were induced only by tones; timbre, intensity, and the pitch of the tone were conjointly influential.<sup>1</sup> Marinesco (7) describes the case of a Roumanian woman, in whom *all* spoken or written words and sounds were colored, the outstanding feature being an endless variety of color and shading. English (5) gives us a brief account of a child (approximately four years of age) who experienced colored music.

Relative to the frequency of the phenomenon of colored hearing, Diserens (3) reports that Lemaitre found it in 30 per cent of children examined, while Phillippe found it in only 12 per cent; Bleuler and Lehmann report a frequency of 12.5 per cent in adults, while Claparede's questionnaire indicated that 43 per cent of his respondents possessed chromatic phonopsis. When Mudge (9) had 50 students report the color, or brightnesses which they associated with certain tones, musical keys, instruments, and familiar musical tunes, he found that only eight persons reported lack of such associations. From these figures it is obvious that there is little agreement as to the frequency of the phenomenon.

In the present study questionnaires were distributed among 277 college sophomores (120 men and 157 women). The questionnaire-form consisted of adequate definitions of terms, as well as specific instructions as to the kinds of information that were desired. All questions were answered by making appropriate check marks, although space was provided for voluntary comments or discussions.

## B. RESULTS AND DISCUSSION

The data indicate, first of all, that 99.97 per cent of the subjects report that they *do* dream; this percentage is almost identical with the 99.4 percentage reported by the author in a previous study (8). Table 1 shows the frequency of dreaming among the respondents.

About 40 per cent of the subjects report that they do not experience any color imagery in their dreams. Table 2 shows the frequency of colored dreaming.

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<sup>1</sup>In this subject (an unmusical man of 30 years of age) tones below 600 vibrations per second gave brown and orange colors; those between 600 and 12,000 gave blue, changing to green; and those above 12,000 gave a colorless gray.

TABLE 1

How frequently do you dream?	Total subjects	Men	Women
Very frequently	13.35 per cent	8.33 per cent	17.19 per cent
Frequently	24.90 per cent	18.33 per cent	29.93 per cent
Occasionally	41.51 per cent	50.00 per cent	35.03 per cent
Rarely	19.85 per cent	22.50 per cent	17.83 per cent
Never	.03 per cent	.83 per cent	0.00 per cent

TABLE 2

Do you see colors in your dreams?	Total subjects	Men	Women
Very frequently	3.29 per cent	2.52 per cent	3.24 per cent
Frequently	6.95 per cent	5.04 per cent	8.44 per cent
Occasionally	19.04 per cent	11.76 per cent	24.67 per cent
Rarely	30.76 per cent	29.41 per cent	31.81 per cent
Never	39.92 per cent	51.26 per cent	31.17 per cent

A rather large number of those who experience color imagery in their dreams made interesting comments. Some of these are presented below:

"Usually the color green presents itself in my dreams. In these instances a landscape in the countryside is colored."

"Often I dream of green fields or blue water and sometimes of the gray color of large buildings."

"In several dreams I have passed through a brilliant green jungle. I had an agreeable time trying to identify a number of birds with bright colored plumage. This is a result of my interest in ornithology."

"In one of my many colored dreams it seemed as if the whole dream were a two-dimensional affair that took place in one plane. It was almost as if it had been projected on a screen. The screen, or background, seemed to change colors, while various geometrical figures (circles, squares, rectangles, and triangles) of different colors kept constantly bursting onto the screen and then disappearing."

"Maybe it's because I'm partial to brown—but nearly all of my dreams appear in sepia. Saturday night after a cheese sandwich my dream was all sepia, with the exception of a banquet scene in which all food was naturally colored. So help me, it was."

"In my dreams I frequently see the primary colors and striped colors."

"In my dreaming, blue is the predominating color. In fact, everything appears as blue."

"Green is the color which predominates in my dreams—usually the blinding hues—and I always wake up frightened."

"Most of the colors I have in dreaming are reds and light blues. Once in a great while I see dark blues and a little yellow."

"Nearly all of my dreams have been in colors—usually reds, browns, and blues."

"In my color dreams I very frequently see big balls of color floating. If the scene of the dream has been indoors, I can recall the particular color of furniture, drapes, etc. If outside, I usually recall the colors of the landscape."

"Often I dream of food. Fried chicken is golden brown, ice cream is usually pink, etc. Snakes and trees are always green and yellow."

"Usually I dream of outdoor scenes and see colors in grass, trees, and flowers. I also see colors when I dream about various places where I've been—such as the Grand Canyon. Atmosphere nearly always seems to be rose-colored."

"Sometimes I dream of paintings that I have been working on or am planning to start, and these are always in color rather than in black or white. Also, I often dream of contests between two people or of groups of people, always in a highly colored environment."

The women respondents report frequently of seeing the colors of clothing in their dreams; the men scarcely make mention of this color factor. A few typical comments follow:

"When anything very special has happened and I dream about it, I can see colors of the clothes the people wore."

"I always (without fail) see the colors of clothes worn by the characters in my dreams, but never the coloring of Nature or of my surroundings."

"When I dream of a person, I invariably see the colored clothing which he is wearing."

"I have designed two formals from those I have seen in my dreams—a bright red one and a blue one."

"I always see my friends in their familiar clothing—the exact colors of their garb."

"In my dreaming the people always have their natural color of hair, eyes, etc., and I usually recall the colors of various articles of clothing."

"My dream colors always have to do with clothes, usually formals in pastel shades. After seeing the movie 'Sweetheart,' I dreamed of all the beautiful clothes, especially the red hat that Jeanette MacDonald wore."

"I usually dream in colors. Just this last week I dreamed of a woman wearing a green hat and driving a yellow truck. I often dream of the colors of dresses. For example, I dreamed the other night about a black and gray checked formal. I can see that dress now."

Many respondents of both sexes say that the color of fire is prominent in their dreams; in fact, this seems to be the only color image experienced by some dreamers. The following few comments are typical:

"I often see red fire in my dreams. Especially was this true when I was younger."

"In my dreams I always see red in the burning down of buildings."

"Fire is the only thing that I have dreamed in color."

"I very definitely see color in fire, but I am not sure that I see color in anything else."

"The only color I see is the red of fire."

"The only thing that I can see colored in my dreams is fire—a sort of yellow and red flame."

Approximately 50 per cent of the respondents report that they experience colored hearing. Table 3 shows the frequency of the phenomenon.

TABLE 3

Do you experience colored hearing?	Total subjects	Men	Women
Very frequently	4.86 per cent	2.60 per cent	6.51 per cent
Frequently	6.75 per cent	5.21 per cent	7.89 per cent
Occasionally	20.59 per cent	18.26 per cent	22.30 per cent
Rarely	17.35 per cent	16.52 per cent	17.76 per cent
Never	50.56 per cent	57.39 per cent	44.73 per cent

A rather large number of those who experience colored hearing made interesting comments. Some of these are presented below:

"As for my colored hearing, brighter colors seem to correspond with brighter melodies or sharper harmonies, while deep blues follow the fuller, mellow harmonies."

"Certain types of music give me the feeling of blue colors. I really experience colored hearing which, I think, was acquired by me after I worked on an art class project in high school. A student who definitely had colored hearing wrote original piano compositions, and I wrote the script for 'Color Fantasia,' which was later played at the John Herron Art Institute, Indianapolis.

. . . After hearing the Peter de Rose composition, I can clearly see deep purple."

"With soft music the color that I nearly always see is pale blue. Then with fast, snappy music, I frequently see a variation of bright colors."

"Music usually suggests to me a mood out of which appears a colored scene. The sounds I hear are usually dark colored; I seldom hear light colors. I have often closed my eyes during symphony programs and observed various colors. I have tried, when not listening to music, to create colors, but have never been successful."

"I am fairly familiar with classical music and several times some musical composition has been associated in my mind with different color combinations. Any organ music causes me to visualize a picture of a large multi-paneled window with a rosy light behind it."

"Symphonic music of different types always gives me various color impressions—especially the music of Debussy. A hazy, pale blue or purple usually accompanies soft, slow, dreamy music."

"Certain compositions or types cause me to sense masses of related colors rather than individual shades. Liszt's *Hungarian Rhapsodic*, for instance, brings to me the deep green of mountain forests; Ravel's *Bolero* causes me to see deep purple, which changes through blue-green to bright yellow. Debussy's *Reverie* makes me see a hazy bluish gray."

"When hearing soft music I frequently see green forests. Light and rather airy passages cause me to see soft, pastel shades, while the heavier and more solemn passages cause me to see the darker and duller colors, such as blacks and browns."

"Sombre music invariably has rich color; light music has silver and pale yellow in it. I don't *always* experience colors when I hear music, but I do when I hear certain types. When I hear a soft, romantic melody I think of pale colors (yellow-green, yellow, light blue, rose). When I hear a march number I usually see bright colors (intense colors of red and purple). Frequently a high sound makes me conscious of red, while a low sound makes me conscious of blue. My colors seem to differ with pitch."

"Pieces that sound like the spring (or like water falling) tend to bring to me a sensation of cool green colors. When I hear Spanish music I see red; sometimes I seem to see blue when I listen to waltzes or lullabys."

"Many of the great masterpieces present various colors to me, depending somewhat on the mood of the piece, the tempo, and the interpretation in general. I hear primarily in brown,

gray, or yellow colors. When music is gloomy it seems to be brown. When I hear the *Bolero* by Ravel I see orange and yellow designs. When *Beccause* or *I Promise You* is played, I get a grayish blue sensation."

"Frequently soft, slow music is sensed as blue, such as Liszt's *Liebstraume—No. 3 in A-Flat Major*. Some music of the same type I see as green, such as the first movement of the *Moonlight Sonata*."

"Violins usually make me visualize various shades of green. Quick, high notes of a symphonic orchestra sometimes make me see orange or red. Harmonic notes, such as Wagner's prelude to *Lohengrin* make me see pastel shades. Whenever I listen to an opera over the radio—especially the *Ring Series*—I always experience a rush of color (much like the spiral formed by a typhoon) which rises and falls with the tones of the piece."

"Rhumbas and boleros give me red and black color sensations; ballads suggest blue. Usually I experience colors when I'm listening to Wagner, Beethoven, and some heavy classical music. Popular music never suggests color, but classical music usually does—especially *Moonlight Sonata* and *Meditation from Thais*."

### C. SUMMARY OF RESULTS

This report is in no sense extensive enough to base definite conclusions upon, but the following tendencies among the subjects studied are indicated:

1. Over 99 per cent of the subjects report that they dream, although they differ greatly in the frequency of dreaming.
2. About 60 per cent of the subjects indicate that they experience color imagery in their dreams. Colored dreaming, however, does not occur with great frequency, and it seems to play a more important part in the dream work of women than of men. The women report frequently of seeing the colors of clothing in their dreams; the men scarcely make mention of this color factor. The color of fire is rather prominent in the dreams of the subjects of both sexes.
3. About 50 per cent of the subjects report that they experience colored hearing, although the phenomenon does not occur with great frequency in a majority of the cases.



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*Department of Psychology*  
*DePauw University*  
*Greencastle, Indiana*