

Creativity and Dream Recall

ABSTRACT The literature on creativity and dream recall often found significant positive correlations between measures of creativity and dream recall frequency (DRF). The present study investigated the relation between creative interests and DRF in detail. The findings confirmed the results reported in the literature, according to which persons with visual *and* verbal creative skills recalled more dreams. It is suggested that the visual memory may serve as a mediator variable in the relation between creativity and DRF.

INTRODUCTION In the first qualitative studies, Adelson (1960) and Giovacchini (1966) stated that creative people recalled more dreams and their dreams were more bizarre, vivid and unusual. Schonbar (1965) subsumed these findings under the so-called "life-style"-hypothesis of dream recall. She hypothesized that persons who were more creative, more introverted, showed trait anxiety, and had a richer inner life, recalled more dreams. The results of the investigations of the relation between personality measures such as trait anxiety, introspectiveness, introversion and dream recall were inconsistent (overview in Cohen, 1979 or Tonai, 1993). Nevertheless, the relation between creativity and visual imagery has proved to be more promising. In a paired-associate learning task in which the subjects were instructed to use the facilitating effect of visual imagery, high recallers performed better than low recallers (Hiscock & Cohen 1973). The subjects in the study of Martinetti (1985) completed a questionnaire investigating fantasy life and attitude towards inner life. These two measures correlated

significantly with dream recall frequency. Schechter, Schmeidler & Staal (1965) found a correlation of $r = .38$ ($n = 87$) between dream-recall and a general score of 22 items concerning creative activities and interests. In a similar way, Belicki (1986) used a questionnaire with items on the self-assessment of creativity, the degree of participation in and enjoyment of creative activities. The correlation of the general score of this questionnaire with dream recall frequency was $r = .29$ ($p < .05$) for all subjects and $r = .46$ ($p < .01$) for subjects with a stable dream recall frequency. Unfortunately the two authors of the last two studies did not give an extensive description of the items they had used for the questionnaires.

Waterman (1991) suggested to use the mean length of diary dreams as a measure of dream recall. The studies of Sylvia, Clark and Monroe (1978), Wood, Sebba and Domino (1989-90) and Livingston and Levin (1991) produced positive correlations between dream length and measures of creativity and confirmed the above cited results.

The present study was planned to explore the relation between dream recall frequency and creative activities and interests in detail. First a positive correlation between the interest in creative activities and DRF was hypothesized. Additionally, the prediction was formulated that activities associated with visual skills were more related to DRF than other activities. This hypothesis was derived from a simple model of dream recall. The dream experience mostly consists of images. Telling the dream another person or writing it down means the transformation of images into language (Cohen, 1979). This process requires predominantly visual skills.

METHOD The subjects were tested individually or in groups up to 20 persons. After the global instructions were given, the verbal creativity test (VKT) was carried out. Subsequent to the test, the subjects were asked to complete the questionnaires. Measures of all subjects were included in the statistical analysis.

SUBJECTS The sample comprised 44 subjects (32 females and 12 males). Most of them were psychology students ($N = 32$), the others were pupils ($N = 5$) or employees ($N = 7$). The mean age was 23.16 ± 4.53 years, range 18 - 37 years.

RESEARCH INSTRUMENTS **Verbal Creativity Test.** The verbal creativity test of Schoppe (1975) consists of nine subtests. In order to reduce the test

duration, only five subtests were chosen. In the first subtest the subjects were asked to write down as many words as they could with the word beginnings (German syllables "Ver-", "De-"). For each task they had 90 seconds. The second subtest was analogous to the first and included word endings (German syllables "-los", "-ing"). For the third subtest the probands had 150 seconds. They were asked to write down sentences which consisted of four words with the initial letters R-S-A-M or D-L-P-W (eg. Ralf mag rote Socken). The order of letters was not fixed. For the fourth subtest, the subjects had 90 seconds for each task. They were asked to write down as many words as they could with one of the given characteristic features ("faster locomotion", "flexible"), for example car, train, skateboard, rollerskates, bicycle, etc. The last subtest consisted of the following task. The subjects were asked to invent nicknames (maximal 3) for the items of domestic use (cat, needle, bathtub, plate, milk, desk, shirt, meadow, cucumber, hole) within 240 seconds.

The five subtests were standardized with tables of a population examined by the test author. The mean value was 100, the standard deviation 10. In the next step the mean score over the five subtests was computed. The Parallel test reliability of the VKT was $r = .844$ (mean value averaged over four parallel tests). The retest reliability (one and a half month) amounted to $r = .806$. Various studies were conducted to prove the validity of the VKT. One investigation used as criterion a teacher's rating of the creativity of his pupils (five-point-scale). The validity index was $r = .532$ for the general score, $r = .616$, $.292$, $.412$, $.382$, $.337$ for the five chosen subtests, respectively (Schoppe 1975).

Items concerning creative activities. Three possible creative activities were selected for the purpose of this study. First the subjects were asked, if they painted in their leisure time, an activity requiring visual skills. The subjects were also asked, if they played an instrument in their leisure time or did needlework/handicraft. If the subjects answered positively they were asked additionally, if they copied pictures, replayed given pieces of music or expressed own ideas by composing a painting, writing a song or creating unusual objects.

Interests in creative activity. This questionnaire comprises of 12 items regarding creative activities and interests. (For translation of the items see Table 1). The selecting process of

the items aimed at the inclusion of abstract items (creativity interest in general) and specific items (practical creative skills). These 12 items should be rated on 5-point interval scales ranging from not interested or strongly disliked (Value 1) to very interested or strongly liked (Value 5).

TABLE 1: Questionnaire Concerning Creative Interests

Are you interested in the following activities (5-point-rating scales, not interested (Value 1) to strongly interested (Value 5)):

- 1) Modeling with clay, gypsum etc.
- 2) developing new and original things
- 3) design the interior decoration of your home
- 4) regarding and understanding abstract art

Please rate your own difficulties with the following tasks (extreme difficult (Value 1) to very easy (Value 5)):

- 5) writing poems or short stories
- 6) replacing a missing tool with something else while doing handicraft
- 7) furnishing your own room with limited means
- 8) wrapping up a gift in an extraordinary manner
- 9) creating a new recipe (cooking)

Rate the following statements (strongly dislike (1) to strongly like (5)):

- 10) Do you like it if you were confronted with new situations and tasks?
 - 11) Do you like creative, abstract activities more than clear, regular tasks?
 - 12) Do you like it finding own solutions for problems and transfer them into practice?
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Self-assessment of creativity. The subjects were asked to rate their own creativity on a 5-point-scale, reaching from noncreative to very creative. The question followed the 12 items concerning creative interests and gave the subjects the opportunity to rate their individual creativity independently of the given items which probably did not take into account all possibilities of creative interests and activities.

Dream Recall Frequency (DRF). The subjects were asked to estimate their dream recall frequency over the last months. The indicated categories were "several times a week", "about once a week", "2 or 3 times a month", "about once a month" and "less than once a month."

RESULTS
Creativity
Measures

This section presents the descriptive statistics of the creativity measures. The general mean score of the verbal creativity test was 101.2 ± 7.23 . This value is comparable to the one of the standardization sample. The distribution of the creative activities was as follows: Painting (21 no, 1 copying pictures, 22 composing and copying paintings), playing an instrument (30 no, 11 replaying given music pieces, 3 writing own songs) and doing needlework (19 no, 11 following given instructions, 14 creating own designs, patterns).

The mean score of the 12 rating-scales "interest in creative activities" amounted to 3.61 ± 0.55 . The highest ratings had item 8 "wrapping up a gift" (4.05 ± 1.03), item 12 "own situations and transfer them" (3.95 ± 0.99), and item 6 "replacing a tool" (3.91 ± 1.22). The internal consistency of the 12 items was .668 (Cronbach's alpha, Crocker & Algenia 1986, p. 138), which is a low to average value for the reliability of a questionnaire. The highest correlations to the total score were for the items 11 and 2, but the items 5 and 9 did not correlate significantly with the total mean score. A factor analysis (principal component and varimax rotation) revealed 4 factors. They explained 65.5% of the total variance. This means that the 12 rating-scales did not measure a homogeneous construct "interest in creative activities". The varimax rotation yielded the following factor pattern. Factor 1 showed high loadings for the items 2, 10, 11, 12 ($> .70$), Factor 2 for the items 3, 6, 7, 8 ($> .50$). On Factor 3 item 1 loaded negatively ($< -.55$) and item 9 loaded positively ($> .80$). Item 5 defined the Factor 4.

Factor 1 implied a general interest in creative activities, own ideas, etc. The second factor could be labelled as "spatial" creativity and included the items furnishing a room, wrapping up a gift, doing handicraft. The third factor was hard to interpret, the creating of recipes is the main variable. Last, the fourth factor could be described as "creative writing". The four factor scores of each subject were used for further analysis.

The self-assessment of creativity showed the mean 3.80 ± 1.05 .

Dream Recall
Frequency

The distribution of dream recall frequency was as follows: 22 subjects chose "several times a week", 15 subjects "about

once a week", 5 subjects "2 or 3 times a month" and one subject each for "about once a month" and "less than once a month."

Correlation
Between
Creativity
and DRF

The total score of the verbal creativity test, the self-assessment and the mean of the 12 rating-scales correlated positively and significantly with dream recall frequency (see Table 2). A look at the creative activities revealed that only "painting" showed a highly significant correlation, whereas "playing an instrument" and "needlework" were not related to DRF. Due to small subgroups (copying pictures, write own songs) for these two items the yes/no-dichotomy was used. A Kruskal-Wallis analysis of the three subgroups (needlework/handicraft) did not reveal any differences between the groups. The yes/no-dichotomy was used for similarity of presentation. Most interesting was the result that item 5 "Do you like writing poems or short stories" correlates significantly with DRF ($r = .36$, $p = .0154$). The items 1, 2, 8, 11 showed also significant correlations with DRF. The correlations for factor scores of Factor 1 and 2 almost reached significance.

TABLE 2: Spearman-Correlations Between Creativity Scores and DRF

Verbal creativity test score	.32*
Painting	.55***
Playing an instrument	-.07
Doing needlework	.02
Self-assessment of creativity	.31*
Interests in creative activities	.50***
Items concerning creative interests	
1) Modelling clay	.40**
2) developing	.39**
3) design the interior decoration	.26
4) abstract art	.25
5) writing poems	.36*
6) replacing a missing tool	-.19
7) furnishing your own room	.14
8) wrapping up a gift	.33*
9) creating a new recipe	.02
10) new situations and tasks	.14
11) creative, abstract activities	.36*
12) own solutions for problems	.11

* $p < .05$ ** $p < .01$ *** $p < .001$

DISCUSSION The findings of the present study confirmed the results of Schechter, Schmeidler, and Staal (1965) and Belicki (1986). This empirical evidence supports the hypothesis that a relationship between creativity interests and dream recall exists. The hypotheses concerning activities with visual skills were also confirmed. Subjects with a visual creative activity (painting) exhibited a high DRF, whereas subjects who played an instrument or did needlework/handicraft did not show an increased DRF. This confirmed the result of Schechter, Schmeidler & Staal (1965), who had found a higher DRF in art students than in students of science or engineering.

A posteriori, the 12 items of the questionnaire were grouped into activities associated predominantly with visual-spatial skills and others. The categorization was only tentative, item 1, 3, 7, 8 could be labelled as "spatial" items. Item 1 and 8 correlated significantly with DRF while the remaining two items did not. This preliminary analysis and the almost significant correlation of the "spatial" factor gave only limited support to the hypothesis of a relationship between visual skills and DRF. Further investigations on this topic should be carried out. Not only visual skills are related to the DRF, but also verbal creativity as measured by the verbal creativity test and the scale "interest in writing poems or short stories". The results of the factor analysis were not very promising, since the general score of the 12 items showed a higher correlation to the DRF than the four factor scores. This may hint that general interest in creative activities was actually measured.

The main results can be explained within the following model of dream recall. The dream experience consists predominantly of visual sequences. Having woken up in the morning, the subject has to transform the experienced content into language (writing down the dream, telling the dream to another person, recapitulate the dream in waking memory). This process of transforming spatial encoding (dream experience) in sequential encoding (language) requires skills in operating with visual images and with verbal tasks. The subjects painting in their leisure time maybe trained themselves in the skills of operating with visual images. Various studies of patients with cerebral lesions demonstrated that the loss of visual skills also resulted in a loss of dream recall (Murri, Arena,

Siciliano, Mazzotta & Muratorio, 1984; Schanfeld, Pearlman & Greenberg, 1985).

Previously collected data (Schredl, 1991) suggested that the VKT not only measures verbal creativity but verbal fluency besides. Two studies (Schonbar, 1959; Puryear, 1962) found a positive relationship between verbal intelligence and DRF, whereas several investigations did not confirm the finding that general or verbal intelligence correlates substantially with DRF (Williamson, Heckel & Boblitt, 1970; Hill, 1974; Tonay, 1993). To differentiate between these two aspects, it may be necessary to develop a new test of verbal creativity.

Waterman (1991) investigated the relationship between visual memory, DRF and dream length in a sample with the age span ranges from 45 years to 75 years. The DRF and the length of diary dreams correlated with the ability of recalling visual material in waking life. Further studies of the relationship between DRF and creativity should include measures for visual memory because this variable may be an important mediator variable in the relationship between creativity and dream recall.

In summary, good dream recallers tend to be persons who exhibit both verbal and visual creativity.

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Michael Schredl, Dipl. Psych, Schlaflabor, Zentralinstitut für seelische Gesundheit, Postfach 12 21 20, 68072 Mannheim, Germany (Sleep Laboratory, Central Institute of Mental Health, Mannheim, Germany)