

RESEARCH IN CREATIVITY AND PSYCHEDELIC DRUGS¹

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Abstract: The influence of psychedelic drug experience upon various aspects of the creative process has been studied by very few researchers over the years. Although no conclusive statements can be made, it appears possible that these substances may be associated with original ideation and imagery, especially in the case of professional artists. There is no evidence that LSD-type drugs can evoke creativity on the part of individuals who are not known to be talented before drug ingestion. Creativity involves transforming fantasy into reality; the study of psychedelic experience, hypnotic experience, and other alterations in consciousness may help science to understand this process.

Eternally shall he be to you the One
Who divides himself into many,
and yet One, eternally remains the only one.
Find in One the many,
conceive the many like as one
And you have the beginning, you have the end of art [Goethe].³

Psychedelic drugs can introduce altered states of consciousness which, for some individuals, are associated with creativity. Hypnotic induction procedures can also introduce altered conscious states which have been linked to creativity. The hypnosis and creativity literatures have been reviewed by Krippner (1969) and by Bowers and Bowers (1972). Bowers and Bowers state that there is now considerable evidence that

unrealistic or fantastic experiences: (a) are [frequent] concomitants of various altered states of consciousness, including hypnosis, (b) occur spontaneously to a greater extent in subjects who are high as opposed to low in hypnotic susceptibility, (c) may occasionally occur in the context of a creative act, but in any event, (d) are often experienced by creative subjects who, as a group, seem more adept than their less creative

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³ Translated from the German by Leo Katz.

counterparts at shifting cognitively from a "higher" to a "lower" level of psychic functioning [p. 283].

Creativity involves transforming fantasy into new reality; however, the unrealistic or fantastic experiences evoked by hypnosis and psychedelic substances may be trivial instead of worthwhile. Even so, the development of human potentials should not overlook the possibility of their safe and constructive use. Unfortunately, the impact of hypnosis upon creativity has merited little attention from serious researchers. The link between LSD-type drugs and the creative process has attracted even less attention.

EFFECTS OF LSD AND LSD-TYPE SUBSTANCES

The Effects of Mescaline, LSD, and Psilocybin on Selected Ss

Only five major research projects in the area of psychedelic drugs and creative performance have been reported and most of these have been described by *Es* as "pilot studies" rather than full-scale experiments with conclusive results. Berlin, Guthrie, Weider, Goodell, and Wolff (1955) investigated the effects of mescaline and LSD upon four graphic artists of national prominence. There was an impairment of finger-tapping efficiency and muscular steadiness among the four artists, but all were able to complete paintings. A panel of art critics judged the paintings as having "greater aesthetic value" than the artists' usual work and noted that the lines were bolder and that the use of color was more vivid. However, the technical execution was somewhat poorer than in their other paintings.

Barron (1963) administered psilocybin to a number of highly creative individuals and recorded their impressions. One of Barron's *Ss* stated, "I felt a communion with all things [p. 253]." A composer wrote, "Every corner is alive in a silent intimacy [p. 255]." Barron concluded, "What psilocybin does is to . . . dissolve many definitions and melt many boundaries, permit greater intensities or more extreme values of experience to occur in many dimensions [Pp. 256-257]."

Some of Barron's artists, however, were wildly enthusiastic about their apparently increased sensitivity during the drug experience only to discover, once the effects wore off, that the production was without artistic merit. One painter recalled, "I have seldom known such absolute identification with what I was doing — nor such a lack of concern with it afterward [p. 251]." This statement indicates that an artist is not necessarily able to judge the value of his or her psychedelically inspired work while under the influence of the drug.

Both studies demonstrate that creativity is not enhanced "across

the boards" by LSD-type drugs. Technical execution and evaluation may actually suffer. However, certain aspects of creative behavior did seem to change in positive directions and these appeared to be amenable to outside evaluation as well as to evaluation by the artists themselves.

LSD and its Long-Lasting Effects on Volunteer Ss

McGlothlin, Cohen, and McGlothlin (1967) made an intensive study of 72 volunteer, graduate students. In a preliminary study (McGlothlin, Cohen, & McGlothlin, 1964) involving only 15 Ss, no significant changes in creativity were noted following a 200-microgram LSD session; a number of creativity tests were given before the session and were repeated 1 week after the session. However, some significant changes were reported on anxiety and attitude tests.

Three groups of 24 Ss each used: were an experimental group receiving 200 micrograms of LSD per session, a control group receiving 25 micrograms of LSD per session, and another control group receiving 20 milligrams of an amphetamine per session. A large battery of psychological tests was administered to each group prior to the series of three, 200-microgram LSD sessions and again at intervals of 2 weeks and 6 months following the third session. Among the tests in the battery were three art scales, a measure of artistic performance, a test of imaginativeness, a test of originality, four tests of divergent thinking, and a test of remote associations. As there were no systematic differences between the two control groups at the end of the study, they were combined for purposes of comparison with the experimental group.

The most frequently reported change in the experimental group on a questionnaire completed 6 months after the third session was the statement by 62% of Ss that they now had "a greater appreciation of music." The increase in number of records bought, time spent in museums, and number of musical events attended in the postdrug period was also significantly greater for the experimental group. However, experimental Ss' scores on the art tests did not show a significant increase; the authors concluded that the data "do not indicate that the increase in aesthetic appreciation and activities is accompanied by an increase in sensitivity and performance [McGlothlin et al. 1967; p. 529]."

On the same questionnaire completed 6 months after the third session, 25% of the experimental Ss felt that their LSD experience had resulted in enhanced creativity in their work. However, the creativity tests showed no evidence to substantiate this subjective report for the experimental group as a whole nor for those claiming greater creative ability.

The other tests in the battery produced provocative results in regard to personality variables and the taking of LSD. McGlothlin et al. (1967)

persons who place strong emphasis on structure and control generally have no taste for the experience and tend to respond minimally if exposed. Those who respond intensely tend to prefer a more unstructured, spontaneous, inward-turning (though not socially introverted) life, and score somewhat higher on tests of aesthetic sensitivity and imaginativeness. They also tend to be less aggressive, less competitive, and less conforming [p. 532cb.]

On the one measure of artistic performance used (the Draw-A-Person Test), the LSD Ss showed a significant decrease after 6 months. This may relate to changes in Ss' perception of the body image.

The Effects of LSD on Creativity-Test Scores

Zegans, Pollard, and Brown (1967) investigated the effects of LSD upon creativity-test scores of 30 male Ss chosen from a group of volunteer graduate students. Upon arrival, the first battery of tests was given and certain physiological measures (blood pressure and pulse rate) were taken. The battery of tests included a measure of remote association, a test of originality for word associations, a test for ability to create an original design from tiles, a free association test, and a measure involving the ability to perceive hidden figures in a complicated line drawing. A tachistoscopic stimulation test was also included to determine speed of visual perception. A dose of LSD equal to 0.5 micrograms per kilogram of body weight was added to the water of 19 Ss randomly selected to receive the drug; the other 11 Ss served as controls and did not receive LSD. After ingestion, all Ss were escorted to a lounge where they relaxed for 2 hours. Immediately prior to the administration of the second half of the test battery (which consisted of alternate forms of the same creativity tests previously given), the physiological measures were again recorded.

When the creativity-test data were investigated, it was discovered that the LSD group did significantly better than the control group on the re-test for originality of word associations (a modified form of the Rapaport, 1958 Word Association Test). Although most other comparisons favored the LSD group, no other results were statistically significant. Zegans et al. (1967) concluded that "the administration of LSD-25 to a relatively unselected group of people, for the purpose of enhancing their creative ability, is not likely to be successful [p. 746]."

A further analysis of the data demonstrated that Zegans et al. (1967) were able to predict physiological reactions to a significant

degree of accuracy on the basis of previously administered personality tests. It was also noted that although the LSD Ss did significantly better than control Ss on the word association test, they performed poorest on those tests requiring visual attention (e.g., the tachistoscopic test, the tile design test, and the hidden figures test). It was suggested that LSD "may increase the accessibility of remote or unique ideas and associations [p. 746]" while making it difficult for Ss to narrow their attention upon a delimited perceptual field. As a result, "greater openness to remote or unique ideas and associations would only be likely to enhance creative thought in those individuals who were meaningfully engaged in some specific interest or problem [Pp. 746-747]."

The Effects of Mescaline on the Creative Process

Harman, McKim, Mogar, Fadiman, and Stolarloff (1966) employed mescaline in an attempt to facilitate the creative process. The Ss included professional workers in architecture, engineering, commercial art, furniture design, mathematics, and physics. They were asked to bring to their sessions a problem of professional interest which required a creative solution. A number of Ss had worked for weeks or months on their chosen problems without obtaining a satisfactory solution. It was decided to evaluate the creative output of each S by means of psychological tests, subjective reports, and the eventual industrial or commercial validation and acceptance of the finished product or final solution.

Following a pilot study in which both LSD and mescaline were used, a formal study was inaugurated. The sessions were individual in nature, each S working alone and in silence, but with two or three other Ss working in different parts of the room. Dosage for these sessions was 200 milligrams of mescaline administered in the morning and combined with a psychic energizer. An additional energizer was administered at mid-day. The Purdue Creativity Test (Lawshe & Harris, 1960), the Object Visualization Test (Miller, 1965), and the Embedded Figures Test (Witkin, 1950) were administered while Ss were free from the influence of mescaline and again during the psychedelic session.

The Purdue Creativity Test requests S to find as many uses as possible for each of a variety of picture objects. The test is scored for fluency of ideas and range of solutions. The Ss showed an increase for both abilities under mescaline but only in the instance of fluency of ideas was the increase (which averaged 30 percentile points) statistically significant.

The Miller Object Visualization Test asks *S* to envision a two-dimensional outline figure folded into a solid. Most *Ss* solved these problems by attempting to visualize the figure "in the mind's eye." All of the *Ss* using this approach improved under mescaline. One *S* used an analytical approach rather than a visualization approach; his score declined. The other *Ss* used both visual and analytic approaches; in general, their scores improved and they tended to shift to a more direct visualization under mescaline. The improvement for the group as a whole was statistically significant.

The Witkin Embedded Figures Test involves the distinguishing of a simple geometric figure embedded in a complex colored figure. Every *S* but one improved on this measure—some of them as much as 200%; the results were highly significant. There was a shift, on this test, from "field dependence" to "field independence," a shift that previous research has found to be related to creativity.

Questionnaires and subjective reports were also analyzed. About half the *Ss* reported that they had accomplished a great deal more during the session than would have characterized their usual work-day. About 20% were not able to concentrate on their projects because they were diverted by other psychedelic effects such as personal memories and insights. About 30% fell in between the two groups. All *Ss* reported positive, overall reactions while under mescaline.

When analyzed, the subjective reports yielded 11 factors: a reduction of inhibition and anxiety under mescaline, the capacity to restructure a problem in a larger context, an enhanced fluency of ideas, a heightened capacity for visual imagery, an increased ability to concentrate, a greater empathy with external processes and objects, a heightened empathy with people, a greater accessibility of unconscious material, an increased motivation to obtain a solution, an ability to associate dissimilar ideas, and a visualization of the completed solution.

The last factor was illustrated by an architect's visualization of a shopping center he was to design:

I looked at the paper I was to draw on. It was completely blank. I knew that I would work with a property 300 ft. square. . . . Suddenly I saw the finished project. I did some quick calculations. . . . it would fit the property and . . . would meet the cost and income requirements. . . . [It was contemporary architecture with the richness of a cultural heritage. It used history and experience but did not copy it. . . .]

I visualized the result I wanted and subsequently brought the variables into play which could bring that result about. . . . I could imagine what was wanted, needed, or not possible with almost no effort [p. 224]. In what seemed like 10 minutes, I had completed the problem, having what I considered (and what I still consider) a classic solution [p. 222].

This example confirms Bowers and Bowers' (1972) conclusion that "unrealistic or fantastic experiences" may occur in the context of a creative act.

Two of the five cited studies (McGlothlin et al., 1967; Zegans et al., 1967) suggest that unselected Ss cannot expect an increase in creative ability as a result of their participation in an LSD experiment. On the other hand, three studies (Barron, 1963; Berlin et al; 1955; Harman et al., 1966) utilizing psychedelic drugs showed an enhancement of creative functioning.⁴ The results must be regarded as tentative until additional work has been done in this field and until a greater control is exerted over the many variables present. In the meantime, Cohen's (1964) statement is worth considering:

Whether LSD does or does not increase creativity remains an open question. No systematic research is available to help in finding an answer. . . . All that can be said at this time about the effect of LSD on the creative process is that a strong subjective feeling of creativeness accompanies many of the experiences [Pp. 80-81].

The Effects of LSD and LSD-Type Substances on Visual Imagery

A related study which bears on the issue of creativity and psychedelics was one reported by Siegel (1973) who designed an experiment which attempted to study the occurrence of drug-related and placebo-related imagery. For the first phase of the experiment, 14 males served as Ss. Each S was required to smoke a specially prepared cigarette in each of eight, once-a-week sessions. The S was asked to inhale for 5 seconds, hold for 20 seconds, exhale, rest for 20 seconds, and repeat the cycle until the cigarette was consumed. Seven types of cigarettes were used: low potency marijuana, medium potency marijuana, high potency marijuana, low dose delta-9 THC on alfalfa, medium dose delta-9 THC on alfalfa, high dose delta-9 THC on alfalfa, and untreated alfalfa (placebo). Sitting in a dark room with eyes closed, each S gave a 5-minute verbal report of his imagery at 90 minutes and 300 minutes after drug ingestion. A 5-minute report was also elicited before the experiment began to obtain baseline data.

The taped, verbal reports were typed, coded, and scored by two examiners, who worked independently and separately and were blind to the type of cigarette consumed by any Ss. Scoring was done on

⁴ An additional study (Janiger, personal communication, May 16, 1967) remains unpublished except for some preliminary data (Janiger, 1959). Thirty prominent artists painted a picture of a standard object (an American Indian doll) before ingesting LSD. During their psychedelic sessions, they again painted the doll. The 60 paintings were evaluated on the basis of several artistic criteria in an attempt to determine what type of change took place as well as the artistic merit (or lack of merit) reflected by the change.

three dimensions: (a) *Form* (curve, lattice, line, spiral, etc.); (b) *Color* (blue, green, red, brown, etc.); and (c) *Movement* (concentric, explosive, horizontal, pulsating, etc). For each dimension, the frequency of occurrence of each category was recorded as was its sequential occurrence in time. The two examiners' scores were almost identical; an average of the two was used for statistical analysis.

It was found that only one *S* reported any change of imagery during the baseline condition; the other *Ss* reported visualizing aimlessly moving black and white random forms with some lines and curves. Six *Ss* reported imagery changes during the placebo condition; generally, these changes consisted of black and white curves, random forms, and complex forms that moved aimlessly. The potency of the marijuana and the dose of THC were directly related to the increase of specific forms and the decrease of random patterns, to the increase of color reports (especially red) and the decrease of black, and to the increase of organized movement (especially explosive and concentric) and the decrease of aimless and pulsating motion. The results were similar for marijuana and THC, except that the number of images given during the verbal report after 300 minutes was always greater in the THC sessions.

In the second phase of the experiment, a group of eight male *Ss* was divided in half. One group remained untrained. The other group received daily training in naming the form, movement, and color of images which were projected on a screen. The training continued for each *S* until no errors were made; all *Ss* had reached this standard of performance at the end of 20 days or less.

All *Ss* then participated in a series of test sessions in which they orally ingested one of the following drugs: 50 micrograms of LSD, 100 micrograms of LSD, 10 milligrams of psilocybin, 20 milligrams of psilocybin, 200 milligrams of mescaline, 300 milligrams of mescaline, 10 milligrams of delta-9 THC, 20 milligrams of delta-9 THC, 50 micrograms of BOL, 100 micrograms of THC, 50 micrograms of BOL, 100 micrograms of BOL, 30 milligrams of phenobarbital, 60 milligrams of phenobarbital, 5 milligrams of d-amphetamine, 15 milligrams of d-amphetamine, or a low potency marijuana cigarette which was smoked until *S* reported an onset of visual imagery. Placebo trials were included as well as an initial baseline session.

All *Ss* were placed in a dark room and instructed to continually report eyes-open visual imagery during the session. The average session lasted for 6 hours. The verbal reports were transcribed and scored, following a similar procedure to that used in the first phase of the experiment. In general, the results supported Klüver's (1966) notion of "form-constants" which were frequently repeated, com-

bined, or elaborated on in various designs.

Siegel and Jarvik (1975) utilized these data in proposing a theoretical approach to imagery:

When the sensory input that would normally give rise to perceptions is absent, man is either thinking, imagining, dreaming, or hallucinating. These quasi-perceptions are forms of mental imagery that lie on a continuum of intensity of vividness, thought images being the least vivid and images of hallucinations being the most vivid. The transition from one form of imagery to another along this continuum depends on the arousal state; when arousal is low, there is still a baseline amount of spontaneous firings by cortical cells in normal waking behavior. This activity is suppressed and inhibited from entering into conscious awareness whenever one is asleep or new information is being scanned and processed. However, some introspection or thinking can retrieve the results of these firings, and they are presented as baseline imagery data [Pp. 148-149].

The information is projected in the "mind's eye" (or "mind's ear," etc.) and reflects both physical structures and experiences—especially recent memories. When arousal is increased, retrieval of information by this system is more successfully obtained, and it may contain increasing amounts of complex information and fantasy. When arousal is further increased, the information may appear to be projected on a field outside the body; in these instances, the term "hallucination" is used to describe the imagery. This may be an example of the "unrealistic or fantastic experiences" noted by Bowers and Bowers (1972). Of course, an artist can transform an "unrealistic" image into a creative product and, from a "fantastic experience," produce something of merit. Many of the images may not be usable by the artist, but by increasing their number—and perhaps their uniqueness—the psychedelic experience could provide raw material for an eventual painting, composition, poem, or invention.

Siegel and Jarvik (1975) observed that it is the observer's experiences of these projections—the sensory fields, emotions, thoughts, and images—that make up consciousness. Therefore, psychedelic-drug research can play an important role not only in studying the creative process, but in learning more about the nature of human consciousness.

PSYCHEDELIC DRUG USE AMONG 180 ARTISTS

In 1969, half a dozen federally approved research projects were still in existence (as opposed to several dozen which flourished in 1965). Because the studies limited themselves to psychoneurotics, alcoholics, narcotic addicts, and terminal cancer cases, no opportunity was available in the United States for artists who desired a legal-LSD

session. As a result, many artists took the drug illegally, risking suicide, psychotic breakdowns, and chromosomal damage,⁵ all of which have been reported on the part of users of black-market LSD (Irwin & Egozcue, 1967; Louria, 1966).

In an attempt to discover the types of psychedelic drugs being used, as well as the subjective opinions of the users, the present author surveyed 180 artists.⁶ I knew many of these artists personally and obtained the names of others through people active in the art field. All 180 artists were reputed to have had one or more "psychedelic experience."

Interviews with amateurs and "Sunday painters" were avoided; the artists in the survey were professionally committed to the creative life. Their talents and comparative development as artists did, of course, vary, but among the 180 were two award-winning film-makers, a Guggenheim Fellow in poetry, a recipient of Ford, Fulbright, and Rockefeller study grants in painting, several college faculty members, and several musicians with rock-and-roll groups. Most of the artists were from the New York area. However, some of them lived in other cities in various parts of the United States as well as Canada, England, France, Spain, Austria, and the Netherlands. The group consisted of 151 men and 29 women. Most of the artists were in their 20s or 30s, many were in their 40s, and some were in their 50s or 60s. Those who could not be interviewed personally were sent a questionnaire by mail.

These data suffer from inevitable biases; it was necessary to ask questions that were positively stated in order to maintain rapport, but this procedure may have altered the responses in some cases. Also, the sample was neither random nor systematic.

Masters and Houston (1968) have defined a "psychedelic artist" as one "whose work has been significantly influenced by psychedelic experience and who acknowledges the impact of the experience on his work [p. 17]." An experience defined as "psychedelic" (from the Greek for "mind-manifesting") is one delineated by Masters and Houston (1968) in which awareness is profoundly different from the usual conscious-waking state, from dreams, and from familiar intoxication states. Sensory experience, thoughts, emotions, and awareness of the

⁵ It is important to note, however, that *pharmaceutical* LSD (as opposed to black-market LSD) has never been linked to date with chromosome damage among healthy human *Ss* (Hungerford, Taylor, Shagass, La Badie, Balaban, & Paton, 1968; Houston, 1969).

⁶ The data resulting from the first 91 interviews have been reported previously (Krippner, 1968). Additional data on the 180 artists have also been published (Krippner, 1970).

internal and external world undergo marked changes as one's consciousness "expands" to take in the contents of the ordinarily inaccessible regions of the psyche.

Of the classes of phenomena most common to the psychedelic experience, a few have particular relevance for the artist. They include (among others) accessibility of unconscious materials, relaxation of the boundaries of the ego, fluency and flexibility of thought, intensity of attention or heightened concentration, a breaking up of perceptual constancies, high capacity for visual imagery and fantasy, symbolizing and myth-making tendencies, empathy, accelerated rate of thought, "regression in the service of the ego," seeming awareness of internal body processes and organs, and awareness of deep psychical and spiritual levels of the self with capacity in some cases for profound religious and mystical experiences [Masters & Houston, 1968; p. 88].

Art may be defined as the controlled structuring of a medium or a material to communicate as vividly and as movingly as possible the artist's personal vision of experience (Angus, 1967). Thus, it was suggested to the 180 artists interviewed that the "psychedelic artist" is one whose paintings or other forms of artistic expression demonstrate the effects of psychedelic experience which usually but not necessarily has been chemically induced. The work may have been produced as a *result* of psychedelic experience, *during* one of the artist's psychedelic experiences, in an attempt to *induce* a psychedelic experience, to *remind* someone of a psychedelic experience, or to *facilitate* a psychedelic experience triggered by something other than the work of art. Each artist was asked whether or not this description agreed with his or her point of view.

When this description was presented to the 180 artists surveyed, 155 agreed with the definition, 18 gave a qualified endorsement, and 7 disagreed. Two artists agreed with the statement but pointed out certain problems which arise in defining psychedelic art. A photographer, Irwin Gooen, stated that all art can be termed "psychedelic" because "art gives the viewer a feeling of sharing something with an already expanded consciousness—that of an artist." The poet Allen Ginsberg noted that the type of consciousness produced by LSD or peyote often resembles the type of consciousness produced by Yoga, religious discipline, or "peak experience." Ginsberg continued, "All the art that I always have been interested in—even before my use of psychedelic chemicals—grows out of that area."

Each of the 180 artists was asked if he or she considered himself or herself to be a "psychedelic artist." Six did not answer, 13 answered negatively, 144 answered affirmatively, and 17 gave a qualified affirmative answer. For example, Walter Bowart, a painter and newspaper editor, found the term "visionary artist" more valid than "psy-

chedelic artist," noting that "all art attempts to expand consciousness and, in that sense, is psychedelic."

Of the 180 artists surveyed, 171 reported having had at least one psychedelic experience, insofar as they understood and interpreted the term. The other 9 recalled experiences which they felt would probably be termed "psychedelic" although they hesitated to utilize a label which they felt has been commercialized and misused.

When asked whether they had ever ingested a psychedelic substance, 162 of the artists answered affirmatively, while 18 responded negatively. For example, a set and costume designer, Joseph Felician, had never ingested chemicals such as LSD but used self-hypnosis which he often preceded with the chanting of prayers to produce an altered conscious state. A Canadian artist had never used psychedelic substances but did utilize a type of meditation he referred to as "choiceless awareness." A California painter stated that he attained alterations in consciousness by means of Yoga, other artists reported having used Zen, fasting, chanting, or achieving the experiences spontaneously. All of the 18 artists who had never used psychedelic substances reported finding creative benefits in their nonchemical, psychedelic experiences.

The artists surveyed were asked whether or not their psychedelic experiences (chemically as well as nonchemically induced) were generally pleasant. An unqualified "yes" response was given by 149 artists, while 26 gave a qualified "yes" response. In the latter cases, it was stated that some of their initial "trips" were unpleasant but that their later experiences were pleasurable. Two artists answered this question negatively and 3 others did not respond. An interior decorator described his psychedelic experiences as "always stimulating artistically, whether pleasant or unpleasant." A painter noted that his experiences were "always meaningful, no matter what." Simon Vinkenoog, a Dutch poet, described the reason why his first experience was unpleasant: "In 1959, LSD was inflicted upon me by a team of unqualified doctors-to-be who messed up some of my most beautiful experiences ever by having me fill in silly forms, by hooking me up to an electroencephalograph going momomomomomomomo, etc."

The painter Arlene Sklar-Weinstein had only one psychedelic session but claimed that "it opened thousands of doors for me and dramatically changed the content, intent, and style of my work." Sklar-Weinstein also stated that she was still working with the material that manifested itself during the time of her LSD session (which was guided by a trained psychologist).

Of the substances mentioned by the 164 artists, marijuana was the most popular, being mentioned by all but 1 of the respondents.

Marijuana was followed by LSD (black market), hashish, dimethyltryptamine (black market), mescaline (black market), peyote, morning glory seeds, tetrahydrocannabinol (black market), psilocybin (black market), yage, diethyltryptamine (black market), and Hawaiian wood rose seeds. Smaller numbers of artists had tried pharmaceutical LSD, pharmaceutical mescaline, and pharmaceutical psilocybin. A few artists had sampled bufotenine, ibogaine, Kava-kava, nitrous oxide, and a variety of black-market preparations which combine psychedelic substances with amphetamines (e.g., DMZ, MDA, STP, Peace). The artists' claims regarding black-market preparations must be viewed with some caution for the simple reason that many preparations being sold as LSD, mescaline, or psilocybin have only a miniscule amount of the chemical—if any—in the capsule or tablet which is sold.

A number of artists claimed to have obtained psychedelic effects from substances generally not considered psychedelic—amphetamines (e.g., benzedrine, methedrine); opium; ritalin; cocaine; ketamine; and amyl nitrate.

The most provocative question of the survey was "How have your psychedelic experiences influenced your art?" None of the artists felt that their work had suffered as a result of psychedelic experience, although some admitted that their friends might disagree with this judgment. Roszak (1969), for example, implied that Allen Ginsberg's predrug poetry was superior to his later poetry. Five of the artists stated that their psychedelic experiences had not influenced their work one way or the other. The others cited a number of effects which fell into three broad categories: content, technique, and approach. In most cases, the artists reported effects that fell into more than one category. Of the group, 114 artists stated that psychedelic experience had affected the content of their work, the most frequently cited example being their use of eidetic imagery as subject matter.

Roger Aplon, a Chicago writer, described his fantasies with peyote and mescaline as prime subject matter for his poems and stories. Irwin Gooen attempted to interpret his visualization to others by "painting" with light on photosensitive paper. The husband-and-wife team, José and Miriam Arguelles, reported having seen "the most beautiful patterns and mandalas in a clear sky; these in turn influence the lines of our drawings."

Of the artists surveyed, 131 said there had been a noticeable improvement in their artistic technique resulting from their psychedelic sessions; a greater ability to use color was the example mentioned most frequently. One California painter described his participating in an LSD-research study directed by Janiger (1959). He

commented, "I always had been afraid to use color in my work, but a single LSD session helped me to conquer that fear."

Of the artists, 142 attributed a change in their creative approach to the psychedelics. One artist claimed his work had become more representational; two others asserted that their work had become more abstract. Mentioned even more frequently was the claim that psychedelic experience had eliminated superficiality from the artists' work and had given them greater depth as people and as creators. Some referred to their first psychedelic experience as a "peak experience," as a turning point in their lives. "My dormant interest in music became an active one," said a musician, "after a few sessions with peyote and DMT." Another said that a psilocybin experience "caused me to enjoy the art of drawing for the first time in my life." The Dutch writer Ronny van den Eerenbeemt stated,

When very young, I started writing stories and poems. The older I got, the more I had a feeling of not being able to find something really worthwhile to write about. My psychedelic experiences taught me that what I used to do was no more than scratch the surface of life. After having seen and felt the center of life, through the psychedelics, I now think I do have something worthwhile to write about.

Thus, the artistic approach of about half the artists surveyed by the author reportedly changed due to psychedelic experience. However, rather than accepting these data on their face value, one should view them as suggestive of the information that could be obtained from a more representative sample of artists questioned in greater depth.

HYPNOSIS, PSYCHEDELIC SUBSTANCES, AND ALTERED STATES OF CONSCIOUSNESS

After reviewing the hypnosis literature, Barber, Spanos, and Chaves (1974) concluded that "there appears to be a relationship between responsiveness to test suggestions in a hypnotic situation and propensity for involvement in imaginative activities [p. 139]." The relationship was explained in terms of role models and demand characteristics of the task. Experimentation with LSD-type drugs also demonstrates this relationship since *Ss*' reactions to psychedelic substances is heavily influenced by expectancy, personality, and setting (Masters & Houston, 1968).

The varied reactions of *Ss* to both hypnotic induction and LSD-type drugs makes it difficult to conceive of a "hypnotic state" or a "psychedelic state." Perhaps, hypnotic induction and psychedelic substances could be conceived as "triggers" which evoke certain experiences. If *E* and *S* have agreed, explicitly or implicitly, on the type of phenomena to be experienced, the outcome is somewhat more assured. If the

suggested outcome is directed toward unusual experiences, the chances are greater that some type of creative behavior may emerge from S's alteration in consciousness.

Is it sufficient to explain these phenomena on the basis of a "trigger" which leads to unusual experiences—if this has been one's expectation—which then may lead to enhanced creativity? Not quite. Why should any trigger at all be necessary if the goal is merely fantasy? Why not just tell a person to fantasize in an ordinary waking state and expect greater creativity? Bowers and Bowers (1972) suggest that the information-processing style differs in waking vs. hypnotic instructions. Tart (1975) has proposed ten major subsystems which vary from one state of consciousness to another; many of these subsystems are directly involved with information-processing (e.g., memory, evaluation, space/time sense, input processing—the automated selecting and abstracting of sensory input so that one perceives only what is important by personal and/or cultured standards). By conducting future experiments in these areas in ways which pay greater attention to information-processing, scientists can begin to understand how to facilitate creativity through altering consciousness.

In summary, this paper has reviewed the research data in the area of creativity and psychedelic drugs. The data are suggestive rather than definitive but do indicate that creative individuals can sometimes produce material of merit following experiences with LSD-type substances. However, they often cannot judge the material's value during the session. Furthermore, individuals who do not ordinarily exhibit creative behavior are unlikely to show enhanced creativity-test scores as a result of psychedelic experience—but they may demonstrate a greater interest in art, music, etc. Relationships to the hypnotic literature were noted and emphasis was placed on studying the information-processing aspects of altered states.

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Eine Forschung über die schöpferische Kraft und psychedelische Rauschgifte**Stanley Krippner**

Abstrakt: Über die Jahre hin haben sich sehr wenige Forscher mit dem Einfluss des psychedelischen Rauschgifterlebens auf die verschiedensten Aspekte des schöpferischen Vorgangs befasst. Obwohl keine endgültigen Behauptungen gemacht werden können, scheint es doch möglich zu sein, dass diese Substanzen mit der ursprünglichen Gestaltung der Idee und Bildvorstellung verbunden sind, und das betrifft ganz besonders die Künstler. Es gibt kein Beweismaterial, dass LSD-artige Rauschgifte das schöpferische Element in Menschen hervorrufen kann, von denen bekannt war, dass sie vor der Rauschgifteinnahme kein Talent besaßen. Bei dem schöpferischen Akt wird Phantasie in Realität umgewandelt. Das Studium des psychedelischen Erlebnisses, des hypnotischen Erlebnisses und anderer Veränderungen im Bewusstseinszustand mag dazu verhelfen, diesen Vorgang zu verstehen.

Recherches sur la créativité et les drogues psychédéliques**Stanley Krippner**

Résumé: L'influence de l'expérience de drogue psychédélique sur divers aspects du processus créateur a été étudiée par très peu de chercheurs au cours des années. Bien qu'il soit impossible de faire des énoncés concluants, il semble possible que ces substances soient associées avec l'imagerie et l'idéation originale, surtout dans le cas des artistes professionnels. Il n'existe aucune preuve que des drogues de type LSD peuvent susciter la créativité chez des individus qui ne sont pas reconnus comme talentueux avant l'ingestion de drogue. La créativité implique la transformation de la fantaisie en réalité; l'étude de l'expérience psychédélique, de l'expérience hypnotique et d'autres altérations de conscience peut nous aider à comprendre ce processus.

Investigación sobre la creatividad y las drogas psicodélicas**Stanley Krippner**

Resumen: La influencia de la experiencia psicodélica sobre diversos aspectos del proceso creativo ha sido estudiada por muy pocos investigadores a lo largo de los años. Aunque no pueden hacerse afirmaciones categóricas, parece posible que las sustancias psicodélicas puedan asociarse con la producción de ideas e imágenes originales, sobre todo en el caso de artistas profesionales. No hay pruebas de que las drogas del tipo LSD puedan inducir la creatividad en individuos que no hayan dado muestras de talento antes de la ingestión de dichas drogas. La creatividad supone la transformación de la fantasía en realidad; el estudio de las experiencias psicodélica e hipnótica y de otras alteraciones de la conciencia, puede ayudar a comprender dicho proceso.