

Pahnke's "Good Friday Experiment": A Long-Term Follow-Up and Methodological Critique

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On Good Friday, 1962, before services commenced in Boston University's Marsh Chapel, Walter Pahnke administered small capsules to twenty Protestant divinity students. Thus began the most scientific experiment in the literature designed to investigate the potential of psychedelic drugs to facilitate mystical experience (Pahnke, 1963, 1966, 1967, 1970; Pahnke & Richards, 1969a, 1969b, 1969c). Half the capsules contained psilocybin (30mg), an extract of psychoactive mushrooms, and the other half contained a placebo. According to Pahnke, the experiment determined that "the persons who received psilocybin experienced to a greater extent than did the controls the phenomena described by our typology of mysticism" (Pahnke, 1963, p. 220).

This paper is a brief methodological critique and long-term follow-up study to the "Good Friday Experiment." Pahnke, who was both a physician and a minister, conducted the experiment in 1962 for his Ph.D. in Religion and Society at Harvard University, with Timothy Leary as his principal academic advisor (Leary, 1962, 1967, 1968). Describing the experiment, Walter Houston Clark, 1961 recipient of the American Psychological Association's William James Memorial Award for contributions to the psychology of religion, writes, "There are no experiments known to me in the history of the scientific study of religion better designed or clearer in their conclusions than this one" (Clark, 1969, p. 77).

Since a classic means of evaluating mystical experiences is by their fruits, follow-up data is of fundamental importance in evaluating the original experiment. A six-month follow-up was part of the original experiment and a longer term follow-up would probably have been conducted by Pahnke himself had it not been for his death in 1971. For over twenty-five years it has not been legally possible to replicate or revise this experiment. Hence, this long-term follow-up study, conducted by the author, is offered as a way to advance scientific knowledge in the area of psychedelics and experimental mysticism. Lukoff, Zanger and Lu's review (1990) of psychoactive substances and transpersonal states offers a recent overview of this topic.

Though all raw data from the original experiment is lost, including the uncoded list of participants, extensive research over a period of four years and the enthusiastic cooperation of most of the original subjects have resulted in the identification and location of nineteen out of the original twenty subjects. From November, 1986 to October, 1989, this author tape recorded personal interviews with sixteen of the original subjects meeting

fifteen in their home cities throughout the United States and interviewing one subject (from the control group) over the telephone. In addition to the interviews, all sixteen subjects participating in the long-term follow-up, nine from the control and seven from the experimental group, were re-administered the six-month 100-item follow-up questionnaire used in the original experiment.

Of the remaining three subjects from the experimental group, one is deceased. The identity of another is unknown. One declined to participate citing concerns about privacy. One subject, from the control group, declined to be interviewed or to fill out the questionnaire because he interpreted Pahnke's pledge of confidentiality to mean that the subjects should not talk about the experiment to anyone. This author's discussion of the meaning of confidentiality and mention of the explicit support for the long-term follow-up by Pahnke's wife failed to enlist his participation.

Informal discussions were also conducted with seven out of the ten of Pahnke's original research assistants for purposes of gathering background information about the experiment. At the time of the experiment, these people were professors or students of religion, psychology and philosophy at universities, colleges and seminaries in the Boston area.

METHODOLOGY OF THE ORIGINAL EXPERIMENT

Pahnke hypothesized that psychedelic drugs, in this case psilocybin, could facilitate a "mystical" experience in religiously inclined volunteers who took the drug in a religious setting. He further hypothesized that such experiences would result in persisting positive changes in attitudes and behavior.

Pahnke believed the most conducive environment for his experiment would be a community of believers participating in a familiar religious ceremony designed to elicit religious feelings, in effect creating an atmosphere similar to that of the tribes which used psilocybin-containing mushrooms for religious purposes (Harner, 1973; Hofmann, Ruck & Wasson, 1978; Hofmann & Schultes, 1979; Wasson, 1968). Accordingly, the experiment was designed to administer psilocybin to a previously acquainted group of Christian divinity students in church during a Good Friday service.

Methodologically, the study was designed as a randomized controlled, matched group, double-blind experiment using an active placebo. Prior to Good Friday, twenty white male Protestant volunteers, all of whom were students at the same theological school in the Boston area, were given a series of psychological and physical tests. Ten sets of closely matched pairs were created using variables such as past religious experience, religious background and training, and general psychological makeup. On the morning of the experiment, a helper who did not participate further in the experiment and who did not know any of the subjects, flipped a coin to determine to which group, psilocybin or placebo, each member of the pair would be assigned.

Three different methods were used to create numerical scales quantifying the experiences of the subjects in terms of an eight-category typology of mystical experiences

designed by Pahnke especially for the experiment. Blind independent raters trained in content-analysis procedures scored descriptions of the experiences written by the subjects shortly after Good Friday as well as transcripts of three separate tape-recorded interviews conducted immediately, several days and six months after the experiment. A 147-item questionnaire was administered to the subjects one or two days after Good Friday and a 100-item questionnaire was administered six months after the experiment. The subject's responses to the interview and the two questionnaires were transformed into three distinct scores averaging the percentage of the maximum possible score in each category. Each of the three complementary scores was then compared to each other.

Pahnke secured support and permission to use Marsh Chapel from Rev. Howard Thurman, Boston University's dynamic black chaplain. Several small meeting rooms and a self-contained basement chapel were set aside on Good Friday for the participants in the experiment while the main service led by Rev. Thurman was taking place upstairs in the larger chapel. The two-and-a-half hour service was broadcast into the basement chapel, where altar pews, stained glass windows and various religious symbols were permanently located.

Pahnke gave an active placebo of nicotinic acid to the controls who were expecting to receive either the psilocybin or an inactive placebo. This was done in order to "potentiate suggestion in the control subjects, all of whom knew that psilocybin produced various somatic effects, but none of whom had ever had psilocybin or any related substance before the experiment" (Pahnke, 1963, p. 89).

The ten research assistants worked as part of the experimental team in order to provide emotional support to the subjects prior to and during the service. Subjects were divided into five groups of four with two research assistants, known as group leaders, assigned to each group. These small groups met for two hours prior to the service to build trust and facilitate group support. Subjects were encouraged to "go into the unexplored realms of experience during the actual experiment and not try to fight the effects of the drug even if the experience became very unusual or frightening" (Pahnke, 1963, p. 96).

As a precaution against biasing the subjects toward the typology of mystical experience, leaders were told not to discuss specific aspects of the psychedelic or mystical experience. The lack of overt bias was confirmed by all of the subjects in their long-term follow-up interviews. In a typical long-term follow-up report, psilocybin subject S.J. (all initials used to identify subjects are coded to preserve anonymity) made the following remarks both about the preparation phase of the experiment and the conduct of the group leaders:

None of the fine points of the mystical experience were given to us. We were not told to read any books such as Stace's book on mysticism or Jacob Boheme's books, nothing like that. They did not bias us in any way towards that, not at all.

At the insistence of one of the group leaders as well as Pahnke's faculty sponsor, Timothy Leary, but over the objections of Pahnke, all of the group leaders were also given a pill prior

to the service (Leary, 1984, p. 107). This was done in a double-blind manner with one of each group's leaders receiving a half dose of psilocybin (15 mg) and the other the placebo. Pahnke was concerned this would lead to charges of experimenter bias being leveled against the study, but Leary and the group leader felt that the full involvement of the group leaders would create more of a community feeling and lend necessary confidence to the subjects. Though administered a capsule at the Good Friday service, the group leaders' reactions were not tape recorded, nor did they fill out questionnaires. Pahnke himself refrained from having any personal experiences with any psychedelic drug until after the experiment and follow-up had been completed.

The double-blind was successfully sustained through all of the preparation phases of the experiment up to and including ingestion of the capsule. The double-blind was even sustained for a portion of the Good Friday service itself because of the use of nicotinic acid as an active placebo. Nicotinic acid acts more quickly than does psilocybin and produces a warm flush through vasodilation of blood vessels in the skin and general relaxation. Subjects in the placebo group mistakenly concluded, in the early stages of the experiment, that they were the ones who had received the psilocybin (Pahnke, 1963, p. 212). The group leaders, unaware that an active placebo was going to be used, were also initially unable to distinguish whether subjects had received the psilocybin or the placebo.

Psilocybin's powerful subjective effects were eventually obvious to all subjects who received it, even though they had not previously ingested the drug or anything similar to it (Pahnke, 1963, p. 212). Inevitably, the double-blind was broken during the service as the psychoactive effects of the psilocybin deepened and the physiological effects of the nicotinic acid faded. At the end of the day of the experiment, all subjects correctly determined whether they had received the psilocybin or the placebo even though they were never told which group they were in (Pahnke, 1963, p. 210). Pahnke himself remained technically blind until after the six-month follow-up. The comments of subject O.W., gathered in the course of this author's long-term follow-up, are typical of members of the control group.

After about a half hour I got this burning sensation. It was more like indigestion than a burning sensation. And I said to T.B., "Do you feel anything?" And he said, "No, not yet." We kept asking, "Do you feel anything?" I said, "You know, I've got this burning sensation, and it's kind of uncomfortable." And T.B. said, "My God, I don't have it, you got the psilocybin, I don't have it." I thought, "Jeez, at least I was lucky in this trial. I'm sorry T.B. didn't get it, but I'm gonna' find out." I figured, with my luck, I'd probably get the sugar pill, or whatever it is. And I said to Y.M., "Do you feel anything?" No, he didn't feel anything. So I sat there, and I remember sitting there, and I thought, "Well, Leary told me to chart my course so I'm gonna' concentrate on that." And I kept concentrating and sitting there and all I did was get more indigestion and uncomfortable.

Nothing much more happened and within another 40 minutes, 45 minutes, everybody was really quiet and sitting there. Y.M. was sitting there and looking ahead, and all of the sudden T.B. says to me, "Those lights are unbelievable." And I said, "What lights?" He says, "Look at the candles." He says, "Can you believe that?" And I looked at the candles, and I thought, they look like candles." He says, "Can't you see something strange about them?" So I remember squinting and looking. I couldn't see anything strange. And he says, "You know it's just spectacular." And I looked at Y.M. and he was sitting there saying, "Yeah." And I thought, "They got it, I didn't."

The follow-up interviews yielded no evidence that the experimental team consciously used their knowledge of which pill the subjects had received to bias the results. However, unconscious bias resulting in an "expectancy effect" cannot be ruled out (Barber, 1976). Still, valuable information can be generated without the successful use of the double-blind methodology. Louis Lasagna, Director of the Center for the Study of Drug Development at Tufts University, writes,

We have witnessed the ascendancy of the randomized, double-blind, controlled clinical trial (RCCT), to the point where many in positions of authority now believe that data obtained via this technique should constitute the only basis for registering a drug or indeed for coming to any conclusions about its efficacy at any time in the drug's career. My thesis is that this viewpoint is untenable, needlessly rigid, unrealistic, and at times unethical.... Modern trial techniques [were not] necessary to recognize the therapeutic potential of chloral hydrate, the barbiturates, ether, nitrous oxide, chloroform, curare, aspirin, quinine, insulin, thyroid, epinephrine, local anesthetics, belladonna, antacids, sulfonamides, and penicillin, to give a partial list... (Lasagna, 1985, p. 48).

Commenting about the attempt to remove the experimenter from the experiment completely, Tooley and Pratt remark:

In certain participant-observer situations (e.g. psychotherapy, education, change induction, action research) the purpose might be to influence the system under investigation as much as possible, but still accounting for (though now exploiting) the variance within the system attributable to the several significant and relevant aspects of the investigator's participant observation.... From this perspective, the quixotic attempt to eliminate the effects of participant-observation in the name of a misplaced pseudo-objectivity is fruitless, not so much because it is impossible but because it is unproductive.... From our point of view... the question becomes not how to eliminate bias (unaccounted-for influence) of participant observation, but how optimally to account for and exploit the effects of the participant observation transaction in terms of the purposes of the research (Tooley & Pratt, 1964, p. 254-56).

The loss of the double-blind makes it impossible to determine the relative contributions of psilocybin and suggestion in producing the subjects' reported experiences. If the experiment were designed specifically to measure the pure drug effects of psilocybin, the failure of the double-blind would be quite damaging. In this instance the loss of the double-blind is of lesser significance because the entire experiment was explicitly designed to maximize the combined effect of psilocybin and suggestion. The setting was religious, the participants were religiously inclined and the mood was positive and expectant. Pahnke did not set out to investigate whether psilocybin was able to produce mystical experiences irrespective of preparation and context. He designed the experiment to determine whether volunteers who received psilocybin within a highly supportive, suggestive environment similar to that found in the ritual use of psychoactive substances by various native cultures would report more elements of a classical mystical experience (as defined by the questionnaires) than volunteers who did not receive psilocybin. The loss of the double-blind may have enhanced the power of suggestion to some extent and suggests that restraint should be used in attributing the experiences of the experimental group exclusively to the psilocybin (Zinberg, 1984).

Critique of the Questionnaire

Pahnke designed the questionnaire he used to measure the occurrence of a mystical experience specifically for the experiment. No similar questionnaires existed at the time (Larson, 1986; Rue, 1985; Silverman, 1983). Pahnke decided to measure the mystical experience in reference to eight distinct experiential categories. The categories include 1) sense of unity, 2) transcendence of time and space, 3) sense of sacredness, 4) sense of objective reality, 5) deeply felt positive mood, 6) ineffability, 7) paradoxicality and 8) transiency. These categories are very similar to those elaborated by such well-respected scholars of mystical experience as William James (1902), Evelyn Underhill (1910), and W.T. Stace (1960) and are accepted as valid even by academic critics of the Good Friday

experiment such as R.C. Zaehner (1972). At present, the scientific questionnaire most widely used by researchers to assess mystical experiences is a 32-item questionnaire created by Ralph Hood, also based on categories developed by W.T. Stace (Spilka, Hood & Gorsuch, 1985).

Zaehner's critique of Pahnke's questionnaire is that it does not contain a category for experiences which are specifically Christian, such as identification with the death and rebirth of Jesus Christ. From Zaehner's perspective, this omission made it impossible to determine if the experiences reported by the subjects during the Good Friday experiment were religious, since he thought a religious experience for Christians necessarily involves a theistic encounter with Christ. Zaehner objected to the claim that an experience of a generalized, non-specific, apprehension of a transcendent reality beyond any specific cultural forms and figures could properly be called religious. Anticipating this critique, Pahnke asserted in the thesis that he was not attempting to resolve the question of what can properly be called religious but was simply investigating mystical experiences, regardless of whether or not they were considered religious. This author will also leave this delicate discussion to others.

The questionnaire used in the Good Friday experiment has been modified and expanded over the years by Pahnke, William Richards, Stanislav Grof, Franco Di Leo, and Richard Yensen for use in subsequent psychedelic research (Richards, 1975, 1978). From the initial creation of the questionnaire by Pahnke in 1962 to Di Leo and Yensen's computerized version, called the Peak Experience Profile, the basic items relating to the mystical experience have remained essentially unchanged (Di Leo, 1982). While the original follow-up questionnaire was composed of eight different categories, the Peak Experience Profile uses only six. The category of transiency was eliminated since it measures any altered state of consciousness whether mystical or not. The paradoxicality and alleged ineffability categories were combined into the ineffability category. Over the years, new categories measuring transpersonal but not necessarily mystical experiences were added. For example, new questions relate to the reexperiencing of the stages of birth and the perinatal matrixes as defined by Grof (Grof, 1975, 1980) and also to past-life experiences (Ring, 1982, 1984, 1988). A series of questions relating to difficult and painful nadir experiences, in some sense the opposites of peak experiences, has also been added.

In Pahnke's original questionnaire and in the subsequent revisions, the completeness with which each subject experienced each category is measured through numerical responses to category-specific questions. Pahnke's subjects rated each question on the post-drug questionnaire from zero to four, with zero indicating that the item was not experienced at all and four indicating that it was experienced as strong or stronger than ever before. The six-month follow-up questionnaire used a zero to five scale, with four indicating that it was experienced as strong as before and five indicating that it was experienced stronger than ever before.

The questions themselves are of two types. The predominant type asks the subject about experiences of a new perspective. For example, some of the questions used to determine

the sense of unity ask subjects to rate the degree to which they experienced a pure awareness beyond any empirical content, a fusion of the self into a larger undifferentiated whole, or a freedom from the limitations of the self in connection with a unity or bond with what was felt to be all-encompassing and greater-than-self. These type of questions are sufficiently detailed and specific to be an effective test for the specific category.

The second type of question, used much less frequently, asks about the loss of a normal state. For example, two questions used to determine the presence of a sense of unity simply required subjects to rate the degree to which they lost their sense of self or experienced a loss of their own identity. This type of question is a minor weak point of the questionnaire because it can be rated highly without having anything to do with mystical experiences. For example, one subject reported in the follow-up interview that under the influence of psilocybin he temporarily had difficulty recalling his career choice, home, names of his wife and children, and even his own name. This experience of a powerful loss of the usual sense of self and identity would be highly correlated with mystical experience in the questionnaire but may not actually be related because it can occur for a variety of reasons. Though the questionnaire has relatively few of this type of question, some overestimation of the completeness of the mystical experience could have been introduced into the data as a result.

In addition to asking questions about the experience itself, the follow-up questionnaire also sought to assess the effects of that experience on the attitudes and behaviors of the subjects. For example, the subjects' attitude changes were assessed by asking them to use a 0 to 5 scale to rate whether they had experienced an increase or a decrease in their feelings of happiness, joy, peace, reverence, creativity, vocational commitment, need for service, anxiety, and hatred. Changes in subjects' behavior were assessed by means of questions asking whether or not they experienced changes in their relationships with others, in time spent in quiet meditation or devotional life, or whether they thought their behavior had changed in positive or negative ways.

Pahnke's questionnaire gathered information only from the self-reports of the subjects, resulting in a general sense of the subjects' own assessment of the direction of the effects of their Good Friday experience. The data do not yield specific information about the internal psychodynamic mechanisms at work within each subject, nor do they include the views of significant others regarding the effects of the experiment on the subjects.

In contemporary psychotherapy research, more sophisticated methods than Pahnke's are used to assess personality change (Beutler & Crago, 1983). Reports from significant others such as family members and close friends of the subject are almost always used to add an important "objective" element in assessing personality change. Data from the follow-up questionnaires, administered by Pahnke at six-months and by the author after twenty-four to twenty-seven years, should be considered valuable as far as they go, but this is not very far. Since no detailed personality tests were given prior to the experiment, results of such tests at the time of the long-term follow-up would have been of little value and were not conducted. The long-term follow-up interviews, because of their open-ended format and

extensive questioning, yielded more detailed information than the questionnaire about the content of the experiences and the persisting effects.

FINDINGS OF THE ORIGINAL STUDY AND LONG-TERM FOLLOW-UP

Pahnke arbitrarily determined that for a mystical experience to be considered complete for the purposes of the experiment, out of the maximum total possible score, "the total score and the score in each separate category must be at least 60 to 70 percent" (Pahnke, 1967, p. 66). According to this cut-off point, "Four of the ten psilocybin subjects reached the 60 to 70 percent level of completeness, whereas none of the controls did" (Pahnke, 1967, p. 64). Looked at by subjects and categories, Pahnke reported that "eight out of ten of the experimental subjects experienced at least seven out of the nine categories. None of the control group, when each individual was compared to his matched partner, had a score which was higher" (Pahnke, 1966, p. 647). In every general category and in every specific question, the average score of the experimental subjects exceeded that of the control subjects. The differences between the groups in the scores on the questionnaires were significant at $p < .05$ level for all categories.

When asked at a conference if any of the controls had a mystical experience, Pahnke replied,

To take an individual case, there was one control subject who scored fairly high on sacredness and sense of peace and that he himself, in his written account, said "It was a very meaningful experience, but in the past I've certainly had one that was much more so" (Pahnke, 1966, p. 648).

Pahnke's six-month follow-up data and the author's long-term follow-up questionnaire data, both of which used the same instrument, are displayed in Table 1. The six-month scores are listed first and the long-term follow-up scores follow in parentheses. For each category, the percentages in the chart represent the total scores of the subjects divided by the highest possible scores that could have been reported. The numbers measure the completeness with which each category was experienced.

Category	Experimentals		Controls	
	Six-Month	Long-Term	Six-Month	Long-Term

1.Unity A. Internal	60	(77)	5	(5)
B. External	39	(51)	1	(6)
2. Transcendence of Time and Space	78	(73)	7	(9)
3. Deeply Felt Positive Mood	54	(56)	23	(21)
4. Sacredness	58	(68)	25	(29)
5. Objectivity and Reality	71	(82)	18	(24)
6. Paradoxicality	34	(48)	3	(4)
7. Alleged Ineffability	77	(71)	15	(3)
8. Transiency	76	(75)	9	(9)
Average for the Categories	60.8	(66.8)	11.8	(12.2)
9. Persisting Positive Changes in Attitude and Behavior	48	(50)	15	(15)
10. Persisting Negative Changes in Attitude and Behavior	6	(6)	2	(4)

TABLE 1
"GOOD FRIDAY EXPERIMENT" EXPERIMENTAL AND CONTROL GROUPS
AT SIX-MONTH AND LONG-TERM FOLLOW-UP,
SHOWN AS PERCENTAGES OF MAXIMUM POSSIBLE SCORES

At Six-Month Follow-up, Exper. N=10, Control = 10

Long-Term Follow-Up (In Parenthesis) Exper. N=7, Control N=9

p<.05 for all category comparisons at both six-months and long-term

Comparisons can reliably be made between the control group's six-month and long-term scores because nine out of the original ten control group subjects participated in the long-term follow-up and the variance in scores between control subjects was small. The absence of completed long-term questionnaires from three of the ten original subjects from the psilocybin group makes comparing their six-month and long-term scores more difficult. The long-term follow-up interviews produced specific information suggesting that one of the

three missing psilocybin subjects had scores significantly lower than average. No information was generated suggesting that the other two missing subjects had scores significantly different than average. The average scores for the long-term follow-up may thus overstate somewhat the scores from the entire psilocybin group.

The average scores for the eight categories of the mystical experience and the scores for persisting positive and negative changes in attitude and behavior have changed remarkably little for either the controls or the experimentals despite the passage of between twenty-four and twenty-seven years between the two tests. The questionnaire seems to be reliable and indicates that time has not substantially altered the opinions of the subjects about their experiences. In the long-term follow-up even more than in the six-month follow-up, the experimental group has higher scores than the control group in every category. For the long-term follow-up, these differences are significant at $p < .05$ in every category.

For the experimental group, the average score for the mystical categories at the six-month follow-up was 60.8 percent. They scored 66.8 percent at the long-term follow-up. In the six-month follow-up, the experimental group scored above 34 percent in all categories while in the long-term follow-up they scored above 48 percent in all categories. The experimental group scored the highest in those categories that typify a different state of consciousness such as transcendence of time and space, alleged ineffability and transiency.

For the control group, the average score for the eight categories of mystical experience at the six-month follow-up was 11.8 percent. They scored 12.2 percent at the long-term follow-up. The highest score of the control group at either time was 29 percent, in the sacredness category. The control group scored the highest in the categories of experience that religious services are most likely to induce, namely sense of sacredness, deeply felt positive mood and sense of objectivity and reality.

For the psilocybin group, the long-term follow-up yielded moderately increased scores in the categories of internal and external unity, sacredness, objectivity and reality, and paradoxicality, while all other categories remained virtually the same as the six-month data. Several decades seem to have strengthened the experimental groups' characterization of their original Good Friday experience as having had genuinely mystical elements. For the controls, the only score that changed substantially was that of alleged ineffability, which decreased.

A relatively high degree of persisting positive changes were reported by the experimental group while virtually no persisting positive changes were reported by the control group. In the open-ended portion of the long-term follow-up questionnaire, experimental subjects wrote that the experience helped them to resolve career decisions, recognize the arbitrariness of ego boundaries, increase their depth of faith, increase their appreciation of eternal life, deepen their sense of the meaning of Christ, and heighten their sense of joy and beauty. No positive persisting changes were reported by the control group in the open-ended section of the follow-up questionnaire.

There was a very low incidence of persisting negative changes in attitudes or behavior in either group at either the six-month follow-up or the long-term follow-up. However, the one

psilocybin subject reported to have had the most difficult time during the experiment was the one who declined this author's request to be interviewed in person or fill out a questionnaire, placing in question the generalizability of this finding for the long-term.

Both the six-month and long-term follow-up questionnaire results support Pahnke's hypothesis that psilocybin, when taken in a religious setting by people who are religiously inclined, can facilitate experiences of varying degrees of depth that either are identical with, or indistinguishable from, those reported in the cross-cultural mystical literature. In addition, both the six-month and the long-term follow-up questionnaire results support Pahnke's hypothesis that the subjects who received psilocybin, more so than the controls, experienced substantial positive persisting effects in attitude and behavior.

THE LONG-TERM FOLLOW-UP INTERVIEWS: GENERAL OVERVIEW

This long-term follow-up was conducted roughly a quarter century after the subjects participated in the original experiment. All subjects contacted live in the United States, with five out of the eight psilocybin subjects and five out of the ten placebo subjects currently working as ministers. Other professions represented are stockbroker, lawyer, community developer, social worker, administrative-assistant and educator. Except for one of the psilocybin subjects, all are currently married. All are working and self-supporting. All but two welcomed the opportunity to discuss their participation in the Good Friday experiment.

Each of the psilocybin subjects had vivid memories of portions of their Good Friday experience. For most this was their life's only psychedelic experience, in part because there have been no legal opportunities for such experiences for the last twenty-five years in the United States (or in any of the roughly 90 countries who are party to the international drug control treaties coordinated by the United Nation's World Health Organization). The experimental subjects unanimously described their Good Friday psilocybin experience as having had elements of a genuinely mystical nature and characterized it as one of the highpoints of their spiritual life. Some subjects reported that the content of their experience was specifically involved with the life of Christ and related directly to the Christian message while others had experiences of a more universal, non-specific nature. Most of the control subjects could barely remember even a few details of the service.

Most of the psilocybin subjects had subsequent experiences of a mystical nature with which they were able to compare and to contrast to their psilocybin experience. These subsequent experiences occurred either in dreams, in prayer life, in nature or with other psychedelics and seemed to the psilocybin subjects to be of the same essential nature as their Good Friday experience. Significant differences between their non-drug and drug mystical experiences were noted, with the drug experiences reportedly both more intense and composed of a wider emotional range than the non-drug experiences. The non-drug experiences were composed primarily of peaceful, beautiful moments experienced with ease while the drug experiences tended to include moments of great fear, agony and self-doubt.

The discussion of Subject T.B. about the relationship between his psilocybin and his other

mystical experiences illustrates how the subjects saw the validity of their psilocybin experiences.

I can think of no experiences [like the Good Friday experience] quite of that magnitude. That was the last of the great four in my life. The dream state... I had no control over when it was coming. It was when I [was about nine and] had scarlet fever and rheumatic fever, apparently at either similar or at the same times. And they thought that I was going to die. And I saw a light coming out of the sky, this is in the dream, and it came toward me and it was like the figure of Christ and I said, "No, let me live and I'll serve you." And I'm alive and I've served. The prayer state when I was in seventh grade was very similar in the way it happened to me. I intentionally went for an experience with God. In seventh grade. And I also went for an experience with God at the Good Friday experience. And those were similar. The West Point experience was different. In that yes, it was prayers, it was on my knees, it was there, but the face of Christ was. ... it happened more to me than me participating in it. It was more like a saving experience kind of thing. So I've had that and can talk about "a salvation experience," a born again experience, it was that kind of dedication.

Each of the psilocybin subjects felt that the experience had significantly affected his life in a positive way and expressed appreciation for having participated in the experiment. Most of the effects discussed in the long-term follow-up interviews centered around enhanced appreciation of life and of nature, deepened sense of joy, deepened commitment to the Christian ministry or to whatever other vocations the subjects chose, enhanced appreciation of unusual experiences and emotions, increased tolerance of other religious systems, deepened equanimity in the face of difficult life crises, and greater solidarity and identification with foreign peoples, minorities, women and nature. Subject K.B.'s description of the long-term effects is representative. He remarks:

It left me with a completely unquestioned certainty that there is an environment bigger than the one I'm conscious of. I have my own interpretation of what that is, but it went from a theoretical proposition to an experiential one. In one sense it didn't change anything, I didn't discover something I hadn't dreamed of, but what I had thought on the basis of reading and teaching was there. I knew it. Somehow it was much more real to me.... I expect things from meditation and prayer and so forth that I might have been a bit more skeptical about before.... I have gotten help with problems, and at times I think direction and guidance in problem solving. Somehow my life has been different knowing that there is something out there.... What I saw wasn't anything entirely surprising and yet there was a powerful impact from having seen it.

In addition to self-reports, several subjects who had stayed in contact with each other over the years spoke about the effects they noticed in each other. In the instances where such information was obtained, the observations of fellow subjects were similar to the self-reports and confirmed claims of beneficial effects.

Several of the psilocybin subjects discussed their deepened involvement in the politics of the day as one result of their Good Friday experience. Feelings of unity led many of the subjects to identify with and feel compassion for minorities, women and the environment. The feelings of timelessness and eternity reduced their fear of death and empowered the subjects to take more risks in their lives and to participate more fully in political struggles.

Subject T.B. discussed how his perception of death during the Good Friday experience affected his work in the political field. He remarked:

When you get a clear vision of what [death] is and have sort of been there, and have left the self, left the body, you know, self leaving the body, or soul leaving the body, or whatever you want to call it, you would also know that marching in the Civil Rights Movement or against the Vietnam War in Washington [is less fearful].... In a sense [it takes away the fear of dying]... because you've already been there. You know what it's about. When people approaching death have an out-of-body experience... [you] say, "I know what you're talking about. I've been there. Been there and come back. And it's not terrifying, it doesn't hurt...."

Subject S.J. found that his Good Friday experience of unity supported his efforts in the political field.

I got very involved with civil rights after that [his psychedelic experience] and spent some time in the South. I remember this unity business, I thought there was some link there.... There could have been. People certainly don't write about it. They write about it the opposite way, that drugs are an escape from social obligations. That is the popular view....

Only one of the control subjects felt that his experience of the Good Friday service resulted in beneficial personal growth. That particular control subject thought he was probably the one in the original experiment reported to have had a partial mystical experience. Ironically, he felt that the most important benefit he received from the service was the decision to try psychedelics at the earliest opportunity. The Good Friday service had that same effect on one other placebo subject, who also had a subsequent psychedelic experience.

The actual experiences of the original psilocybin subjects are best communicated by quoting from the transcripts of the long-term follow-up interviews. Reverend S.J. had an experience almost uniformly positive. He describes his experience as follows:

Something extraordinary had taken place which had never taken place before. All of a sudden I felt sort of drawn out into infinity, and all of a sudden I had lost touch with my mind. I felt that I was caught up in the vastness of Creation... huge, as the mystics say.... I did experience that kind of classic kind of blending.... Sometimes you would look up and see the light on the altar and it would just be a blinding sort of light and radiations The main thing about it was a sense of timelessness.

The meditation was going on all during this time, and he [Rev. Howard Thurman] would say things about Jesus and you would have this overwhelming feeling of Jesus.... It was like you totally penetrated what was being said and it penetrated you.... Death looked different. It became in focus.... I got the impression, the sensation... that what people are essentially in their essence that somehow they would continue to live. They may die in one sense, the physical sense, but their being in heaven would survive....

We took such an infinitesimal amount of psilocybin, and yet it connected me to infinity.

Subject L.J. confronted the issue of personal mortality, which he described as follows:

I was on the floor underneath the chapel pew and he [a group leader] was looking after me and sort of aware of, you know, "L.J. is down there, is everything all right?" I was hearing my uncle who had died [several months before], the one who was a minister, saying, "I want you to die, I want you to die, I want you to die" I could hear his voice saying. The more that I let go and sort of died, the more I felt this eternal life, saying to myself under my breath perhaps, "it has always been this way, it has always been this way.... O, isn't it wonderful, there's nothing to fear, this is what it means to die, or to taste of eternal life...." And the more I died the more I appropriated this sense of eternal life.... While the service went on I was caught up in this experience of eternal life and appreciating what the peyote Indians or the sacred mushroom Indians experienced with their imbibing of the drug. Just in that one session I think I gained experience I didn't have before and probably could never have gotten from a hundred hours of reading or a thousand hours of reading.

I would have to say as far as I'm concerned it was a positive, mystical experience... confirmed by experiences both before and after.

Reverend L.R. had one of the most difficult experiences of all the psilocybin subjects. He described the early portion of his experience as follows:

Shortly after receiving the capsule, all of a sudden I just wanted to laugh. I began to go into a very strong paranoid experience. And I found it to be scary. The chapel was dark and I hated it in there, just absolutely hated it in there. And I got up and left. I walked down the corridor and there was a guard, a person stationed at the door so individuals wouldn't go out, and he says, "Don't go outside," and I said, "Oh no, I won't. I'll just look outdoors." And I went to the door and out I went. They sent [a group leader] out after me. We [L.R. and the group leader] went back into the building and again, I hated to be in that building and being confined because there were bars on the window and I felt literally like I was in prison. One of the things that was probably happening to me was a reluctance to just flow. I tried to resist that and as soon as resistance sets in there's likely to be conflict and there's likely, I think, for there to be anxiety.

In addition to his emotional struggles, Reverend L.R. discusses the mystical aspect of his experience as follows:

The inner awareness and feelings I had during the drug experience were the dropping away of the external world and those relationships and then the sudden sense of singleness, oneness. And the rest of normal waking consciousness is really... illusion. It's not real and somehow that inner core experience of oneness is more real and more authentic than normal consciousness.... I was also experiencing some of those same kind of states that produced anxiety, and I wanted to try to get at the bottom of it.

I personally feel that the experience itself was, and I know his [Pahnke's] research came to the conclusion, that the effect of the chemicals like that is very similar, parallel to, perhaps the same as a classical mystical experience....

Reverend Y.M. describes his experience, which also had some difficult moments, as follows:

I closed my eyes and the visuals were back, the color patterns were back, and it was as if I was in an ocean of bands, streams of color, streaming past me. The colors were brilliant and I could swim down any one of those colors. Then that swirl dissolved itself into a radial pattern, a center margin radial pattern with the colors going out from the center. I was at the center and I could swim out any one of those colors and it would be a whole different life's experience. I could swim out any one of them that I wanted. I mean I could swim metaphorically. There wasn't the sense that I could actually paddle. I could choose any one I wanted, but I had to choose one.

I couldn't decide which one to go out, and eventually it connects to the decision I was in the midst of making about career choices ... when I couldn't decide, I died. Very existential... for a brief moment there, I was physically dying. My insides were literally being scooped out, and it was very painful.... I said to myself... that nobody should have to go through this... it was excruciating to die like that. Very painful. And I died....

After the psilocybin experience, I never consciously made the choice as to what I was going to do career-wise, but the choice was made. It was made while I was on the psilocybin. But it never had to be consciously, intentionally, "Ah, let's see, what I am going to do is...." It was made, and I was confident of it, it was going to be. And I did it afterwards....

Reverend K.B. describes his mystical experience in the following manner:

I feel almost whatever I say about it... is a little bit artificial in terms of describing. What it is is something deeper and probably also more obvious and I think I endeavor to put it into some kind of category which may obscure the point in some way. I remember feeling at the time that I was very unusually incapable of describing it. Words are a familiar environment for me and I usually can think of them, but I didn't find any for this. And I haven't yet.

I closed my eyes, either thinking of meditating or maybe I was drowsy or something. I closed my eyes and it seemed to be darker than usual. And then there was a sudden bolt of light which I think was entirely internal and a feeling almost like a shock or something and that was only for an instant. It wasn't violent but it was a definite tingling like taking hold of a wire or something.

I closed my eyes and... thought that this would be a fine time for [meditating on the Passion].... So I did think about the procession to the cross. And with my eyes closed I had an unusually vivid scene of the procession going by. A scene quite apart from any imagining or anything on my part. A self-actualizing thingkind of like watching a movie or something, it was apart from me but very vivid.

I had a definite sense of being an infant or being born, or something like that. I had a sense of death, too, but I think actually the sense of death came after the sense of birth.... I had my hands on my legs and there wasn't any flesh, there were bare bones, resting on my bones. That part wasn't frightening, I was just kind of amazed.... I think I must have gone along through the life of Christ identifying in a very total sort of wayreliving the life in some way until finally dying and going into the tomb.

I really am glad I took it. And glad that I was a subject. I don't think it would be a particularly memorable experience if I just had listened to the service. I've heard some good services and I imagine this was as moving as most. But I think it would be in that category instead of a once-in-a-lifetime sort of thing....

I've remained convinced that my ability to perceive things was artificially changed, but the perceptions I had were real as anything else.

Subject T.B. was very comfortable with the effects of the psilocybin, perhaps because he had had mystical experiences prior to the experiment. He describes his experience in the following way:

I was kneeling there praying and beginning to feel like I was experiencing the kind of prayer life that I experienced back when I was in the seventh grade, eleven or twelve years old. It was the kind of experiences that you knew that something great was happening. I started to go to the root of all being. And discovered that... you never quite get there. That was my discovery during that time... it's a philosophy and a theology that I hold yet today. You can approach the fullness of all being in either prayer, or in the psilocybin experience. You can reach out, but you can't dive down... and hit that root.

The discovery within that experience is that you could approach God by two different ways. You either get to the root, the ground of all being, or the fullness of all being. And in getting to the root, you'll strive, you'll come closer and closer, but it's always half, and you'll think another half step, another half step, and you'll never quite get there. The fullness, to approach the fullness of God is the only way to approach God.

Subject H.R. tells of his largely positive experience in the following way:

It was a feeling of being... lifted out of your present state. I just stopped worrying about time and all that kind of stuff ... there was one universal man, personhood, whatever you want to call it... a lot of connectedness with everybody and every thing. I don't think Christ or other religious images that I can remember came into it. That's the only reason I didn't think it was religious. I don't remember any religious images....

I was convinced after the experiment that I had had quite an experience but that it was really into my psychological depths, and it was not a religious experience.... It was really the sense that I was discovering the depths of my own self. It did not have a sacredness kind of element to it.... I didn't think I had experienced a God that was particularly outside of me. What I experienced was a God that was inside of me. And I think that... made me say, I don't think this is religious, I think this is psychological. But that was because of the way I was defining being... the way I thought God was being defined by other people at that point.

After the Good Friday experiment, two out of the ten placebo subjects experienced psychedelics. Placebo subject P.J. describes his first psychedelic experience, which took place in a chapel with psilocybin subject L.R. as his guide, as follows:

I laid on the front pew and watched myself it seemed like eternity pour through my navel and totally become nothing. And I felt that this would never stop. It seemed like an eternity of being in heaven and everything. One of the most beautiful experiences in my entire life.

It sure kicks the hell out of one being rigid with what could go on and what kind of experiences you could have. To take one of these drugs says a lot more can happen than what's been happening in your total experience. And I think that's good, and that's why I would want my kids to take it.

Placebo subject L.G. received psilocybin in a hospital as a part of a subsequent experiment conducted by Pahnke (1966) in a fruitless search for a placebo substance which would permit a successful double-blind experiment. L.G. describes his experience as follows:

It was rather removed from the religious context. Certainly the environment we were in had no particular religious symbols. I recall they really stressed [the need to] be absolutely open and just relax and flow with the experience whatever comes. So, there was no context really to suggest a particular experience like there might have been with the Good Friday experiment. We didn't talk about mysticism, as I recall, or religious symbols....

At one point I kind of felt like, "Well, maybe this is what it is like to be crazy." I never really panicked but I was acutely aware of anxiety.... As time evolved I just had this incredible sense of joy and humor, too. I was laughing, real ecstasy.... The thing that struck me was how anybody could worry or not trust, that just struck me as an absurdity. It was very exciting.

There was an energy, it was almost a sexual thing, an intensity and a joy. The visual things that I experienced and the music, I think were aligned with the sense of unity, everything was unified. We were all part of the same thing. You didn't sense a difference between the music or the physical objects....

I think that you can certainly have a religious experience without the religious symbols. Certainly the religious symbols can lead you to a mystical experience. Unfortunately, they can also be divisive. The sectarianism can flow from the different symbols and justify the differences rather than the commonality. I think the mystic experience as I understand it comes down more on the commons.

Contrasting with the desire of two of the control subjects to have their own psychedelic experience, several of the remaining control subjects decided during the course of the experiment that they had no desire to try psychedelics. The behavior of some of their fellow subjects who received psilocybin had frightened them. Placebo subject B.A. remarks

I tend to look back on it as an historical curiosity, with intellectual interest to me, but you know, frankly not much else at this point.... The only change that I can think of that it brought about in my life was a conviction that I never wanted to go on a drug trip of any type ever. And I never have, except for booze. The sights I saw [during the experiment] were very disturbing to me, and I didn't see myself wanting to be in that kind of position. It appeared to be hopelessly out of control and life threatening in several instances.

The remaining control subjects viewed psilocybin with some equanimity but were not motivated enough to seek out their own experience. If the circumstances were right and the substances were legal, several indicated that they might be willing to participate in another experiment.

A Significant Omission

Out of the seven psilocybin subjects formally interviewed, only two had had Good Friday experiences that they reported to be completely positive without significant psychic struggles. The others all felt moments in which they feared they were either going crazy, dying, or were too weak for the ordeal they were experiencing. These struggles were resolved during the course of the Good Friday service and according to the subjects contributed to their learning and growth.

It appears that these difficult moments were significantly underemphasized in Pahnke's thesis and in the subsequent reporting on the experiment. Psilocybin subject H.R. states,

The other thing I found unique that wasn't talked at all about in what I read, at least in the thesis, was that it was all on the positive up side. I don't know whether other people have said this but I had a down side.... It was a roller coaster.... I mean I had a very strong positive sense of the whole... one with humanity kind of positive glowing, unity kind of feeling and then I went down to the bottom where I was really just... guilt ... that's all I can say. It was a very, very profound sense of guilt.

Pahnke does mention that two of the subjects who received the psilocybin "had a little difficulty in readjusting to the 'ordinary world' and needed special reassurance by their group leaders until the drug effects subsided" (Pahnke, 1963, p. 219). Almost certainly, one of those subjects was L.R., who found the chapel to be like a prison and went outside for much of the service. The other subject is, almost certainly, the one who refused to participate in the follow-up study.

In one technical section of the thesis, and in none of his subsequent papers, Pahnke mentions that one of those two subjects later referred to his experience as "a psychotic episode" (Pahnke, 1963, p. 232). In another part of the thesis, Pahnke mentions that injectable thorazine was on hand for emergencies. What he does not report anywhere is

that one subject was actually given a shot of thorazine as a tranquilizer during the course of the experiment. Several of the subjects and group leaders remembered this incident and reported in the long-term follow-up interviews that it involved the one psilocybin subject who refused to be interviewed by the author. Needless to say, this occurrence should surely have been mentioned in Pahnke's thesis and, by those few who knew that such an event had actually transpired, in any subsequent reporting on the experiment.

Pahnke probably did not report his use of the tranquilizer because he was fearful of adding to the ammunition of the opponents of the research. Fears that negative aspects of the experiment would be taken out of context and exaggerated may have been justified. In an example of just such a critique, Zaehner asserts in his book, *Zen, Drugs and Mysticism*, that Pahnke, in an article Pahnke published several years after the Good Friday experiment, repudiated the results of his own study (Zaehner, 1972, p. 105). In that article, Pahnke does indeed say that mystical experiences were absent (Pahnke, 1967, p. 71). Pahnke was, however, referring to the control subjects. This misreading of Pahnke by Zaehner is an indication of how, even in an educated scholar, bias can overwhelm facts. This observation, of course, is also true of Pahnke. His silence about his administration of a tranquilizer may perhaps have been good politics; certainly it was bad science.

Although an interview with the subject who was tranquilized would be necessary to understand the subtleties of his experience and its consequences, several long-term follow-up interviews generated second-hand information which may be summarized as follows: This subject was reported to be deeply moved by a sermon delivered by the very dynamic preacher who emphasized that it was the obligation of all Christians to tell people that there was a man on the cross. This subject was reported to have gone outside of the chapel possibly intending to follow the exhortation.

A struggle ensued when the group leaders, worried for his safety, tried to bring him back inside. After a time during which he seemed fearful and was not settling down, Pahnke tranquilized him with a shot of thorazine. He was then brought back into the chapel and remained calm for the duration of the experiment. He participated in all further aspects of the experiment and in the six-month follow-up reported that he considered his fear-experience "slightly harmful" because "in a mob panic-situation I feel I would be less likely to maintain a calm objective position than I might have formerly" (Pahnke, 1963, p. 232).

Subsequent to the Good Friday experiment, the use of tranquilizers in controlled psychedelic psychotherapy research was largely abandoned in favor of simply providing a supportive environment and letting the drug run its course (Richard Yensen, personal communication, 1991).

DISCUSSION

The original Good Friday experiment is one of the preeminent psychedelic experiments in the scientific literature. Despite the methodological shortcomings of the unavoidable failure of the double-blind and the use of several imprecise questions in the questionnaire used to quantify mystical experiences, the experiment's fascinating and provocative conclusions

strongly support the hypothesis that psychedelic drugs can help facilitate mystical experiences when used by religiously inclined people in a religious setting. The original experiment also supports the hypothesis that those psilocybin subjects who experienced a full or a partial mystical experience would, after six months, report a substantial amount of positive, and virtually no negative, persisting changes in attitude and behavior.

This long-term follow-up, conducted twenty-four to twenty-seven years after the original experiment, provides further support to the findings of the original experiment. All psilocybin subjects participating in the long-term follow-up, but none of the controls, still considered their original experience to have had genuinely mystical elements and to have made a uniquely valuable contribution to their spiritual lives. The positive changes described by the psilocybin subjects at six months, which in some cases involved basic vocational and value choices and spiritual understandings, had persisted over time and in some cases had deepened. The overwhelmingly positive nature of the reports of the psilocybin subjects are even more remarkable because this long-term follow-up took place during a period of time in the United States when drug abuse was becoming the public's number one social concern, with all the attendant social pressure to deny the value of drug-induced experiences. The long-term follow-up interviews cast considerable doubt on the assertion that mystical experiences catalyzed by drugs are in any way inferior to non-drug mystical experiences in both their immediate content and long-term positive effects, a critique of the Good Friday experiment advanced primarily by Zaehner (Bakalar, 1985).

Unexpectedly, the long-term follow-up also uncovered data that should have been reported in the original thesis. Pahnke failed to report the administration of the tranquilizer thorazine to one of the subjects who received psilocybin. There is no justification for this omission no matter how unfairly the critics of this research may have used the information and no matter how minimal were the negative persisting effects reported by the subject. In addition, Pahnke underemphasized the difficult psychological struggles experienced by most of the psilocybin subjects. These very serious omissions point to an important incompleteness in Pahnke's interpretation of the effects of psilocybin.

Some of the backlash that swept the psychedelics out of the research labs and out of the hands of physicians and therapists can be traced in part to the thousands of cases of people who took psychedelics in non-research settings, were unprepared for the frightening aspects of their psychedelic experiences and ended up in hospital emergency rooms. These unfortunate instances of panic reaction have many causes, yet some of them stem from the way in which the cautionary elements of the Good Friday experiment were inadequately discussed in Pahnke's thesis, in subsequent scholarly reports and in the popular media. For example, *Time* magazine reported on the experiment in glowing, exaggerated terms stating, "All students who had taken the drug [psilocybin] experienced a mystical consciousness that resembled those described by saints and ascetics" (9/23, 1966, p. 62).

The widespread use of psychedelics, both in medical and nonmedical settings, which began in the 1960s and is still currently taking place, apparently largely underground. Such use was partially founded upon an optimism regarding the inherent safety of the

psychedelic experience which did not fully acknowledge the complexity and profundity of the psychological issues associated with psychedelic experiences. With some proponents of psychedelics exaggerating the benefits and minimizing the risks, a backlash against these substances was predictable. With the intriguing connection reported by several psilocybin subjects between mystical experiences and political action, the backlash in retrospect may have been inevitable (Baumeister & Placidi, 1985).

Despite the difficult moments several of the psilocybin subjects passed through, the subjects who participated in the long-term follow-up reported a substantial amount of persisting positive effects and no significant long-term negative effects. Even the subject who was tranquilized in the original experiment reported only "slightly harmful" negative persisting effects at the six-month follow-up. Second-hand information gathered during the course of the long-term follow-up suggests that his experience caused no persisting dysfunction and may even have had some beneficial as well as detrimental effects.

The lack of long-term negative effects or dysfunction is not surprising. Strassman's literature review of all controlled scientific experiments using psychedelics in human volunteers found that panic reactions and adverse reactions were extremely rare. He concluded that the potential risks of future research were outweighed by the potential benefits (Strassman, 1984).

This long-term follow-up study, even in light of the new data about the difficulties of the psychedelic experiences of many of the subjects, adds further support to the conclusion that additional studies are justified. Future experiments should be approached cautiously and carefully, with a multidisciplinary team of scientists involved in planning and implementation. Such a team should include psychiatrists, psychologists, religious professionals from a variety of traditions, as well as drug abuse prevention, education and treatment officials. Questions as fundamental as those raised by the Good Friday experiment deserve to be addressed by the scientific community, and pose special challenges to the regulatory agencies. Renewed research can be expected to require patience, courage and wisdom from all concerned.

REFERENCES

R, J. (1985). Social and intellectual attitudes toward drug-induced religious experience. *J. Humanistic Psychology*, 25(4), 4566.

BARBER, T.X. (1976). *Pitfalls in human research*. New York: Pergamon Press.

BAUMEISTER, R. & PLACIDI, K. (1985). A social history and analysis of the LSD controversy. *J. Humanistic Psychology*, 23(4), 25-60.

BEUTLER, L.E. & CRAGO, M. (1983). Self-report measures in psycho therapy outcome. In M. Lamben, E. Christensen, & S. DeJulio (Eds.), *The assessment of psychotherapy outcome*. New York: Wiley.

- CLARK, W. H. (1969). *Chemical ecstasy: Psychedelic drugs and religion*. New York: Sheed & Ward.
- DI LEO, F. (1982). Protocol: LSD-assisted psychotherapy correlation of peak experience profiles with behavior change. Appendix C: Peak experience profile. Unpublished.
- GROF, S. (1975). *Realms of the human unconscious: Observations from LSD research*. New York: Viking Press.
- GROF, S. (1980). *LSD psychotherapy*. Pomona, CA: Hunter House.
- HARNER, M. (Ed.) (1973). *Hallucinogens and shamanism*. New York: Oxford University Press.
- HOFMANN, A., RUCK, C. & WASSON, R. G. (1978). *The road to Eleusis: Unveiling the secret of the mysteries*. New York: Harvest Books.
- HOFMANN, A. & SCHULTES, R. E. (1979). *Plants of the gods: Origins of hallucinogenic use*. New York: McGraw-Hill.
- JAMES, W. (1961, orig. 1902). *Varieties of religious experience*. New York: Collier Books.
- LARSON, D. et al. (1986). Systematic analysis of research on religious variables in four major psychiatric journals, 1978-1982. *American J. Psychiatry*, 143 (3), 329-34.
- LASAGNA, L. (1985). *Clinical trials in the natural environment*. Boston, Tufts University: Center for the Study of Drug Development, Reprint Series RS 8695. 45-49.
- LEARY, T. et al. (1962). Investigations into the religious implications of consciousness expanding experience. Newsletter #1: Research program on consciousness-altering substances. Cambridge, MA: Harvard University.
- LEARY, T. (1967). The religious experience: Its production and interpretation. *J. Psychedelic Drugs*, 1(2), 3-23.
- LEARY, T. (1968). *High priest*. New York: College Notes and Texts, Inc.
- LEARY, T. (1984). *Flashbacks*. Los Angeles: J.P. Tarcher.
- LUKOFF, D., ZANGER, R. & LU, F. (1990). Transpersonal psychology research review: Psychoactive substances and transpersonal states. *J. Transpersonal Psychology*, 22(2), 107-48.
- PAHNKE, W. (1963). Drugs and mysticism: An analysis of the relationship between psychedelic drugs and the mystical consciousness. Ph.D. dissertation. Harvard University.

- PAHNKE, W. (1966). The contribution of the psychology of religion to the therapeutic use of psychedelic substances. In Abramson, H. (Ed.), *The use of LSD in psychotherapy and alcoholism*. New York: Bobbs-Merrill, 629-49.
- PAHNKE, W. (1967). LSD and religious experience. In DeBold, R. & Leaf, R. (Eds.), *LSD, man and society*. Middletown, CT: Wesleyan University Press, 60-85.
- PAHNKE, W. (1970). Drugs and mysticism. In B. Aaronson. & H. Osmond. (Eds.), *Psychedelics: The uses and implications of hallucinogenic drugs*. Garden City, NY: Anchor Books. 145-64.
- PAHNKE, W. & RICHARDS, W. (1969a). Implications of LSD and experimental mysticism. *J. Religion and Health*, 5(3), 175-208.
- PAHNKE, W. & RICHARDS, W. (1969b). The psychedelic mystical experience and the human encounter with death. *Harvard Theological Review*, 62(1), 1 -32.
- PAHNKE, W. & RICHARDS, W. (1969c). Implications of LSD and experimental mysticism. *J. Transpersonal Psychology*, 1(2), 69-102.
- RICHARDS, W. (1975). Counseling, peak experiences, and the human encounter with death. Ph.D. dissertation, Washington, D.C.: Catholic University.
- RICHARDS, W. (1978). Mystical and archetypal experiences of terminal patients in DPT-assisted psychotherapy. *J. Religion and Health*, 17(2), 117-26.
- RING, K. (1982). *Life at death: A scientific investigation of the near-death experience*. New York: Quill.
- RING, K. (1984). *Heading toward omega: In search of the meaning of the near-death experience*. New York: Quill.
- RING, K. (1988). Paradise is paradise: Reflections on psychedelic drugs, mystical experiences and the near-death experience. *J. of Near-Death Experiences*, 6(3), 138-48.
- RUE, L.D. (1985). Our most outrageous blind spot: The academic study of religion. *Chronicle of Higher Education*, (29), 40.
- SILVERMAN, W. (1983). Bibliography of measurement techniques used in the social scientific study of religion. *Psychological Documents* 13(7). Washington, D.C.: American Psychological Association.
- SPIILKA, B., HOOD, JR., R. W. & GORSUCH, R. (1985). *The psychology of religion: An empirical approach*. Englewood Cliffs, NJ: Prentice Hall.
- STACE, W.T. (1960). *Mysticism and philosophy*. London: MacMillan.

STRASSMAN, R. (1984). Adverse reactions to psychedelic drugs: A review of the literature. *J. Nervous and Mental Disease*, 172, 577-95.

TIME. (1966) Mysticism in the Lab. September 23, 62.

TOOLEY & PRATT (1964). Letter to the editor, *Behavioral Science* 9(3), 254-56.

UNDERHILL, E. (1974, orig. 1910). *Mysticism*. New York: Meridian.

WASSON, R. G. (1968). *Soma: Divine mushroom of immortality*. Rome: Harcourt, Brace & Jovanovich, Inc.

ZAEHNER, R.C. (1972). *Zen, drugs and mysticism*. New York: Vintage Books.

ZINBERG, N. (1984). *Drug, set and setting*. New Haven: Yale University Press.

BIBLIOGRAPHY OF RELATED LITERATURE

AARONSON, B. & OSMOND, H. (Eds.) (1970). *Psychedelics: The uses and implications of hallucinogenic drugs*. Garden City, NY: Anchor Books.

ABRAMSON, H. (Ed.) (1967). *The use of LSD in psychotherapy and alcoholism*. New York: Bobbs-Merrill.

BAKALAR, J. (1979-80). Psychedelic drug therapy: Cultural conditions and obstacles. *J. Altered States of Consciousness*, 5(4), 297-307.

BAKALAR, J. & GRINSPOON, L. (1986). Can drugs be used to enhance the psychotherapeutic process? *American J. of Psychotherapy*, XL(3), July.

CLARK, W. H. (1973). *Religious experience: Its nature and function in the human psyche*. Springfield, IL: Charles C. Thomas.

D'AQUILI, E. (1982). Senses of reality in science and religion: A neuroepistemological perspective. *Zygon*, 17(4), 361-84.

DEAN, S. (Ed.). (1975). *Psychiatry and mysticism*. Chicago: Nelson Hall.

DEIKMAN, A. (1982). *The observing self: Mysticism and psychotherapy*. Boston: Beacon Press.

DOBKIN DE RIOS, M. (1972). *Visionary vine: Hallucinogenic healing in the Peruvian Amazon*. Prospect Heights, IL: Waveland Press.

EFRON, D. (Ed.) (1967). *Ethnopharmacologic search for psychoactive drugs*. Washington, D.C.: Public Health Service Publication No. 1645.

GRINSPOON, L. & BAKALAR, J. (1979). *Psychedelic drugs reconsidered*. New York: Basic Books.

- GRINSPOON, L. & BAKER, J. (Eds.) (1983). *Psychedelic reflections*. New York: Human Sciences Press.
- HUXLEY, A. (1954). *Doors of perception*. New York: Harper.
- LEE, M. & SCHLAIN, B. (1986). *Acid Dreams: LSD, the CIA and the sixties rebellion*. New York: Grove Press.
- MASTERS, R.E.L. & HOUSTON, J. (1966). *The varieties of psychedelic experience*. New York: Dell.
- MASLOW, A. (1964). *Religions, values, and peak experiences*. New York: Viking Press.
- MUELLER, R. (1982). *New genesis: Shaping a global spirituality*. Garden City, NY: Doubleday.
- MYERHOFF, B. (1974). *Peyote hunt: The sacred journey of the Huichol indians*. Ithaca, NY: Cornell University Press.
- O'CONNELL, S. (1983). The placebo effect and psychotherapy. *Psychotherapy: Theory, research and practice*, 20(3), 335-57.
- PAHNKE, W. (1966). Report on a pilot project investigating the pharmacological effects of psilocybin in normal volunteers. Massachusetts Mental Health Center. Unpublished manuscript.
- PERSINGER, M. (1987). *The neurophysiological basis for God experiences*. New York: Praeger Press.
- PRINCE, R. H. & SALMAN, D. H. (Eds.). (1967). *Do psychedelics have religious implications?* Proceedings of the third annual conference, R. M. Bucke Memorial Society for the Study of Religious Experience, Quebec.
- RAM DASS. (1974). *The only dance there is*. New York: Doubleday.
- SCHMITZ-MOORMAN, K. (1986). Philosophical and theological reflections on recent neurobiological discoveries. *Zygon*, 21(2), 249-57.
- SHULGIN, A., SHULGIN, L. A. & JACOB III, P. (1986). A protocol for the evaluation of new psychoactive drugs in man. *Methods and Findings in Experimental Clinical Pharmacology*, 8(5), 313-20.
- SMITH, D. (Ed.) (1967-68). Psychedelic drugs and religion. *J. Psychedelic Drugs*, 1(2).
- SMITH, H. (1964). Do drugs have religious import? *J. Philosophy*, LXI(18), 517-30.
- STAFFORD, P. (1983). *Psychedelics encyclopedia*. Los Angeles: J.P. Tarcher.

WEIL, A. (1972). *The natural mind*. Boston: Houghton Mifflin.

WILBER, K. (Ed.) (1984). *Quantum questions: Mystical writings of the world 's great physicists*. Boulder, CO: Shambhala.

WOLMAN, B. & ULLMAN, M. (Eds.) (1986). *Handbook of states of consciousness*. New York: Van Nostrand Reinhold.
