

PSYCHOPHARMACOLOGY:
IMPLICATIONS FOR PSI RESEARCH

JEROME LEVINE, M.D.

*Chief, Psychopharmacology Research Branch
National Institute of Mental Health
Chevy Chase, Maryland*

LEVINE: Thank you very much. I am grateful to have been invited, and I am very impressed by the multidisciplinary nature of the group. I shall try to function as a catalytic agent to get us talking about clinical pharmacology, and to draw on the experience of some of the people here who were responsible for the development of LSD, who were involved in its early work, and who continue to be involved in its investigation.

First, I would like to mention a source of psychoactive substances that I think will be of interest to this group. One of the participants in a recent conference held in San Francisco whose theme was "The Ethnopharmacologic Search for Psychoactive Drugs"¹ was Dr. Schultes, curator of the Botanical Museum at Harvard. He has spent many years in the Amazon looking for varieties of plants that might have medicinal or psychoactive effects. During these years he has observed that the treatment of various disorders in "primitive" cultures is based on a different set of premises than in our own culture. We attempt to cure illness by eliminating various etiologic agents, such as bacteria, or other "physical" causes of an illness. In more "primitive" societies, there is a belief that illness is caused by a demon, a spirit, or a curse. Therefore, they seek substances that will allow them to communicate with demons and spirits or persons who have cursed the sick. Consequently, their whole armamentarium of drugs is of a different type than ours. In fact, it may be a reservoir of drugs that help induce the kind of phenomena which have been discussed here during the past day and a half. I think that this source may provide a number of substances

that will be of interest to this group in the future. Already a drug has been discovered which, because of its reported powers, was named "telepathine." Harmine is the generic name of the drug.

OSMOND: I am wondering whether telepathine is in fact harmine. I wondered whether it is clear that the active principle of *B/caapi* is harmine because in Pennes' work² it seemed to be a most unsatisfactory substance.

LEVINE: Dr. Hofmann, do you have any knowledge of this?

HOFMANN: Yes, I have repeatedly investigated *Banisteriopsis Caapi*³ and did not find anything other than harmine, harmaline, and tetrahydroharmine. I wonder how to explain the difference between the action of the so-called drug and that of the pure compounds.

AARONSON: Among the "hip" groups in the United States, something called "yage" is going around now, which is really harmaline and produces extremely potent effects. One person told me about telepathic experiences with this drug. Dr. Harner, who studied some tribes in Ecuador, told me that the whole plant is used there to assist the Shamans.

LEVINE: If I could bring a little of the clinical pharmacology in now, I would say that it might be a different chemical substance, but there are also extrapharmacological variables at work. The way in which the medicine man goes about preparing himself when he is going to take a substance, by dancing or fasting, for instance, may influence the effects. We may have the same chemical substance, but because the Shaman is aiming for a certain effect he may, in fact, have experiences that persons in the laboratory may not have. Not only the administration of the pharmacological substance, but possibly also the extra drug variables, have to be taken into account.

HOFMANN: I can confirm this. Schultes told me⁴ that he used the whole drug and he did not have this visionary experience at all. He became sick, which is just the effect that you have with harmine. That would confirm your idea that the setting and the expectations would produce a special kind of visionary effect.

BELOFF: May I add that very possibly the Shamans are natural sensitives to start with. They are specially selected and specially trained; there is a sort of pre-preparation before they take the drugs, which might predispose them to have such experiences.

OSMOND: We have a good deal of evidence about the training of

Shamans. Not only is it an extremely risky profession, but it is extremely rigorous; you have to be both devoted and determined to undertake it, and you do so often at the peril of your life. I think this is an important variable.

CAVANNA: The case of harmine is complicated because its main known action is an irreversible blockade of monoaminooxidase. Experimentation on man would be more complex than with drugs that might be reversible inhibitors of enzymatic systems, because long-term effects can be expected. Too little is known about monoaminooxidase topical action on specific amines in the brain. Actually, a good deal is known about the enzyme, but as yet no correlation with specific functions is possible.

PAHNKE: At the conference in San Francisco, Dr. Naranjo reported on using harmine, harmaline, and six-methoxy tetrahydroharman, a derivative which he indicated is also found in the pineal gland.⁵ As far as you know, is that accurate?

LEVINE: In the metabolism of certain endogenous compounds found in the brain and pineal gland, there are substances that superficially look like harmine and harmaline. I have heard this talked about before, and of course it is very interesting in terms of schizophrenia. If there is a psychotomimetic substance that is, in fact, produced in the body, could there be some alteration in the metabolism of this substance which could lead to an accumulation giving rise to a psychotomimetic experience? If I might go on to some other points, I would like to say that the dose of a substance given can be very important. In discussing drugs here, when we talk about LSD or some other drug, we are using sort of a "shorthand." We are not specifying how much of a drug is involved. Pharmacologists are very concerned about dose-response relationships because it is quite possible that a large dose of something leads to very different results than does a low dose of the same thing. For example, two anthropologists at the conference in San Francisco discussed a particular drug. One found very marked effects: he had taken it, and could barely get up and walk afterward. The other fellow found practically no effects, and he thought this was a kind of inert substance. Well, it turned out that in the preparation of the material one used a handful of substance for about 30 people, and the other used a handful for each individual. It took a face-to-face confrontation for them to realize that dose explained the difference. Just as simple as that. I bring this to your attention, because sometimes apparently contradictory results are not all that contradictory.

TART: Is a handful a standard pharmacological measure?

OSMOND: In the jungle, it is one of the few things you can regularly count on.

LEVINE: Another pharmacological principle that should be kept in mind is the time course of action of a drug. When a substance is ingested, there is a period of time over which it acts. The beginning part may be different from the middle, and may be different from the end. Or the acute effects of the drug: a single administration may be very different from a chronic administration. For instance, when LSD is taken a single time, this results in the different types of experiences that we have been describing. But if that same dose is taken day after day, by about the fourth day there will not be any effects. It is also very important to decide whether one has just taken the drug and is on the upswing, or whether one is coming down from the effects of the drug. With regard to LSD, I think that one might expect more favorable conditions for the type of phenomena that we discussed here as one is coming down from the height of one's LSD experience. When the thoughts are beginning to slow down, when things are beginning to integrate, when one has gone through a profound experience and there has been a reshaping in the way information is processed, I would then expect psi phenomena to occur, more than I would at the height of the LSD experience.

AARONSON: I have heard reports that support your hypothesis. That is, when these phenomena do occur.

LEVINE: Another condition that should be specified is whether one is under the acute effects of the drug, that is, the effects of the drug are still present, or whether certain changes or effects persist after acute drug effects have ended. After an LSD experience, an individual might be aware of things that he could not imagine before. He is a very different individual, even though he is not under the effects of the drug any more. This experience has changed him. It is important to differentiate acute drug effects from persistent psychological change.

The route of administration may also lead to very different effects. For example, one of the most potent psychotomimetic drugs is dimethyltryptamine. This drug has its onset very quickly and gives what is called the "45-minute psychosis." Whereas the action of LSD lasts 8 or 10 hours, that of DMT lasts about 45 minutes or an hour and a half. DMT is effective when injected, but produces no psychological effects when taken orally.

Then there is the case of marijuana. When one smokes marijuana, it is about two to three times more potent than when taken orally. So, it is important to know the route of administration.

HOFMANN: In the case of marijuana, its active principles are now known. It has been shown that in the plant most of the components are inactive, and that they become active by a pyrolytic process. They are changed during smoking; a ring closure taking place by the action of heat.

AARONSON: DMT in "hip" circles now is taken by smoking.

LEVINE: Yes, this has recently come to my attention. I do not know of any experimental work that has been done using it by this route of administration. The lore has it that one needs only one puff on the DMT "cigarette" to be instantly off into an experience.

AARONSON: I saw this happen.

HOFMANN: That problem of smoking DMT is not new. DMT has been found in *Piptadenia Peregrina*, which is a snuff used by the Amazonian Indians to get them into a trance. It could also be DMT oxide, which is found in the snuff powder, or can be produced by heat oxidation when you smoke DMT.

LUDWIG: It is interesting that these altered states of consciousness can be obtained by many different means. We interviewed a number of people who had taken most of these active compounds. Every possible orifice or way of getting them into the body has been used.

LEVINE: These snuffs are sometimes used for purposes of finding what is causing a person's illness. One of the ways it is used is by placing a plug of the snuff in a long hollow bamboo tube. One person puts one end of the tube into his mouth, and another individual puts the other end of the tube in his nose. The first person then blows the material into the nose of his partner, who almost instantaneously goes into an altered psychological state.

CAVANNA: I have seen a picture of the same procedure which was a little more complicated. Each of the two is blowing into the other's nose simultaneously; they use a double tube.

LEVINE: Another source of new drugs suggested by Dr. Schultes is the search of various herbaria around the world. One can look at the actual

specimens of plants, and at the notes on the effects they were alleged to have according to the individuals who collected the specimens. Then one either goes back and gets new material, or tries to isolate compounds from this old material with modern pharmacologic and biochemical techniques. One can now take a leaf or part of a plant and search for some of these substances by a combination of certain refined instruments, such as a mass spectrometer connected to a gas chromatograph. The latter will separate the various compounds from one another, while the mass spectrometer will help determine their structure. In this way one can more easily see what compounds are common to a number of different plants, or if substances are present that were previously known. So what we need to do is to get pharmacologists and biochemists working together with anthropologists and botanists. The botanist will identify the plant material; the anthropologist will tell us how the people live with and use the plant. In this way we can develop some very new and interesting drugs. My guess is that the type of drugs that will be developed will have more relevance to psychic phenomena, rather than be useful in the treatment of the disease, whatever the etiologic agent. This might be a development in which this group would be interested.

One of the things that has been reported by individuals who have taken LSD is an increased sensitivity to stimuli; that is, colors appear brighter, vision is reported to be clearer, there is a feeling that one can hear things better, and some individuals even think that their sense of smell is sharper. This subjective information has been reported numerous times.

When one tries to measure these changes objectively, by and large what is found is the reverse: that the individual's ability to perceive in one way or another is usually diminished by the drug. But the subjective feeling exists that one sees things more clearly, that one is more sensitive, and I do not discount it. I remember one of our subjects at Lexington sensed that the door was about to open in the therapy room. He had a feeling that the door knob was about to turn. I remember another subject. Dr. Ludwig had his pipe in his hand, and he was at one end of the room. I was working with the subject at the other end of the room. As soon as Dr. Ludwig opened his tobacco pouch the patient instantly said, "I smell tobacco in the room." This surprised us, as we would not have thought that this could occur.

TART: In most of the recent experimental work in hypnosis, no objective changes in perceptive capacity are found. Nevertheless, the subject's experience undergoes a definite qualitative or quantitative change, even though this will not be reflected in actual performance.

MUNDLE: A very short question: Did the subject see the tobacco pouch being opened before saying he smelled the tobacco?

LEVINE: No. His eyes were closed.

OWEN: Did the door knob actually turn?

LEVINE: Yes. That is what impressed us.

OWEN: You mean it turned after he said it would turn?

LEVINE: Yes. He had the feeling that somebody was at the door and there was someone.

OWEN: Could he hear somebody approaching?

LEVINE: I do not know that. He just told us that the door was about to open. My assumption, on the basis of logic, would be that he heard something. But he may have felt it, I don't know.

OWEN: Had you tested him for sensory hyperesthesia?

LEVINE: No, not in a formal way.

GILBERT: If you repeat that experiment, will you keep the psi factor in mind?

LEVINE: I do not follow you.

GILBERT: If the experiment is repeated, will the experiment itself be controlled in terms of both parapsychology and your own field?

LEVINE: I do not know how you control for parapsychology.

NICOL: With regard to the door handle turning, Grottendieck's mediumistic friend, Mr. B., showed an extraordinary hyperacuity of hearing. He was able to respond to suggestions made in a low whisper by Mr. Grottendieck, who was standing outside the closed door of the room in which Mr. B., with his ears stopped with cotton wool, was sitting. But if addressed directly in a loud voice, he appeared unable to hear anything at all.⁶ In another case, this time involving hyperesthesia of vision, Bergson showed a hypnotized boy a microscopic transparency of a photograph of twelve men, its longest diameter 2 millimeters. The boy saw and imitated the attitude of each man.⁷ Hyperesthesia is particularly important in view of Myers' theory that telepathy and hyperesthesia are closely related human functions.

AARONSON: There is a study by Elizabeth Erickson,^{8,9} demonstrating through a series of autohypnosis experiments that she could develop a considerable sensory hyperacuity.

LEVINE: In trying to understand why people should feel subjectively that they are seeing things more clearly, while objectively they do not, one explanation has occurred to me. It might not be that the sensory threshold is different, but rather that peripheral objects that are usually ignored may, in fact, become more central because the attention is not focused in the usual way. It is conceivable that a different patterning of the stimuli could account for the feeling that things are clearer, rather than an absolute change in threshold.

PAHNKE: You say these things have been measured and have been proved not to be objectively true. Has anyone done audiometer experiments?

LEVINE: The things I referred to are primarily visual.

PAHNKE: For instance, has there been testing for hearing under LSD to find out if people can really hear more?

LEVINE: I do not remember any specific studies that I could tell you about. There is now a small study going on in the intramural program of the National Institute of Mental Health. They are testing for the ability to organize sensory input and to measure thresholds. This is being done by auditory measurements. They are also measuring taste thresholds with LSD and other substances. This is a small-scale pilot study in progress now.

May I mention another experience that Dr. Ludwig and I had at Mendota State Hospital? He had started treating alcoholics with the hypnodelic technique. I had not witnessed this treatment with alcoholics before. Another therapist had hypnotized the patient after giving him LSD. The session was going on in a soundproof room, fitted with a one-way mirror. We were outside the room in a darkened observation area in order to observe the session. The patient's eyes were closed, and he was obviously not having a particularly good experience. Late in the session the patient stated that his difficulties during the experience stemmed from a definite feeling that two people were watching him and trying to read his mind. I think this could be interpreted as an extrasensory type of phenomenon.

LUDWIG: As a matter of fact, this patient had a very unusual reaction. He went into a "catatonic state" during the session and was very mute; the

therapist was having a great deal of difficulty getting any verbal material out of him. It looked very much like a schizophrenic state. I was quite concerned, watching him under those conditions. However, when he was brought out of this state and back to his room, he wrote quite prolifically. What he described was that he was very much afraid of opening up because he had the feeling that there were people watching him: they were interested in what he had to say, that he did not know these people, that he was not going to speak, that he felt safer just clamming up. Eventually, his experience turned out to be a good one after working it through, but certainly there were no external indications of this.

GILBERT: Was the therapist aware of the visitors?

LUDWIG: The therapist was aware that there would be some observation, but not of how many people would be in the room. Our usual procedure is to have my research associate tape these sessions, requiring him to be in and out of the observation room periodically. The therapist was not aware of how many people would be involved, but apparently the subject was very much attuned to this.

GILBERT: Would the subject normally be aware that he might be observed?

LUDWIG: No. As a matter of fact, we were not quite frank with the subjects, for we told them that this was a private session.

LEVINE: I would like to describe another phenomenon observed in some of our patients. It was the experience that some patients had when they looked at their hands. They claimed they could actually see the bones in their hands, the blood vessels, and the blood flowing through their hands. Others have reported similar findings. Unfortunately, we were not quick enough to ask them to draw the bones and the vessels in the hand. This would have given some objective evidence of whether they were seeing something physical, or whether they were imagining something.

FINER: As I am particularly interested in pain, I sometimes want to know prognostically whether hypnosis will help a patient who has a pain problem. Or if we are going to do a minor operation under hypnosis, whether the patient would be able to tolerate the operation without becoming worried. The technique that I use to somehow objectify the hypnotic state is to test the superficial skin reflexes. If one asks a subject under hypnosis (whatever hypnosis means operationally) to imagine one

foot anesthetized, then in a very high proportion of cases the plantar reflex in that foot disappears. This is not a question of the Babinski response. If you ask the subject at the same time to imagine the other foot as hypersensitive, the plantar reflex in that foot will increase. You can record this electromyographically. A similar thing also occurs with the abdominal reflexes and the eyelash reflexes. In tests in which you are dependent on the subject concentrating on giving a reply, this will detract from the subject's capacity to concentrate on a particular sensation. But if you ask the subject during this state to imagine whether there is an increased or decreased sensitivity to pain, then you can test the reflex objectively. This might work out fine, it might be worth trying.

TART: I would like to comment on the possibility of objective testing. Certainly the subjects report an increased acuity, but is it objective or not? There is great difficulty in testing this because of the variability in concentration brought about by LSD. Almost all tests of acuity require the subject to concentrate for a fairly extended period of time. It may be that the subject will concentrate on the test quite well for the first five seconds, then his mind will drift off and this will cover up any effects. I participated in a pilot study on visual acuity for color hues under psilocybin. On the average, the tests showed no change from the normal state to the psychedelic state, but if you looked at the variability, it increased considerably. There would be long runs of extremely high accuracy, then rather gross mistakes that would bring the score down to average. As I recall it, when one could concentrate on the test well enough it was easy to distinguish the different hues (more than in a normal state). But if one could not easily find the next matching hue, he just hallucinated in the appropriate color, to fulfill his obligation as an experimental subject, and went on to more interesting things.

ULLMAN: We have been emphasizing one aspect, the acuity problem, which obviously has to be tested. But there is also another aspect, and that is the relationship of the individual to sensory experience in general, regardless of whether it is increased or decreased. This may also have important implications for parapsychological research. In Pavlovian terms, it is almost as if in hypnosis you had elicited a reorganization of the central nervous system along the lines of primary signalling system dominance. That is, you have created a sensory-bound organism functionally. This is similar to the primary signalling system dominance during dreaming.

HOFMANN: I think there is truly an enhancement of the sensitiveness

of the receptors in our brain. I think everyone who has heard music under LSD will confirm that he could hear the several tones more clearly. I would say it is really stimulation of the sensorial receptors which occurs under LSD.

MUNDLE: May I ask that we try to link these fascinating facts with what we are primarily concerned about as parapsychologists. We have been given three examples of *prima facie* cases of ESP: the hands case, which several people have reported; the case of the tobacco pouch; and the case where two people were present and the patient seemed to be aware of them. First, for the record, can we get confirmation that all three subjects in question were hypnotized and under the influence of LSD—that the conditions were alike in this respect? I am not sure of this fact.

LEVINE: They all had LSD; however, I do not remember which were hypnotized and which were not. The patient at Mendota was hypnotized. As to the one in the case of the turning of the door knob, I do not remember; nor concerning the one in the hand case. But I would like to say one thing here. I have reported some observations we have made, but I am not ready to make the connection that it was ESP, or suggest that it was an enhancement of sensory function, or something that is explainable in other terms. I do not know. These are things we have observed which led me to pose one question, namely: Is there an enhancement of sensory acuity that may in some way be related to some of these psi phenomena?

GILBERT: If such events recur in your practice, would you be able to test these patients for ESP with their cooperation?

LEVINE: That would be another situation. If one wants to study ESP phenomena with LSD and hypnosis, one should design a good study to do this.

ULLMAN: I wonder if we can get back to Professor Mundle's question. I think that your question is concerned with whether or not their observations were made under similar experimental conditions. In my opinion, it is more important to discuss how this material can help us in formulating future experiments.

TART: One of the problems in learning to use psi is to discriminate psi material from material that is fantasy or hypermnesia. In the LSD state all perceptions seem equally acute and meaningful. There is, however, tremendous fluctuation; one moment the subject may have tremendous insight,

or his perceptions may be terribly sharpened; and the next moment they may be quite off the mark in terms of either sensory or extrasensory perception. However, it all seems equally significant and wonderful to him. The problem of getting the subject to discriminate is a very difficult one.

LEVINE: You anticipated the other thought I had in terms of these phenomena. That is the statement Mrs. Garrett made yesterday, "I know because I know." (That may be an exact quote or it may be the meaning that I got.) The feeling that one just knows and that no other evidence is necessary—the feeling that things have an increased significance, an increased meaning, the feeling that they are so—definitely occurs with LSD. In some cases these things are, in fact, truths; in other cases they may be meaningless. Dr. Ludwig has a perfect example of that.

RAO: One of the main problems in parapsychology is selection. There are potentially so many different variables when an individual enters into a hypothetical psi state. How is it that he gets his information from one and not from other potential targets? I am not convinced there is evidence that volitional influence has much to do with it. Volition perhaps has something to do only with retrieving subliminally or unconsciously distorted information obtained paranormally. Is there any possibility that drugs or hypnosis, used individually or together, would be able to remove the unconscious resistances that individuals may have to accepting paranormal phenomena? Or is it conceivable that the very stimulation will also be affected by these drugs? These are two different areas in which pharmacologic research can be of considerable value to parapsychologists.

LUDWIG: Dr. Levine and I, working with the hypnodelic technique,¹⁰ observed that subjects seemed much more open to logical incongruities and to experiencing things in a non-Aristotelian manner. Once this state is induced, they are much more open to things that ordinarily would be viewed as contradictions. Black and white, good and evil, masculinity and femininity, need not be opposites anymore, they could be the same. In this state logical incongruities evaporate, and subjects would consider accepting interpretations we might make. In the waking state they would ordinarily reject them because they did not fit in with their mental setup at the time. Therefore, if this is what you are referring to, I would say it looks hopeful that it could be achieved.

OSMOND: Most of the activities of sensitives seem to be connected

with imagery and with holding imagery steady. Galton did work on imagery long ago.¹¹ He demonstrated it by taking Fellows of the Royal Society and members of the Arts and Stage. The Fellows of the Royal Society had remarkably little imagery and the members of the Arts and Stage had a great deal. The interpretation of the Fellows of the Royal Society was that the members of the Arts and Stage were lying.

We know at least one great religious order that devoted itself to selection techniques in imagery, the Jesuits. They selected very high imagers, had them develop their powers of imagery to the highest degree possible, then got them to control that imagery. In talking with Mrs. Garrett and Mr. Johnson, it is perfectly clear that both of them are extremely capable imagers. The other thing that they are able to do is to hold imagery remarkably steady. Most people cannot control their normal imagery and find it even more difficult to control imagery under LSD, even though LSD does enhance imagery. Some people who have very little imagery become naturally extremely astounded when they experience imagery for the first time—it is like seeing a totally new landscape. It remains to be seen whether psychopharmacologists will discover agents for producing steady imagery. If they did, would this allow us to increase ESP? At any rate, LSD is an agent which can enhance imagery in poor imagers. Not only that, I gather from Mrs. Garrett that it will enhance even her imagery somewhat or change it in some subtle way.

GARRETT: I can leave the LSD state at any particular moment and go into ESP. Not in the beginning, because I am too busy with imagery, but later on ESP comes through.

MUNDLE: May I make what I hope is a practical and perhaps practicable suggestion as to what might be done now? Dr. Levine and Dr. Ludwig are doing very important work which has to be done for its own sake. Is it not possible to kill two birds with one stone? I speak metaphorically. . . .

LEVINE: Not us, man!

MUNDLE: I do not regard them as birds, anyway. They would not need to take time off to make ESP experiments for their own sake. In the course of the experiments which they are doing with a therapeutic purpose, the Parapsychology Foundation could appoint an experimentalist trained in ESP, who could arrange the setup conditions to eliminate sensory clues. Then, in the course of your work, if you encountered phenomena which looked like ESP, your left-hand man, the parapsychologist, would make

sure that the situation was so designed that the subject could not have received the information by sensory clues. This is a possible way of making use of your valuable and important inquiries for parapsychological research.

KRIPPNER: I frankly do not think this is advisable with experiments that have already been set up, such as the one Dr. Ludwig is doing. As Dr. Levine suggested, I think these conditions have to be built into an experiment from the beginning. Professor Mundle's suggestion is very good, in terms of some future study.

RAO: Perhaps the parapsychologist could work together with the therapists. While they are on their jobs, treating the patients, he could be looking after his own experiment designed for these subjects.

MUNDLE: Well, the parapsychologist would be the advisor or consultant as to what condition must be set up in order to eliminate explanations other than ESP.

NICOL: It seems to me that this would have to be built into an experiment. I do not know anything more about these drugs than what I have read, but you would have to be terribly careful not to allow cues to be available to the subject. Certainly in hypnosis, as Podmore¹² pointed out 60 years ago, the most famous of all telepathic-hypnotic subjects, Alexis Didier, "must have been possessed of an almost incredible acuteness of vision." The conditions in your experiments would have to be more stringent than usual. If a target is involved, it ought to be outside the room altogether. For instance, how do we know that the tobacco exposed here will not be smelled by someone at the other end of the room?

AARONSON: Dr. Wiener has documented that most of us have a great deal more smell sensitivity than we are aware of. In fact, he has a theory of communication via smell which he believes determines a lot of the affective quality of human relationships.¹³

HOFMANN: I would like to mention one case of predicting the future under the influence of the hallucinogenic mushrooms of Mexico. This happened to Mr. Gordon Wasson, when he attended a mushroom session in Mexico.¹⁴ The curandera, Maria Sabina, gave him information about his son—very astonishing things. He believed that his son was in New York, but the curandera said no, the son was in another town. Furthermore, she predicted that his son would enter the military service. Wasson came back

to New York, and found that his son had not been in New York at the time; he had, in fact, been in another town. Much more interesting is that half a year later, his son ran away and joined the army, which was completely unexpected. I think it would be very interesting to make some controlled experiments with Maria Sabina, or with her two daughters, who also use these mushrooms.

LEVINE: There is one paragraph in an article, "Analytic and Integrative Therapy with the Help of LSD-25," by Dr. Holzinger,¹⁵ which bears directly on parapsychological phenomena and LSD. It was the only reference I was aware of before coming here, and it might be worthwhile reading:

Some patients have reported an experience of a psi nature while in the field of expanded awareness. However those phenomena cannot be predicted, nor are they encouraged by the therapist, as they have little or no therapeutic value for the patient. It may be added that the writer has checked up on some of those statements in connection with telepathic phenomena made by patients while under treatment. They proved to be correct.

SERVADIO: I do not think that it can be said that these phenomena have no value for the patient, because apart from LSD experiments, those analysts who have worked in the field could use this material very well for therapeutic purposes.

ULLMAN: I would go one step further and say that this is often just the critical material at a given moment in analysis.

TART: We have two levels of discourse going on here. One is spontaneous cases: when LSD is given for other purposes, parapsychological phenomena might occur. The question is: Is this at a higher rate than you would get under normal conditions? We do not have any data on this. The only work I know of, besides what Drs. Ludwig and Levine have presented, comes from the International Foundation for Advanced Study in Menlo Park. In the course of several years of psychedelic therapy on 300 to 400 patients, they had seven instances of ESP in which the evidence was quite strong. I do not know if this is a terribly high proportion in comparison to what happens in ordinary psychotherapy. The second level of discourse is the specialized use of drugs by curanderas and Shamans—people who may have a genetic or inherited ability, and who use it within a special setting. I do not think we can expect as much from tacking things

on to LSD experiments planned for other purposes as we could by specifically designing experiments to make use of the special properties of gifted people. Of course, we should observe closely what happens in the spontaneous setting for what it can tell us about the psychodynamics.

VAUGHAN: I think that Dr. Tart is quite right, the difficulty is finding the subjects. I think that a sensitive would probably be a good person to identify the subjects more likely to get good results under LSD. I had a sitting in London before I came here (my first one with a medium). One of the things she told me was that I was psychic. This struck me, because how was she able to tell? If I were to take her to an American university and go through short interviews with college students, perhaps she would be able to identify those who have psi ability.

BELOFF: I do not want to sound cynical about that last remark, but I think it is a fairly routine matter for a medium to tell clients that they are psychic. Perhaps Mrs. Garrett would tell us how she feels about this. Do you think it is possible, Mrs. Garrett?

GARRETT: I am one of those unfortunate people who see the atmosphere or aura of other people. I see them clouded or clear. I am able to tell how much sensitivity they have. Perhaps 52 years of looking at and into individuals has given me a very strong feeling about their makeup. The person who is a sensitive is more expansive—you see the luminosity of his atmosphere.

PAHNKE: Could Mr. Johnson comment on whether he can identify sensitives?

JOHNSON: I think that if you had a reliable subject, somebody of integrity who had a psychic faculty, it would be perfectly easy for him to pick out others who have the same gift. I agree with the remark that mediums are sometimes not particularly scrupulous. I have done some work at universities in the United States and have felt that some students had psychic faculties. They are very easy to distinguish, but I do not always tell them, as it is quite useless, and they probably would not believe me, nor be interested.

FINER: How do you do it?

JOHNSON: Just as Mrs. Garrett said, it is very difficult to say. I do not see them with beautiful golden auras and lovely colors; I just feel it. A

very uneducated medium was asked the same question, and she said, "Sometimes I sees; sometimes I 'ears, and sometimes I just knows."

FINER: How often did you make a mistake?

JOHNSON: Oh, frequently. I do not think Mrs. Garrett does, but I am very often with people from whom I receive nothing at all, and I tell them so.

GARRETT: I know some people right here at this table who do not believe a word we say. If you think that psi phenomena are going to take place here, they *could*, but they will not.

MUNDLE: We are supposed to be discussing whether there is a connection between these psychedelic drugs and ESP. Dr. Tart made an important criticism of my would-be practical suggestion about "killing two birds with one stone": namely, that I was glossing over the difference between spontaneous cases which just crop up incidentally and are difficult to verify in retrospect, and the controlled quantitative experiment. Now this is the question I want to put to the experts on psychedelic drugs: Would it seriously interfere with therapeutic work if a subject under hypnosis and LSD was asked to guess his way through one pack of Zener cards or to collaborate in other simple ESP experiments? It seems we have a gilt-edge opportunity here to explore a new kind of ESP research, provided it would not detract from, or interfere with, the therapeutic purposes.

TART: You are a practical man.

PAHNKE: Card experiments are so boring that I do not think they would work.

SERVADIO: May I make a suggestion? Why couldn't someone start where Dr. Cavanna and I left off? After all, what we did was a pilot experiment with selected subjects.¹⁶ It could be expanded to other kinds of subjects. I think it was a good start.

HOFMANN: Before closing, one should give credit to Professor Lewin, who was a toxicologist in Berlin at the end of the last century. He was the first pharmacologist who separated this group of substances which are now called psychedelics. He coined the expression "phantastica,"¹⁷ which I think was very good.

ULLMAN: Our morning time is drawing to a close. But before we

formally adjourn, could I put a thoroughly unfair question to Dr. Levine? Does the National Institute of Mental Health have any inborn response bias against supporting parapsychologic research? You don't have to answer this.

LEVINE: I am very happy to talk about these things. As to an inherent bias, I would say no. This is my judgment. I never tested out the system; I do not know. If you ask me whether some of the individuals on study sections may be prejudiced against ESP phenomena, I would say you know as much or more about the world and how people react to ESP than I do, but I can tell you that the National Institute of Mental Health has no particular policy regarding this.

ULLMAN: That answers my question, and I am grateful to you.

REFERENCES

1. EFRON, D. H. (ed.): *Ethnopharmacologic Search for Psychoactive Drugs: Proceedings of a Symposium Held in San Francisco, California, January 28-30, 1967*. Public Health Service Publication No. 1645 (Washington, D.C.: U.S. Government Printing Office, 1967).
2. PENNES, H. H. and P. H. HOCH: "Psychomimetics, Clinical and Theoretical Considerations: Harmine, Win-2299 and Nalline," *Amer. J. Psychiat.*, 113, No. 3 (Mar., 1957), 887-892.
3. HOFMANN, A.: Personal communication to the speaker.
4. *Ibid.*
5. NARANJO, C.: "Psychotropic Properties of the Marmala Alkaloids," in D. H. EFRON (ed.), *Ethnopharmacologic Search for Psychoactive Drugs: Proceedings of a Symposium Held in San Francisco, California, January 28-30, 1967*. Public Health Service Publication No. 1645 (Washington, D.C.: U.S. Government Printing Office, 1967).
6. FIELDING, E.: "Some Observations and Experiences Reported by Mr. W. G. Grottendieck," *J. Soc. Psychic. Res.*, 12 (1905/06), 257.
7. MYERS, F. W. H.: *Human Personality and Its Survival of Bodily Death* (new ed.; London: Longmans, Green & Co., Ltd., 1954), I, 478.
8. ERICKSON, E. M.: "Observations Concerning Alterations in Hypnosis of Visual Perceptions," *Amer. J. Clin. Hypn.*, 5 (Oct., 1962), 131-134.
9. ERICKSON, E. M.: "Further Observations on Hypnotic Alteration of Visual Perception," *Amer. J. Clin. Hypn.*, 8 (Jan., 1966), 187-188.

10. LEVINE, J. and A. M. LUDWIG: "Alterations in Consciousness Produced by Combinations of LSD, Hypnosis and Psychotherapy," *Psychopharmacologia*, 7 (Feb. 15, 1965), 123-137.
11. GALTON, F.: *Mental Imagery Inquiries into Human Faculty and Its Development* (London: J. M. Dent & Sons Ltd., 1907).
12. PODMORE, F.: *Mesmerism and Christian Science* (Philadelphia: George W. Jacobs & Co., 1909), p. 174.
13. WIENER, H. B.: "External Chemical Messengers: II. Natural History of Schizophrenia," *N. Y. State J. Med.*, 67 (1967), 1144-1165.
14. HOFMANN, A.: Unpublished data.
15. HOLZINGER, R.: "LSD 25, A Tool in Psychotherapy," *J. Gen. Psychol.*, 71 (July, 1964), 9-20.
16. CAVANNA, R. and E. SERVADIO: *ESP Experiments with LSD 25 and Psilocybin: A Methodological Approach*. Parapsychology Monographs, No. 5 (New York: Parapsychology Foundation, Inc., 1964).
17. LEWIN, L.: *Phantastica, Narcotics and Stimulating Drugs: Their Use and Abuse* (London: K. Paul, Trench, Trübner & Co., 1931). See also *Phantastica: die betäubenden und erregenden Genussmittel* (Berlin: Verlag von George Stilke, 1924).