

Psychotherapy with Hallucinogenic Adjuncts from a Learning Perspective

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Abstract

A number of well-controlled studies have indicated that hallucinogen-assisted psychotherapy is both safe and effective. Following an historical overview, psycholytic and psychedelic therapy approaches are reviewed in terms of rationale, technique, applications, and outcomes. A new theoretical approach stemming from a learning orientation is offered as a conceptual basis for beneficial use of hallucinogens in psychotherapy. As a technology, the hallucinogens have not yet found acceptance as a useful therapeutic adjunct in the United States.

INTRODUCTION

Despite current opinion that hallucinogens have no clearly defined therapeutic use (National Institute of Mental Health, 1975), there is evidence that they represent a valuable adjunct to psychotherapy, especially when psychotherapy

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is viewed from a learning perspective. Hallucinogens can enhance the capacity for experiencing in humans (Aaronson and Osmond, 1970), can facilitate learning in animals (e.g., Bignami, 1972; Rouse and Frank, 1974), and have been shown in well-controlled studies to be safe and effective therapeutic adjuncts.

HISTORICAL OVERVIEW

Cross-cultural and anthropological data show that hallucinogens were well-known on many continents for many centuries and that learning, insight, healing, and rites of passage were the desired outcome of their use (La Barre, 1947; McGlothlin, 1967). In many ways, such use parallels the modern context and goals of psychotherapy.

Since the first use of LSD in psychotherapy (Busch and Johnson, 1950), the recent history of hallucinogens as psychotherapeutic adjuncts has been filled with controversy and confusion. Research interest had shifted between the drugs' psychotomimetic (Corbett et al., 1978; Rinkel et al., 1952) and psychedelic (Osmond, 1957; Richards et al., 1977) effects while the public's attention had been drawn to the issues of pleasure and danger and away from therapeutic efficacy and context for use. The National Institute of Mental Health Research Task Force (1975) report concluded that, "Apart from adverse psychological effects, there is no good evidence that the hallucinogens themselves are dangerous" (p. 255). Nevertheless, there are no sanctioned clinical research programs ongoing in the United States today.

THERAPY APPLICATIONS

The adjunctive use of hallucinogens evolved along two principal theoretical lines. *Psycholytic therapy*, used mainly in Europe, employs multiple low-dose sessions in conjunction with psychoanalytically oriented therapy. *Psychedelic peak therapy*, used mainly in North America, involves one or two high dose sessions in conjunction with eclectic therapy. Both approaches emphasize the establishment of rapport and trust in the therapeutic relationship but neither employs a learning perspective to harness the potential for lasting change. Before developing this latter idea, the two approaches will be described with regard to rationale, technique, applications, and outcomes.

The requirements for clinical research into the efficacy of any new treatment have been outlined by Eysenck (1960) and by Meehl (1955). To determine whether a new drug is effective, a control group of some kind is needed. If placebo controls are used, a double-blind procedure is best. Random assignment to experimental and control groups is required. Finally, either objective measures or uncontaminated ratings of subjective treatment outcome need to be made before and after treatment and preferably at follow-up intervals. The

only requirement that has been seriously challenged in LSD-assisted modes is the double-blind procedure. Workers on all sides of the controversy seem to agree that in evaluating drugs with unique and sometimes profound sensory effects, the double-blind procedure is ineffective since both therapist and client quickly ascertain whether a hallucinogen or control drug was given (Hoffer, 1967; Ludwig et al., 1970; Smart et al., 1967). Smart et al. (1967) found that in 19 out of 20 cases, therapists accurately determined whether LSD or Ephedrine was administered. Pahnke et al. (1970a) used a low dose control in their study of LSD in alcoholism treatment. An alternative control drug, marijuana extract tetrahydrocannabinol, has apparently not been used.

Some insight into the conduct of clinical research is gained from Unger's (1964) bibliography of the English language literature pertaining to LSD and psychotherapy. He stated that not a single methodologically acceptable controlled study of the efficacy of LSD-assisted psychotherapy had been performed. He further stated, however, that such studies are very rare with any type of therapy. Also, it is not uncommon for outcomes of controlled studies to differ considerably from uncontrolled studies (Foulds, 1958). For example, a review of the chlorpromazine literature showed that double-blind controlled studies yielded significantly fewer positive results than did nonblind uncontrolled studies (Glick and Margolis, 1962). Actually, psychedelic peak therapy is, in some respects, well suited to rigorous evaluation, with time-limited and single dose features. In other respects, evaluation of hallucinogen-assisted psychotherapy is fraught with difficulties that were apparent to early researchers.

LSD-25 is not a medication in the usual sense. It is simply a triggering mechanism that initiates an experience lasting 12 hours or more. Haley (1957) reports that most of the drug is out of the system in 1 hour and 20 minutes. Since it is therefore the experience and not the medication that is therapeutic, the treatment situation or milieu becomes the overwhelmingly important factor. (MacLean et al., 1961, p. 43)

Yet many subsequent researchers ran large-scale studies on hallucinogens as chemotherapeutic agents. The context of a therapeutic relationship is notably lacking in chemotherapeutic approaches which therefore do not adequately test hallucinogens as adjuncts to therapy.

Psycholytic Therapy

The term "psycholytic therapy" suggests dissolving or releasing of tensions and conflicts. Buckman (1967) has described the theoretical assumptions and reasons for using LSD in psychoanalytically oriented therapy. Basically, LSD is seen as a means of access to the unconscious. On the basis of clinical experience, the following aspects of analytic therapy are favorably influenced.

First, the client maintains a clear awareness during the session and has good memory of it afterwards in contrast to, say, amytal-assisted therapy; resistance is overcome and usual defense mechanisms weakened or dissolved; regression is speeded and recall of childhood experiences is facilitated; abreaction is promoted; positive and negative transferences are intensified; the client's gain of insight may be assisted and his capacity for introspection increased.

Typically, several weeks of drug-free interviews are devoted to assessment and the development of a warm, trusting relationship. The possible risks and benefits of psycholytic treatment are discussed and the procedure described. "Preparation of the patient for the LSD treatment was of utmost importance, many patients having read a lot of nonsense about it" (Buckman, 1967, p. 88). Intervals between LSD sessions are usually 1-2 weeks. A barely active dose may be used in initial sessions and gradually increased until an optimum dosage is found. Criteria for optimum dosage are adequate depth of self-exploration and emergence of sufficient unconscious material while being able to maintain good therapeutic contact. This dosage is repeated in future sessions. Typical dosages range from 75-200 μ g. The total number of drug sessions typically ranges from 5-100.

Sessions are conducted in comfortably furnished rooms. Music, pictures, and other aids are usually on hand. The therapist is present during most of the 10 h of drug-induced experience. A period may be devoted to direct interpretation but often interaction is minimal. Between LSD sessions, drug-free sessions are held individually or in groups. Material from the preceding session is discussed and analyzed, as are any transference problems that may have occurred. Both therapist and client keep detailed records of the LSD sessions. A main objective is to identify patterns of experiential sequences and relate them to the patient's personality, clinical problems, and therapeutic progress.

During the 1950s and early 1960s this approach was successfully applied to a variety of clinical problems both in Europe and the United States. Since that time, few, if any, new investigations have been reported. In these early, largely exploratory studies, techniques varied considerably and methodological rigor was lacking. For example, a synopsis of 42 psycholytic papers noted that only 15 of them reported follow-ups (Mascher, 1967); use of controls and objective pre-post measures was quite rare.

The work of Chandler and Hartman (1960) illustrates the psycholytic mode. Their approach emphasized the therapeutic benefit of emotionally reliving early memories, even back to birth or the first year of life. They treated 110 patients with neuroses, personality disorders, personality trait disturbances, or sociopathic disorders in a private practice setting. About half of these individuals specifically sought treatment in the LSD program. Patients received an average of 6.2 LSD sessions (at 2 week intervals) plus drug-free psychotherapy between them. Additional drugs were used to adjust the LSD reaction (Ritalin, ampheta-

mines) or to end it (Seconal, Thorazine). Eye shades and ear plugs were sometimes used; at other times music was employed. The authors report that they gave patients a "... brief description of the unconscious and its language of symbolism" (p. 287) but then paradoxically state "No psychiatric terminology is used, and no psychological system is presented to the patient" (p. 287). In terms of therapists' ratings on an eight-category scale, improvement (some, considerable, marked, or outstanding) was shown in 66% of the cases. Ratings were based on reports from families and friends, symptom improvement, behavioral change, and patients' subjective reports. A further analysis of 32 patients who had received at least 6 months of psychotherapy immediately prior to LSD sessions indicated the LSD produced an acceleration (definitely noticeable or marked) in the rate of therapeutic progress in 69% of the cases, according to therapists' ratings. No follow-up was reported.

While most anecdotal reports are quite encouraging, the lack of scientific rigor in conducting and reporting psycholytic studies greatly attenuates claims for effectiveness. Mascher's (1967) synopsis, however, is the best available summary of outcomes with the psycholytic approach. Some of his statistics are reproduced in Table 1 which summarizes 42 psycholytic papers. It displays success rates relative to clinical groups and treatment mode. This summary suggests that anxiety neuroses respond best to psycholytic treatment and that psycholytic treatment is most effective when supplemented by group therapy between LSD sessions.

At least a brief note should be made of the unusual phenomena often observed with serial administration of LSD. Grof (1967, 1975) and Leuner (1967, 1968), both pioneers in psycholytic therapy, have independently reported the emergence of memory constellations (and related fantasies) sharing the same emotional theme. For example, various layers of a system can contain all memories having to do with humiliating and degrading situations, including the core or prototype experience which seems to lay a foundation or matrix pattern for recording subsequent similar events. As the client relives and abreacts successively earlier experiences, and finally the core experience itself, far-reaching changes in symptomatology, behavior, values, and attitudes are observed. In Grof's account of 17 years work with psycholytic therapy, his patients repeatedly experienced manifestations of the Rankian unconscious (i.e., perinatal experience) and transpersonal experiences. Additional detailed accounts of psycholytic therapy are found in Abramson (1967) and Eisner and Cohen (1958).

Psychedelic Peak Therapy

The intent of psychedelic or psychedelic peak therapy is to produce a particular kind of experience using one or two high dose administrations of LSD

Table 1
Synopsis of Papers Reporting Use of Psycholytic Therapy^a

Clinical group	Number of papers reported	Success rate ^b (%)
Anxiety neuroses	9	70
Depressive reactions (not endogenous)	4	62
Character neuroses, sociopaths	10	61
Borderline cases	4	53
Obsessive-compulsive neuroses	10	42
Hysteria and conversion symptoms	2	31.5
Alcoholics and drug addicts	2	31
	<i>N</i>	Success rate (%)
	(total = 1603)	
1 LSD session plus individual therapy	87	56
Repeated LSD sessions plus individual therapy	701	56
Repeated LSD sessions plus individual therapy plus group therapy	452	62.5
LSD in group sessions	363	40

^aStatistics from Mascher (1967).

^bSuccess indicates categories of much improved or very much improved.

(or some other hallucinogen). Hoffer, Osmond, and colleagues introduced the technique (see Hoffer, 1967). The psychedelic peak reaction (also called transcendental or mystical) has been described elsewhere in detail (Pahnke and Richards, 1969; Richards, 1976); its hallmark is a sense of unity (positive ego transcendence, loss of usual sense of self without loss of consciousness). The following are also part of this experience: transcendence of time and space; deeply felt positive mood (joy, peace, love); sense of awesomeness, reverence, and wonder; meaningfulness of psychological or philosophical insight or both; and ineffability (difficulty in verbally communicating the experience). With this experiential aim, LSD is conceptualized as a catalyst for inducing rapid fundamental changes in the client's value-belief system and his self-image. In line with Maslow's writings, LSD is seen as facilitating self-actualization by augmenting preexisting potentials for growth. The emphasis is more on the patient's "unfolding inner world" (Pahnke et al., 1970a, p. 1857) than on the impact of the external environment.

As in psycholytic therapy, several weeks of drug-free sessions (totalling around 20 h) are spent in assessment, developing rapport, and preparing the patient for the LSD session. The focus is on the client's potentials for positive adjustment and on their strengthening and unfolding rather than on pathologies

and maladjustment. In preparation for the LSD session, the client is encouraged to trust the therapist, himself, the situation, to let go voluntarily of his usual ego controls and go with the experience. Openness to whatever experiences he may encounter is fostered. With optimal milieu and large dose, psychedelic peak reactions are estimated to occur in about 2/3 of clients (Pahnke et al., 1970a).

Music and visual aids are provided in comfortable treatment suites. The therapist and psychiatric nurse are in constant attendance. The client reclines on a sofa with eyeshades and stereophonic headphones, alternately listening to music or interacting with the therapist; interaction, however, is kept to a minimum. The carefully selected classical music helps the client release intense emotionality. Pahnke et al. (1970a) consider the elicitation of intense, labile, personally meaningful emotionality to be the most therapeutically relevant aspect of drug-altered reactivity. Previous research suggests the affective response is indeed important in psychedelic therapy (Hoffer, 1967; O'Reilly and Funk, 1964). Skillful handling allows the client to stabilize in an elevated mood state. Follow-up therapy begins during the waning hours of the drug session and continues the next day as the client and therapist work together to review and integrate the events of the session. A detailed written description of the experience is requested of the client. Postsession therapy continues for about a week.

Major variations on the above outline are listed below; none are clearly superior to it. Ludwig et al. (1970) used hypnotic induction to structure the onset of the drug effect. When patients were both hypnotized and under the influence of the drug, the therapist engaged in 3 h of intensive insight-interpretive psychotherapy; this technique is termed "hypnodelic." Use of more than one therapist has been described (MacLean et al., 1961). Another interesting innovation was described by Calder (1962) and Leary et al. (1965); patients were treated by therapists who also took LSD with their clients. Improvement rate was significantly poorer than with usual procedures; the patients sometimes reported that they felt left out of the treatment. Cheek et al. (1966) gave LSD to patients who then participated in specially constructed group therapy. Groups consisted of eight patients, two under LSD. One of the most exciting recent developments is the application of shorter-acting hallucinogens such as DPT, dipropyltyrptamine (Grof et al., 1973; Rhead et al., 1977). Its duration of action is only 4–6 h, making it more practical for adjunctive use in therapy. In addition, new hallucinogens have been developed which seem to have a lesser potential for inducing psychotomimetic reactions (Bylinsky, 1978; Shulgin and Carter, 1975; Standridge et al., 1976).

It was not until 1970, when interest in LSD-assisted therapy was already waning, that well-controlled studies began to support the efficacy of psychedelic peak therapy. Applications include alcoholism and the emotional aspects of terminal disease—conditions notoriously resistant to psychotherapy. Success rates in these and other applications are shown in Table 2. In listing success or

Table 2
Success Rates for Various Applications of Psychedelic Peak Therapy

Clinical syndrome ^a	N ^b	Sex (M/F)	Follow-up (months)	Success rate or outcome ^c	Additional comments
Alcoholism Smith (1958)	24	23/1	Average 12	50% improved or much improved, i.e., showed definite reduction of alcohol intake or abstinence, confirmed by other observers	No controls or premeasures. Average length of uncontrolled drinking was 12 years. Most patients were diagnosed as psychopathic or character disorder; most had failed A.A. LSD and mescaline were used
Chwelos et al. (1959)	16	N.A.	Average 6	63% abstinent, confirmed by other observers	No controls or premeasures. Average length of uncontrolled drinking was 11 years. Diagnoses similar to Smith's (1958)
MacLean et al. (1961)	61	50/11	Average 9	75% improved or much improved, as defined by Smith (1958)	No controls. Average length of uncontrolled drinking was 14 years. Most were diagnosed personality trait disturbance
Jensen (1962); Jensen and Ramsey (1963)	70	N.A.	Average 55 ^d 6-18	48% 56% abstinent, significantly different from controls, 25%. Assessment technique not specified	Nonrandom assignment. No premeasures. 87% had failed A.A. Average age, 39 years. Duration of drinking problem not specified

O'Reilly and Funk (1964)	68	60/8	Average 14	38% abstinent during the 2 months preceding follow-up, assessed by patient's report, and that of his physician and a significant other	No controls or premeasures. 94% had uncontrolled drinking for more than 6 years. 62% were diagnosed chronic alcoholism
Kurland et al. (1967)	69	69/0	6	33% abstinent, assessment technique not specified	No controls. Duration of drinking problem not specified
MacLean et al. (1967)	217	N.A.	Average 38	53% improved or much improved as defined in Smith (1958)	No controls. Duration of drinking problem not specified
Smart et al. (1967)	10	9/1	6	Not different from controls on most measures including abstinence; LSD group showed better work adjustment. Assessment included interviews, Maudsley Personality Inventory, and Rorschach	Chemotherapeutic. Patients given 800 gamma LSD (mg) while strapped to bed. Duration of drinking problem was not given. Most were diagnosed personality disorder
Van Dusen et al. (1967)	56	0/56	18	Abstinence not different from controls as rated by independent raters on the basis of a patient interview	Hospitalized female patients with an average 8 years uncontrolled drinking. More than 1 at a time given LSD. Average age, 41 years. Most were diagnosed alcoholism
Johnson (1969)	25	N.A.	12	Abstinence not different from controls based on interviews by independent observers. LSD group showed better work adjustment	No psychedelic set or setting; patients strapped to bed. Average duration of drinking problem, 8 years

(continued)

Table 2 (continued)

Clinical syndrome ^a	N ^b	Sex (M/F)	Follow-up (months)	Success rate or outcome ^c	Additional comments
Hollister et al. (1969)	26	26/0	6	Abstinence not different from controls, based on behavior scale ratings given by independent observers following a patient interview	Chemotherapeutic. VA Hospital patients, pre-selected for geographic and job stability, with median age, 45 years. Duration of drinking problem, not given
Bowen et al. (1970)	71	71/0	12	Composite adjustment not different from controls, based on ratings given by a social worker following an interview; abstinence data, not given	VA Hospital patients, average age, 44, were prepared via group lectures; no post-LSD therapy. Duration of drinking problem, not given
Faillace et al. (1970)	11	N.A.	24	27% improved or much improved (sober and working) assessed by a follow-up survey or direct contact, not further specified	No controls. Therapy resistant inpatients with multiple hospitalizations and over 10 years of excessive drinking received either DPT or DET in 5 sessions
Ludwig et al. (1970)	44	N.A.	12	Psychedelic, hypnodelic, not different from controls in abstinence, based on PEP and behavior scale ratings given by independent raters following patient and relative interviews	Hospitalized patients with drinking problems of unspecified duration were given 2 h pre-LSD preparation and post-LSD therapy in groups

Pahnke et al. (1970a)	57	N.A.	6	Abstinence and global adjustment significantly better than controls, based on independent behavior scale ratings following a patient interview	Duration of drinking problem, diagnoses, not given. Rigorous evaluative criteria
			18 ^e	Not different from controls on abstinence, global adjustment	
Grof et al. (1973)	47	N.A.	6	38% abstinent, based on independent ratings given by social workers. Assessment included MMPI, POI, PEP	No controls. Patients with an average 10 years drinking problem were given DPT
Rhead et al. (1977)	33	33/0	6	Sobriety not different from controls, assessed by independent raters based on patient interview	Inpatients, screened for motivation, were given DPT. Average age, 40 years. Duration of drinking problem not given. 41% drop-out in experimental group
Criminal psychopathy Leary et al. (1965)	32	32/0	18	Recidivism not different from institutional baseline. Experimental group committed fewer new crimes but more parole violations posttreatment than institutional baseline	Inmates in a maximum security prison who were eligible for parole in 3-5 months were given psilocybin in groups
Shagass and Bittle (1967)	9	N.A.	12	Significantly better behavior ratings than controls, based on reports of the patient and a relative	Inpatients in a hospital for the psychopathic, all with diagnoses of psychopathic personality. No post-LSD therapy

(continued)

Table 2 (continued)

Clinical syndrome ^a	N ^b	Sex (M/F)	Follow-up (months)	Success rate or outcome ^c	Additional comments
Emotional aspects of terminal disease					
Kast (1964)	128	25/103	3 weeks	Less intense pain (group data only), assessed by composite rating resulting from patient's behavior, opinion of ward personnel and another observer	Chemotherapeutic. Patients not told of LSD administration until effects were apparent. Average age, 53 years, prognosis, 1-2 months of life. Only 100 gamma LSD given
Kast (1966)	80	N.A.	3 weeks	Improved sleep, attitude toward death, less depression (group data only), assessed by daily interviews	Chemotherapeutic. Terminal cancer patients, knew their diagnoses. Only 100 gamma LSD given
Pahnke et al. (1970b)	6	2/4	2-7 d	All showed improved or much improved mood, interpersonal relations, ease of medical management, as rated by physicians, nurses, therapists, and family members. Decreased need for narcotics in 4 patients	Terminal cancer patients, experiencing depressive reaction and physical pain. Average age, 52 years
Richards et al. (1972)	31	8/23	3 d	Significantly lessened depression, anxiety, pain, fear of death, better global adjustment (group data only). Physicians, nurses, family members, therapists, and	Terminal cancer patients, average age, 55 years, who were experiencing depression, physical pain, anxiety. Time since first

cancer diagnosis averaged
34 months

an independent rater made assessments on a rating scale of emotional condition. Narcotic consumption did not significantly decrease

DPT was given to terminal cancer patients, average age, 51 years. Patients were experiencing psychological distress of unspecified duration

No significant treatment effects, assessed by independent raters but significant improvement on MMPI scales, *Pt, Sc, D, Hy, Pa*, and nine POI scales

1 week

11/23

34

Richards et al.
(1977)

Narcotic addiction
Ludwig and
Levine (1965)

Hospitalized "postnarcotic drug addicts," average age, 28 years, selected for suggestibility. Duration of addiction, not given

No behavioral data on abstinence. Hypnotic group significantly more improved than psychotic or other groups, as measured by self-report on PEP

2

8/6

14

Savage and
McCabe
(1973)

Unmotivated, lower SES paroled heroin addicts, average duration of narcotics use, 9 years treated in a halfway house facility

25% abstinent, significantly different from controls (5%), evaluated by daily urine monitoring

12

37/0

37

Neuroses

MacLean et al.
(1961)

No controls. Multitherapist interviews, anxiety, depressive, or obsessive-compulsive neuroses, duration of problem, not given

Average 9

9/17

26

89% improved or much improved, as rated by therapist, patient and family

(continued)

Table 2 (continued)

Clinical syndrome ^a	N ^b	Sex (M/F)	Follow-up (months)	Success rate or outcome ^c	Additional comments
Mogar and Savage (1964)	60	N.A.	6	Significant improvement on MMPI scales <i>Pt, D, Sc, Si</i> (group data only)	No controls. LSD and mescaline were given simultaneously. Duration of clinical problem not given. Self-selected outpatients at a psychiatric clinic, average age, 36 years
Savage et al. (1973)	31	7/24	6	Not different from controls on PEP, Katz Adjustment Scale, and an independent rating of "total community adjustment"	Chronic, severe neurotics, mostly "psychoneurotic disorder, depressive reaction." Duration of problem not specified

^a Studies were selected which fit clearly under the syndrome headings and had $N > 5$.

^b N is the number of experimental drug subjects evaluated at the last follow-up point.

^c Pertains to the last follow-up point at which a meaningful analysis could be made. Unequivocal indices such as percent abstinent were preferentially included, followed by percent success (improved or much improved); some reports gave only group data.

^d Reported in MacLean et al. (1967).

^e Reported in Kurland et al. (1971).

improvement rates, unequivocal measures (e.g., % abstinent or recidivism rate) were preferentially included in Table 2. In some cases, authors reported only global judgments of improvement.

The design and outcome of a classic study will be reviewed for its heuristic value and to demonstrate clearly defined therapeutic use. Pahnke et al. (1970a) randomly assigned 135 alcoholics to experimental and control groups. The population consisted of patients in the Alcoholic Rehabilitation Unit of Spring Grove State Hospital, Baltimore. The randomization achieved matching on pretreatment rating of abstinence, IQ, age, and occupational status but not on marital status, number of previous admissions, or educational status; these latter variables favored the experimental group, thus somewhat attenuating the findings. The control group received *exactly* the same therapeutic preparation as the experimental group, only the LSD dose varied. The control condition was 50 μg , the experimental, 350–450 μg . The smaller dose was considered an active placebo unlikely to produce a psychedelic peak reaction. (Even this low dose often produced considerable abreaction, however, and it was later noted that this “control” group made more gains than is typical with conventional treatments; thus a lower dose or perhaps no LSD would have provided a clearer comparison.) Treatment was double-blind and evaluation was carried out by an independent rating team. Six-month follow-up measures of drinking behavior and global adjustment revealed significantly better improvement among the experimental group than the control group on both indices. At 12 and 18 month follow-ups, however, the difference between experimental and control groups had disappeared (Kurland et al., 1971).

A rather frequent trend with psychedelic peak therapy is that initially impressive gains may fade after 6–12 months. Earlier researchers noted the effect and suggested that a booster LSD session may help sustain gains (e.g., Cheek et al. 1966; Shagass and Bittle, 1967). Other suggestions based on learning principles will be offered in a later section of this paper, but the lack of routine permanent cures is not too disappointing given the poor prognoses of the clinical problems under consideration.

At least two authoritative book-length works on LSD and alcoholism, however, found LSD to be of little value (Ludwig et al., 1970; Smart et al., 1967). These researchers employed an approach similar to chemotherapy, where preparation and follow-up integration were quite minimal. The latter study, funded by the Addiction Research Foundation, is a curiosity because it purports to correct deficiencies of previous studies and determine the general usefulness of adjunctive LSD, yet the number of subjects in the experimental cells (10) appears so small that the likelihood of attaining statistical significance was reduced (Salzman, 1969). Also, patients were shipped out to a different hospital for the LSD session and were apparently provided with very little pretreatment contact with their LSD therapist. Additionally, no aids were provided and clients

were secured to their beds by means of a Posey belt, administered an anti-convulsant (Dilantin), then an 800 μ g dose of LSD intramuscularly. A "three-way psychotherapeutic interview" (p. 64) by a doctor and nurse followed which lasted 3 h. It is hard to imagine a more insensitive procedure but it speaks well of the safety of LSD that no psychological damage resulted from this regime. At follow-up they found few differences between LSD and control groups (Ephedrine and no drug). Some trends did favor the LSD group; for example, only this group showed a significant gain in employment at 6 and 12 month follow-ups. Regarding abstinence, the groups were not different. Other studies of the same genre obtained much the same results (Bowen et al., 1970; Hollister et al., 1969; Johnson, 1969).

The most recent use of psychedelic peak therapy is in treating the emotional aspects of terminal disease. None of these studies was controlled. Early chemotherapeutic LSD studies noted that critically ill patients showed decreased depression, improved sleep, and lessened apprehension concerning death (Kast, 1964). Especially remarkable with Kast's terminal patients was their changed attitudes toward death, also observed in subsequent investigations. Psychiatric patients and normals under LSD often experience ego-death (loss of usual sense of self) and rebirth which they feel effects a radically changed attitude toward death; it is seen as a transition to a different type of existence and to them, the idea of continuity of consciousness beyond physical death seems more plausible. Feelings of unity with all of creation and transpersonal experiences (e.g., Jungian archetypes, experience of the cosmic drama) seem to provide a background and referential system against which individual destruction appears less important. Whether such changes of consciousness are delusions or insights, the fact that patients who are actually facing physical death make such reports (and manifest changes in basic values, philosophy, and religious beliefs) is some indication of their profundity. This therapeutic use marks an exciting, untapped interface between religious counseling and psychotherapy.

Titillating incidental findings are sprinkled throughout the psychedelic research literature. Grof et al. (1973) found that alcoholics treated with DPT-assisted psychedelic therapy showed an average IQ increment of 4.39 points (significant at the .001 level of probability) on the Raven progressive matrices; similar findings with LSD have also been reported (Kurland et al., 1967; Savage, 1968).

In evaluating the psychedelic peak approach, it is at once clear that the level of methodological sophistication is generally superior to that reported in psychotic studies. All of the investigations in Table 2 reported follow-up data and about half utilized some type of control. Some of the uncontrolled studies (e.g., Smith, 1958; Jensen, 1962) purposely selected patients with poor prognoses, i.e., chronic, severe disorders unyielding to previous therapy attempts. Although no substitute for controls, this selection factor makes success more impressive.

Of the controlled studies, only about half incorporated sufficient patient preparation, post-LSD therapy, and suitable settings (Jensen and Ramsey, 1963; Pahnke et al., 1970a; Rhead et al., 1977; Savage and McCabe, 1973; Savage et al., 1973; Van Dusen, 1967). Van Dusen treated hospitalized female alcoholics more than one at a time with cloth screens between them. He did not find the LSD group to be more improved than a group receiving routine hospital care. He explained this result by noting that "... perhaps in part because we were already so successful with these women that there was no room for improvement" (p. 303) but did not describe their "therapeutic community-like setting" (p. 297). The Rhead et al. (1977) study, while methodologically sophisticated, did not result in clear-cut findings due in part to significant differences between experimental and control groups in percent completing treatment and percent contacted at follow-up points. Their finding that conventional, individual therapy was superior to DPT psychedelic therapy at 1-year follow-up was thereby qualified. Their study indicated that random assignment to treatment modalities is at cross-purposes with patient expectations and motivational factors crucial to psychedelic peak therapy. Savage and McCabe (1973) did not assess the contribution of LSD *per se* but of a treatment package utilizing LSD in a 6-week residential program for heroin addicts. Daily urine analyses for 1-year posttreatment indicated the program significantly increased abstinence over routine outpatient care (25 vs 5%). In another study with hospitalized chronic severe neurotics, Savage et al. (1973) found psychedelic peak therapy superior to low dose and standard hospital treatment controls but only immediately posttreatment. Data at 6- and 12-month follow-ups did not clearly support high dose LSD but favorable trends were noted.

In concluding this section, therapeutic uses have been defined and shown to be promising. Two methodologically acceptable studies (Pahnke et al., 1970a; Savage and McCabe, 1973) supported the superiority of psychedelic peak therapy over control procedures, at least for 6-12 months posttreatment. One methodologically acceptable study (Savage et al., 1973) did not support this relative superiority. Each of these three investigations featured controls, randomization, objective pre-post measures, and follow-ups and were not seriously plagued by patient dropout or other problems. Considering psycholytic and psychedelic modes together, the majority of favorable reports indicates the hallucinogens are versatile enough to safely augment a number of therapeutic programs. The few well-controlled studies tended to substantiate the efficacy of adjunctive LSD, although not unanimously. Over the years, as experimental designs improved, some strengths and limitations of recent uses emerged. The demise of clinical research with hallucinogens in the United States appears relatively unrelated, however, to questions of risk (or cost)/benefit but to political factors (Osmond, 1978; Rhead, 1978).

THEORETICAL CRITIQUE

At this point it may be helpful to reexamine the relationship between theory and practice in the therapeutic use of hallucinogens and consider some alternatives. Psychoanalytic theory predated the therapeutic application of hallucinogens, and their use within that framework may be called forced. Knowledge of Freudian symbolism is undoubtedly helpful but it is a double-edged sword; because of the LSD subject's heightened suggestibility and increased doctrinal compliance (Buckman, 1969), the psycholytic therapist may be especially prone to eliciting evidence consonant with his preconceptions. One of the merits of psycholytic therapy is that perinatal and transpersonal phenomena are more readily seen with serial LSD administrations. These phenomena have opened new doors to transpersonal psychology and the relationship between mental health and religious experiences (Pahnke and Richards, 1969). Although the psycholytic procedure seems to shorten psychoanalytic treatment to months rather than years, this still represents a large investment for both therapist and client. Practically speaking, obtaining governmental permission to give just one or two administrations of hallucinogens, much less an open-ended series, is quite difficult. Therefore, researchers may profitably turn their attention to making the most efficient use of the fewest possible hallucinogen administrations.

More efficient than the psycholytic treatment is the psychedelic peak approach which generally requires only one psychedelic session and perhaps 2 months treatment time. The theory underlying this adjunctive use of LSD is eclectic but primarily Rogerian. The central ideas are that the client possesses within him potentials for positive adjustment and that the catalytic action of LSD may bring these potentials to fruition primarily through an enhanced sense of self-worth. Pre-post measures of self-actualization, as measured by the Personal Orientation Inventory, favor high dose psychedelic peak therapy (Savage et al., 1973), and self-report data from terminal cancer patients shows that those who have peak experiences benefit most (Richards et al., 1977).

Di Leo (1976) has suggested combining the best of psycholytic and psychedelic therapies, i.e., serial psychedelic sessions. The approach would presumably shed more light on the role of perinatal and transpersonal phenomena in therapy by continuing to emphasize the experiencing of emergent subjective states.

Need for a Learning Emphasis

LSD therapists are generally aware of the difficult problem of "... integrating new insights into the fabric of everyday existence" (Richards et al., 1977, p. 3), i.e., generalization. The problem is typically addressed by additional (post-LSD) eclectic therapy totaling about 5 h. The utter disuse of LSD-assisted

therapy, however, suggests that a comprehensive new approach is needed, not simply new twists for old strategies. The learning approach can meet this need. In the problem of generalization, for example, a learning theorist might seek to specify categories of verbal and gross motor behaviors indicative of improvement and provide augmented support (e.g., differential reinforcement) for healthy behaviors. In alcoholism, for example, one or two key figures in the client's immediate environment (e.g., ward personnel, spouse) could be trained to differentially ignore or reward particular categories of client behavior on a gradually thinning schedule. Special situations could be constructed, as in psychodrama, or monitored such that alcoholics could receive *in vivo* rewarded practice for refusing drinks or drinking appropriately. Training in self-reinforcement and internal dialogues are other possibilities. These approaches have been moderately successful without the addition of LSD (for a review see Nathan and Biddell, 1977); whether LSD can add anything to behavioral treatment is an empirical question.

Several LSD therapists have alluded to the importance of learning theory (Savage, 1968; Savage et al., 1962). Baker (1967) considers learned disorders to be particularly appropriate for LSD techniques. Yet no systematic attempt to couple learning principles with hallucinogens has been reported. Researchers have noted, however, that the state occasioned by hallucinogen administration seems to be a unique opportunity for behavioral "reprogramming" (McCabe, 1974; Unger, 1969). Silverman (1976) offers a neurophysiological basis for this effect. He reviews evidence that LSD induces excitation in primary afferent pathways while inhibiting activity in cortico-cortical pathways, thus facilitating new perceptual-cognitive perspectives while habitual response patterns (dependent upon familiar patternings of sensory input) are suspended or modified.

Assuming that psychotherapy is a learning process, Cohen (1967) asked if LSD can accelerate learning. At the time, he could find no evidence that LSD enhanced learning but credited LSD with fostering profound emotional experiences which may rapidly alter one's value system. Since 1967, a number of independent investigations have shown that hallucinogens can indeed facilitate learning in animal studies.

Using operant and classical conditioning paradigms, investigators have generally found that higher doses of hallucinogens impair responding, so that both performance and learning are adversely affected (e.g., Gardner, 1965; Rosen and Kubos, 1973), but there is also considerable evidence that under some conditions, lower doses can facilitate learning (e.g., Appel, 1971; Bignami, 1972; Bridger and Mandel, 1971; Bridger et al., 1973; Stoff et al., 1974). Rouse and Frank (1974) present evidence on facilitation of learned seizure resistance that may have implications for clinical biofeedback. They cite additional studies showing facilitated learning. Most studies find the facilitating effect more readily in tasks which involve delay, inhibition, or a minimum of responding while

under the drug's influence. Rosen and Buga (1973), for example, found enhanced acquisition in a spatial discrimination task requiring only a bar press response whereas in a runway instrumental conditioning task both high and low doses impaired acquisition and extinction. Some investigators have commented on the staring or "catatonic" behavior shown by experimental animals (e.g., Davis and Bear, 1972; Kluver, 1969). Similarly, human subjects become outwardly more passive and report that perceived objects and events take on more significance and meaning (e.g., Hoffer and Osmond, 1967). These observations suggest that vicarious or observational paradigms, with few overt behavioral demands during training, may be more suited to the study and therapeutic use of hallucinogens.

Several additional observations from human and animal research support the conceptualization of hallucinogen-assisted therapy as a modified learning situation. First, a principal effect of hallucinogens is to suspend habitual response patterns and frames of reference (Cleckner, 1977; Silverman, 1976). It is thought to be a time during which an organism's behavior repertoire may be reprogrammed. Second, stimuli (both internal and external) assume exaggerated import and significance with human drug subjects (Aaronson and Osmond, 1970; Cohen, 1967; Grof, 1967; Hoffer and Osmond, 1967). Levine and Ludwig (1967) consider this aspect of LSD to be its primary contribution to therapeutic change. Some researchers have interpreted results from animal studies along these lines (Becker et al., 1967; Blough, 1957). Third, one's experience under hallucinogens is rarely forgotten. On the contrary, most subjects and many therapists see the experience as the fulcrum about which potential deep change turns. Evidence from follow-up therapeutic studies indicates that change is often lasting although not necessarily permanent. Kahn et al. (1974) found that mescaline given to rats immediately after training facilitates retention of passive avoidance 48 h later. Finally, human subjects are unusually suggestible and impressionable (Ditman and Bailey, 1967; Levine and Ludwig, 1967; Sjöberg and Hollister, 1965).

Probably the most important general point from the above evidence is the great significance of the milieu for coloring the subject's reaction. Of the usual independent variables under experimental control (drug, set, setting), the setting has received little attention. In nearly all previous therapy applications, the role of the external environment, beyond being comfortable and supportive, has not been actively programmed; the presentation of music, flowers, pictures, etc. to elicit emotionality is a notable exception. Generally, the literature on vicarious and observational learning, especially social learning theory, would suggest stimuli to pair with the drug effect (and adjacent drug-free therapy) in specific courses of treatment. Some exemplary strategies will be described.

Suggestions for Future Research

Music is known to have profound emotional effects in LSD-assisted therapy (Bonny and Pahnke, 1972). The use of specially prepared films, theatre productions, or psychodrama are possibilities predicated on this observation. Sound recordings and video tapes can be used to direct emotionality and help the client have a "corrective emotional experience" (O'Reilly, 1967, p. 505). Films depicting adaptive modes of response to common difficult social situations may have considerable potential. Meichenbaum and Cameron's (1974) work as well as Goodwin and Mahoney's (1975) is relevant here, although these researchers did not use hallucinogens. Aiding the acquisition of new responses with hallucinogens that suspend former habitual response patterns and frames of reference while enhancing the subject's impressionability may modify therapeutic gains considerably.

Another area that could gain from more deliberate programming of the environment is work with autistic children. Although a comprehensive review recently affirmed the relative therapeutic promise of hallucinogens with such children (Rhead, 1977), much of the work approximates a chemotherapeutic mode. One of the most crucial deficits exhibited by many of these children is an inability to relate themselves in the ordinary way to people and situations from the beginning of life (Kanner, 1973). If a child for some reason does not learn to respond to people as the most emotionally salient environmental stimuli, that is, if they do not "imprint" on humans, much learning from observation is precluded. Gray (1958) considers the imprinting concept to be applicable to human attachment processes and a theory linking autism to imprinting difficulties has been described (Moore and Shiek, 1971; Treffert, 1970). It may be that coupling parental affection with hallucinogenic drug action would result in strengthened emotional bonds (imprinting or reimprinting) between parent and child (Leary, 1975). In support of this notion, Simmons et al. (1966) reported that autistic children were more attentive to physical and face contact and showed decreases in self-stimulatory behavior while under 50 μ g of LSD. Observations of transference intensification in psycholytic therapy (Buckman, 1969; Grof, 1967; Ling, 1967) also support such a hypothesis.

A further possibility of therapeutic LSD use is the facilitation of learning in biofeedback training as suggested by William Coe (see Asher, 1975).

CONCLUSION

A psychotherapeutic context for the beneficial use of hallucinogens makes sense from the evidence reviewed. Clinical data suggest that psycholytic therapy can benefit some patients. Empirical evidence partially supports the efficacy of

psychedelic peak therapy. A learning perspective was offered which may make more efficient use of the "atomic power of psychiatry" (Silverman, 1976, p. 143).

If experimental work confirms that observational, vicarious, or imprinting paradigms are especially suited to the study of hallucinogens and that hallucinogens materially effect the learning process, then their more frequent use in psychotherapy seems warranted. One implication is that the treatment and staff training policies of centers where hallucinogens are employed as therapeutic adjuncts be modified. Such changes should include experimental exploration of observational, imprinting, or other learning paradigms both with animal and human subjects. To facilitate staff training, such centers might engage in exchange visits, seminars, and demonstrations including both behavioral clinicians and clinicians experienced in the use of hallucinogenic adjuncts. The growing area of medical psychology provides a ready arena for such collaborative endeavors and research.

As a technology, the use of hallucinogens represents a prime example of cultural lag; that is, the ability to invent surpasses the ability to implement. When powerful technologies are introduced without a context (or within a malevolent context), abuse is invited. This paper has sought to help provide a constructive context for the use of hallucinogens. Pollard et al. (1965) condemn

... the timid reaction of the academic and research establishment, which has tended to prohibit, avoid controversy and publicity, and turned away to other, safer problems. (p. 205)

It is the function and duty of scientists to work diligently to specify beneficial uses for their inventions, particularly the most powerful inventions. Abrogation of that responsibility will result in stagnation at best and harmful misuse at worst.

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