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LYSERGIC ACID DIETHYLAMIDE (LSD 25) AND BEHAVIOUR THERAPY*

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Summary—This paper deals with the problems involved in the treatment of complex neurotic conditions. A seventh feature is added to Wolpe's list of the six features that make a neurosis complex. The use of Lysergic Acid Diethylamide (LSD 25) in the treatment of such difficult cases is discussed and three cases are presented.

WOLPE (1964) has recently written: "Starting from the clinical fact that neuroses generally present themselves as unadaptive obstinate habits of behaviour (with anxiety most often to the forefront), a patient may be regarded as having a *simple* neurosis if he has only one such habit and if it consists of responses to a single and obvious family of stimuli". There is now a considerable amount of evidence (Wolpe, 1958; Eysenck, 1960; Lazarus, 1963) that behaviour therapy is effective in the treatment of such *simple* neurotic conditions.

Wolpe (1964) has listed the features that give complexity to a neurosis and has reported that 89 per cent of 65 patients with a complex neurosis were judged "... either apparently cured or much improved" after behaviour therapy. Lazarus (1963) found that 61·9 per cent of 126 patients described as "extremely neurotic" were rated as "markedly improved" or "completely recovered" after behaviour therapy. Lazarus notes that patients suffering from pervasive anxiety and panic appear to have the most unfavourable prognosis.

The features giving complexity to a neurosis that have been listed by Wolpe (1964) are: "(1) Multiple families of hierarchies may be conditioned to neurotic reactions. (2) The reactions may involve unadaptiveness in important areas of social behaviour ("character neurosis"). (3) The neurosis may involve obsessional behaviour. (4) The neurosis may have somatic consequences. (5) There may be continuous anxiety in addition to that which is associated with specific stimuli. (6) Essential stimulus antecedents of the neurotic reactions may be obscured by conditioned inhibition of associations".

In the present paper we shall discuss the use of lysergic acid diethylamide in the treatment of a case complex on account of feature 5 listed above, a case complex on account of feature 6, and a case that appears complex on account of a feature not listed by Wolpe. We shall discuss the latter case first.

CASE I. CLAUSTROPHOBIA

Mrs. X was a 34-year-old Roman Catholic housewife suffering from claustrophobia. She said, during her first interview, "Since I was about 18 I had the closed-in feeling, my hands would sweat and I felt nauseated". She reported that the phobia was at its most extreme when she was in church but that it also occurred in restaurants and stores. Later it was found that most enclosed places produced the phobic reaction.

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Two incidents in her life seemed to be related to her phobia. When she was seven years old, a man invited her into a bathing house promising to catch a gopher for her. Inside the bathing house he put his hand inside the bathing suit she was wearing. She was extremely frightened but managed to run away from him. She told her mother about the incident and received a thorough spanking.

The second incident occurred when she was 18 (shortly before the development of the phobia). She was attending a camp with a large group of people her own age. Also present were some French Canadian priests from Quebec. She became quite friendly with one of the priests teaching him some English and later washing his underclothes for him. One evening when she returned his clean underclothes, he told her that they were not to speak to one another again because the other camp members were becoming suspicious about their relationship. He also told her to be careful of the boys in the camp and began to hint at what they may want to do. She was very disturbed by the incident and felt both disgusted and angry with the priest.

The first stage of treatment involved the technique of systematic desensitization based on relaxation (Wolpe, 1958). It seemed that restaurants provoked less anxiety than stores and stores less anxiety than churches. An "anxiety hierarchy" in connexion with restaurants was constructed. The first four sessions were devoted to training the patient in relaxation following the method proposed by Wolpe (1958).

At the end of a further 10 sessions, desensitization to all the items of the restaurant "anxiety hierarchy" was considered complete and a day or two following the tenth session, the patient accompanied her husband to a restaurant and ate there without any discomfort. Because of the patient's rapid response to the desensitization procedure, an anxiety hierarchy involving stores was constructed at the seventh session and desensitization was considered complete after 8 sessions or at the eighteenth session since the start of treatment.

At this point of the treatment, the patient reported that there was no lessening of her anxiety at church and she continued to sit at the end of the back row struggling with a strong desire to leave. An "anxiety hierarchy" similar to the ones used for the restaurants and stores was constructed.

Unlike the patient's response to the other two hierarchies, there was no progressive change in her response or even consistency in her response to the church hierarchy. On occasion the patient was able to visualize all the items of the hierarchy with little anxiety. At other times she became extremely anxious though the anxiety seemed to be unrelated to the visualizations of the scenes being presented to her. At the twenty-third session it was decided that no progress was being made with this form of desensitization. An LSD-session was suggested to the patient and an explanation of what she could expect was given.

On the LSD-day the patient came to the hospital at 8.30 a.m. In line with the suggestions made by Blewett and Chwelos (1959), the patient was reminded of the kinds of experiences to expect and was told that the therapist and a nurse would remain with her all day.

The patient was then given orally 400 μg of LSD in water. It should be noted here that this is a higher dose than that given by many therapists. Experience with the drug in Saskatchewan has suggested that higher doses make it almost impossible for the patient to "fight" the drug effect, thus producing better therapeutic results.

The session was conducted in a sitting room with adjoining toilet facilities. The room was pleasantly furnished with arm chairs, bed settee, table, record player, mirror and a number of paintings.

Blewett and Chwelos (1959) have described the various stages through which the LSD experience goes: (1) The onset of symptoms—mainly perceptual disturbance and physiological symptoms such as palpitations, nausea etc. (2) A confusional state produced by the flooding of conscious with ideas and visual imagery. (3) An enhancement of all aspects of perception. (4) The psychedelic experience (Osmond, 1957)—the experience is stabilized and the patient establishes "order and organization to the unhabitual perceptions" (Blewett and Chwelos, 1959, p. 9).

With the help of reassurance and soothing music, the patient passed through stage (1) by the end of the first hour and was made more accepting of the confusion encountered by the flooding of conscious with ideas and visual images in stage (2). When she reported that she was getting vivid visual images, part of Offenbach's Gaité Parisienne was played followed closely by some spirituals sung by Mahalia Jackson. During the Mahalia Jackson record the patient became quite agitated. The volume was turned down and the patient was told to face whatever ideas, thoughts or pictures were presenting themselves to her. She was told that life was a beautiful though sometimes awesome pattern which we spoiled by turning away from it. Thus stage (4) of the experience was suggested to the patient. The patient at this point stretched out her hand for me to hold and she held my hand tightly. After a short period of a few seconds she loosened her hold on my hand, became very relaxed and said, "And I was afraid". I agreed there was nothing whatsoever to be afraid of and once again put the Gaité Parisienne record on. The patient almost immediately began to laugh. Then she said "sex", laughed more and then said, "I was going to be a nun". This was followed by more laughter. The Mahalia Jackson record was then played and the patient lay on the settee looking extremely relaxed. For the rest of the session, until 3.00 p.m., the patient listened to music, drank coffee occasionally and talked a little about her family, their holidays, her husband's hunting, etc. At no time was her camp experience or her phobic condition discussed.

At 3.00 p.m. the patient was given 100 mg sparine intramuscularly by Dr. Julia O'Reilly, a psychiatric colleague, and at 3.30 p.m. the patient's husband, as had been arranged, came for the patient and took her home.

The patient was told not to go out that night, that she would probably feel tired and need sleep and that should she want to talk to me at any time, she should ring me. She was instructed to ring me in any case on the following two days. This is necessary since some patients feel slightly depressed when they come back to earth! On the third day the patient was asked to visit me, and at this time reported that she felt very relaxed. She had forgotten a lot of the experience but told me: "There were so many things at the same time...my mother...and then a boy at high school—he wanted to touch me but I would not dream of it...and the priest, and then my mother back again and wanting to be a nun...all so fast". The following Sunday the patient went to church, sat in the middle row and "felt so comfortable".

Six months later the patient was interviewed again and reported that she had completely recovered from her claustrophobia, that she was going to more places with her husband, and that she was generally much happier.

COMMENT

Lazarus (1961) has written, "...it is only where reasonably well defined configurations can be identified that desensitization techniques should be applied" and "A further prerequisite for the effective application of desensitization is the ability to conjure up

reasonably vivid visual images which elicit emotional reactions comparable to the feelings evoked in the real situation".

The failure of the usual desensitization technique with the church "anxiety hierarchy" was due, it is suggested, to the fact that stimulus to anxiety was not the well defined configuration "church". "Church" was probably part of a complex stimulus configuration involving sex, religion, mother, French priest, religious aspirations, and perhaps even gophers... .

The ideas presented here lean heavily on Osgood's (1956) theory of representational mediation processes and it will be necessary to give a brief account of Osgood's ideas. Osgood writes, "Whenever a neutral stimulus is contiguous with a significate (any stimulus such as shock, food etc., which regularly and reliably produces a predictable response pattern) and this occurs sufficiently close to a reinforcing state of affairs, the neutral stimulus will acquire an increment of association with some portion of the total behaviour elicited by the significate as a representational mediation process. This stimulus-producing response process (r_m) is *representational* because it is part of the very same behaviour produced by the significate itself...".

Whenever a set of stimuli are associated with the same significate and hence with the same total behaviour pattern, they become, according to Osgood, a hierarchy of signs associated with the same representational process and hence have the same significance.

Osgood makes the distinction between *primary learning* and *secondary learning* "*Primary learning* would involve the original formation of sensory integrations (perceptions) motor integration (skills) and representational processes (meanings)....*Secondary learning* would involve nothing more than associative reshuffling of signs with mediators and of mediators with instrumental acts." Osgood gives as an example the example of the whistle which already has some significance for a dog becoming associated with a food-taking significance.

We would agree with Osgood's analysis of the role of representational mediation processes in learning but wish to go one stage further and emphasize that among human beings words, visual and other types of imagery are extremely important signs in the "associative reshuffling of signs with mediators". This may appear a trite remark. It is an aspect of human learning, however, which it is felt should receive much more emphasis than it is generally given. Osgood himself, who has given more attention than most psychologists to the problems of language, gives as an example of associative reshuffling in a human the case of a young lad for whom an officer's uniform has one significance based on movie-going experience and who comes to modify this significance somewhat after being drafted. In other words, he gives an example involving external events rather than language and imaginal processes.

Osgood does say in another part of the same paper, "Nearly all the phenomena we consider peculiarly human depends upon symbolic mechanisms. A simple but typical example is *semantic generalization.* A subject is shocked whenever the word JOY appears among lists of other words; some response...is recorded; then a list of test words is presented and we find that the subject makes a generalized reaction to words like GLEE and FUN but not to words like BOY or TOY—and this, despite the fact that the latter are physically more similar to JOY than the former". Thus Osgood points out the importance of symbolic processes. But symbolic processes, we suggest, play another equally important role in learning.

In Osgood's example, a word JOY which was a sign of some pleasant significate, has now become a sign of an unpleasant significate "shock". Now words such as GLEE and FUN which had the same previous sign value as JOY also become signs (albeit weaker ones) of the new significate. What we wish to add to this is that a symbol (word, image etc.) may regularly and reliably produce a predictable response pattern. In other words, it may act as a significate in such a way that (to use Osgood's terminology) should another symbol be contiguous with the first symbol (*with which it originally does not share any mediation processes*) and this occurs sufficiently close to a reinforcing state of affairs, the second symbol will require an increment of association with some portion of the total behaviour elicited by the first symbol (or significate) as a representational mediation process.

In the case of claustrophobia, a sexual incident during childhood was followed by a severe spanking from the patient's mother. The mother's attitude during the following years no doubt reinforced this connexion between sex and punishment so that the idea "sex" would be expected to regularly produce an anxiety response. When some years later a priest began to talk about sex to the girl in what the girl felt was a less than fatherly manner, the priest, and other ideas and thoughts associated with religion in general, also became signs of anxiety.

That this goes a stage further than Osgood's analysis will become clearer if we use Osgood types of diagrammatic illustrations of the formation of representational mediation processes. In Fig. 1 for instance S_1 may be the word JOY which becomes a sign of shock ($\dot{S}_1$) through the representational stimulus-producing response process (r_{m_1}) (anxiety). The self stimulation (s_{m_1} produced by this intervening reaction can become associated with a variety of instrumental acts (R_x) which "take account" of the objects signified. In the same way the word SEX (S) in our example became a sign of punishment ($\dot{S}$).

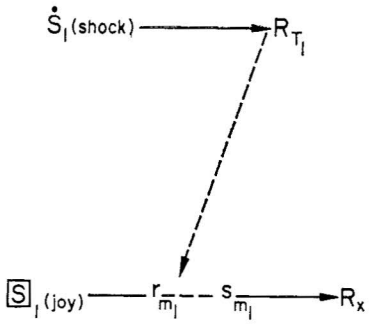

FIG. 1. Formation of a representational mediation process.

Osgood's example of semantic generalization can be represented diagrammatically in the following manner. In Fig. 2 we see that JOY, GLEE and FUN are all signs of some pleasant social situation ($\dot{S}_2$) and share the same representational processes (r_{m_2}). We shall concern ourselves solely with the stimulus side of Osgood's equation. Figure 3 shows us what happens after JOY has been associated with shock. GLEE and FUN which share the representational process (r_{m_2}) with JOY also now share the new representational process (r_{m_1}).

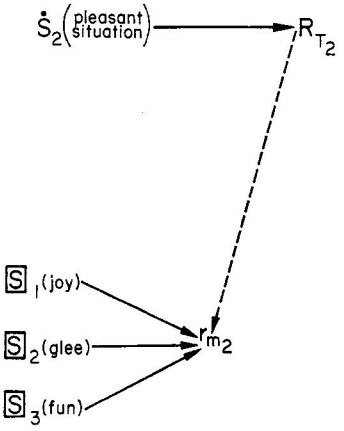

FIG. 2. JOY, GLEE and FUN are a hierarchy of signs associated with the same representational process r_{m_2}.

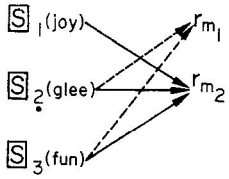

FIG. 3. GLEE and FUN which share the representational process r_{m_2} with JOY now also share the new representational process r_{m_1} with JOY.

In the case of our example, however, we suggest that the process diagrammed in Fig. 4 occurs. The word "RELIGION" comes to share some of the portion (anxiety) of the total response elicited by the significate (the word "SEX").

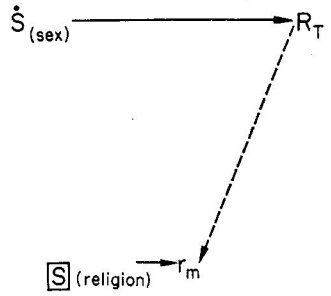

FIG. 4. The word SEX now acts as a significate and the word "RELIGION" comes to share some portion (r_m) of the total response elicited by the significate.

It is suggested that a whole chain of conditioned reactions at a purely symbolic level may take place. With an increase in the number of such conditioned symbols sharing the same mediation processes which occur together, there is an increase in the probability of the occurrence of the mediation processes and an increase in the intensity of the mediation processes. It is likely that the picture is even more complex than this. For instance, rather than a number of words individually coming to share the same representational processes such as anxiety, they may only evoke the anxiety response *when they occur together*. It is

in this manner then that the stimulus configuration producing anxiety may be a complex one. Furthermore, the anxiety response may not be readily elicited by visualization of one aspect of such a configuration. Even if one were able to reconstruct by means of interview with the patient what exactly the configuration is that evokes anxiety, it would probably be difficult to get the patient during therapy to recreate the configuration with any intensity. One of the most marked effects of LSD is the stimulation of vivid imagery thoughts and memories in abundance thus increasing the probability of the occurrence of a number of the conditioned symbols in close proximity and therefore increasing the probability of the occurrence of the complex stimulus configuration at a sufficient intensity level. This may occur as a direct effect of the drug. However, in view of the increased suggestibility of the subject during the LSD experience, one may also have a greater chance of successfully evoking the stimulus configuration by means of verbal instructions or manipulation of the environmental conditions as in the case of the claustrophobic patient, records selected to evoke sexual and religious feelings were played.

We shall now consider the special conditions of relaxation that may be produced during an LSD experience.

(*a*) *Empathy and relaxation*

Blewett and Chwelos (1959) wrote of the acute sense of awareness of the feelings of other people that one experiences after taking LSD, and most workers with LSD are in agreement about this. Lazarus (1959) has noted that "the therapeutic atmosphere of empathy and acceptance may in itself reciprocally inhibit neurotic anxieties". The Wisconsin studies on affectional responses in monkeys had demonstrated that the infant prefers stimulus objects offering some degree of maternal contact comfort to those associated with feeding (Harlow, 1958; Harlow and Zimmerman, 1959). A number of other studies also suggest a reciprocal relationship between anxiety and social contact (Bovand, 1959; Allee, 1958; Schacter, 1959; Sarnoff and Zimbardo, 1961).

It has been suggested that Eysenck's (1960) statement, "Personal relations are not essential for cures of neurotic disorder although they may be useful in certain circumstances" has led critics to believe that behaviour therapists under-estimate the value of personal relations. Costello (1963) suggested that the position of behaviour therapists would be better put as follows: "Personal relations may be of great value for the cure of some neurotic disorders and are of little use in some circumstances". Eysenck (1963) has himself suggested that the facts of transference cannot be discounted though the psychoanalytic theory of transference has not been empirically substantiated. Meyer and Gelder (1963) have noted that in their work the single factor which seemed most relevant to the outcome of behaviour therapy was the relationship between patient and therapist.

The increased feelings of empathy under LSD could be expected then to increase the patients's relaxation. This will occur of course only to the extent that the patient has complete trust in the therapist and to the extent that the therapist himself is relaxed and confident. The importance of relaxation and confidence on the part of the therapist has been indicated in two studies which suggest that therapist's anxiety is invertly related to therapeutic competence. Bandura (1956) demonstrated that therapist anxiety as measured by fellow therapists was inversely related to therapeutic competence as independently rated by supervision. In a second study Bandura and his colleagues (1960) demonstrated that those therapists who had little anxiety about hostility encouraged the expression of general hostile feeling. Those with more anxiety avoided hostile themes.

(*b*) *Beauty and relaxation*

One aspect of the LSD experience which has been emphasized by those therapists who used the drug to produce a transcendental experience is the increased awareness of beauty producing intense feelings of joy and relaxation. Such an experience can usually be quite easily suggested to the patient.

The patient's suggestibility under LSD is increased, perhaps to a certain extent as a result of the increase in sensory input. Though an individual is usually more responsive to influence from his environment while under sensory deprivation, there is evidence that sensory enhancement may also increase a subject's susceptibility to outside influence. Chan (1958) found that the effect of enhancing visual sensory input in the form of geometric forms, colours etc., increased the probability of susceptibility to verbal conditioning.

Under this heading also, we may mention the use of music in increasing the sense of beauty and resultant relaxation. Zimny and Weidenfeller (1962, 1963) have found that two kinds of music rated as exciting or calming had different effects on the GSR. Ellis and Brighouse (1952) obtained similar effects using respiration rate as the measure of emotionality. In the claustrophobic patient, music was used primarily to evoke aspects of the anxiety producing stimulus configuration. It was also used, however, to increase the relaxation of the patient on the grounds that what was good enough for King Saul is usually good enough for the patient!

(*c*) *Assertiveness and relaxation*

Savage (1962) has noted that LSD may cause an inflation of the ego which may be an effective antidote for low self esteem. It is suggested that it may also enable the therapist to evoke assertive responses which will aid in the reciprocal inhibition of anxiety.

CASE 2. REACTIVE DEPRESSION WITH ANXIETY

The sixth feature which Wolpe (1964) lists as giving complexity to a neurosis is as we have noted above, that essential stimulus antecedents of the neurotic reactions may be obscured by conditioned inhibition of associations. The case to be presented fits into this category only partially since it concerns the defence of denial and as Wolpe notes, his sixth feature is more akin to the mechanism of repression.

Mrs. Y. was a 38-year-old married woman suffering from a severe reactive depression and anxiety. We shall intersperse with the description of treatment the theoretical comments which are related to the treatment of this particular case.

The patient reported that she has always felt inferior. She had not completed her high school education due to pregnancy which necessitated an early marriage. At the age of 34 she had an operation for haemorrhoids and at 35, a non-cancerous lump was removed from her breast. At this time she could not stand to look at herself in the mirror. She felt she was not pretty enough and that her skin was horrible because of some blemishes.

She had two children, a daughter and a son, who at the time of the onset of her illness were 20 and 18 years respectively. Having rejected herself, the mother pinned her hopes on her daughter. She herself said: "I wanted my daughter to be perfect—maybe I wanted too much". The girl did what her mother wanted most of the time though she tried to remain independent and on occasion disobeyed her mother's wishes with resulting quarrels. During the first year of university she became pregnant and dropped out of university to marry. The patient had herself been working to help finance the girl's university education.

The patient almost immediately developed severe depression and anxiety, and had suicidal ideas. She was admitted to hospital and before referral to the author received a course of ECT, antidepressant medication (parstelin) and psychotherapy. Her condition had, however, grown worse rather than better.

Assessment of the patient suggested the following formulation of the development of her illness. In Mowrer's (1960) terminology, the girl had become a stimulus of hope. A generally well behaved, intelligent, attractive girl, she relieved the despair that the patient's own life thus far had generated. The daughter had become a cue for what Mowrer calls secondary reinforcement Type 2. Mowrer suggests that depression occurs in the following manner: "Clearly enough if a signal (in our case the daughter) has acquired the capacity to arouse hope, i.e. promises relief from some primary discomfort and if such a signal is present and then withdrawn before it is confirmed, there will be a recrudescence of fear, dismay, hopelessness. The individual, as one may say, 'loses hope', feels disappointed" (Mowrer, 1960, p. 164).

We have then a daughter who has become, for the mother, a source of hope suddenly letting her mother down. We can account at least in a manner that has some logical consistency, for the patient's depression. But we have not accounted for the patient's anxiety. Here Mowrer's further development of his theory is of help. He writes: "Would it not be preferable to make threat rather than frustration the common basis for these emotions (anger, fear and sorrow) and to assume that they are all *future* orientated? *Fear* is thus identifiable as the prospect of the situation *getting worse* (drive increment); anger as the prospect that something hopeful *may* be lost; and sorrow at the prospect that something hopeful is *definitely lost*. *Hope*, by contrast, is the prospect of the situation *getting better* (drive decrement). Although there is always the possibility that it will not which will presumably explain why hope and fear being mirror images of the same phenomenon are dynamically always so intertwined".

Since the patient was clearly quite anxious, the question arose—is there still some hope left which in turn generates fear? That this is plausible is suggested by the fact that the patient said she constantly wanted to ask her daughter why she behaved the way she did in becoming pregnant. She did not do so however, suggesting that she *hoped* for a satisfying explanation but *feared* that things would be made even worse.

We are still left with the question—why did the hope not extinguish?

We have noted that the girl, on occasion, did not comply with the mother's wishes. In other words, the mother received only intermittent reinforcement and it would follow that hope would not extinguish completely and immediately. It may still be argued that the girl's very decided action of leaving the university and marrying, clearly indicated that there was little room for hope. It will be remembered, however, that the patient wanted to ask the daughter why she behaved the way she did. This suggests that the patient was using the mechanism of denial to hide from the threatening facts of the matter. It is of interest that the patient refused to read letters from the daughter. During the period when the patient was afraid to look in the mirror because of her blemishes, she was also afraid to look at her daughter's face for fear she would see blemishes on it.

This little hope and much fear the patient had could not be extinguished of course because she would not face the facts (stimuli) squarely. There is a further possible reason for the patient's anxiety. By the daughter's action the patient was thrown back on herself and it seems clear why the stimulus "self" would arouse considerable anxiety. Furthermore, any

thoughts about her daughter due to the similarity of the daughter's predicament to the patient's as a girl would begin to share some of the representational anxiety response aroused by the thoughts of the patient's "self".

Thus the stimulus configuration evoking the anxiety and depression was clearly a complex one. Discussion of the problem with the patient as might be expected, did not produce any relief. An LSD session was suggested to the patient.

It was hoped that during the LSD session the complex stimulus configuration would be aroused and the patient would be desensitized to it. It was anticipated that since she would be faced with the inevitability of the daughter's action, she would become quite depressed—she would, in other words, feel the sorrow that Mowrer suggests one feels at the prospect that something hopeful is definitely lost. An important aspect of the therapeutic strategy was also to convert the patient's self concept into a cue for hope.

On the day of the LSD session the patient was given orally, at 8.30 a.m. 400 μg of LSD in water.

The onset of stage (1) of the experience (see discussion of Case 1) occurred about 15 minutes after the administration of the drug. Soothing music was played and reassurance given to the patient who passed through this stage by the end of approximately $1\frac{1}{2}$ hours. At this point the music was turned off and the patient was engaged in a discussion of her daughter and the mother's attitude towards her. Within 10 or 15 minutes the patient showed extreme agitation. Music was immediately switched on again and the patient was told firmly that she had to face now whatever thoughts were presenting themselves to her. She was told at the same time to listen to the music and realize that life was not a simple monotonous affair but was beautiful though not always gay. Within a few minutes the patient appeared to slump and began to cry bitterly. She was permitted to cry for approximately 30 minutes. The music was then changed to a much gayer mood and the therapist began to talk to the patient about her relationship with her husband—their individual and mutual interests. Emphasis was placed on the very happy future that she could have. The patient became increasingly involved in the discussion and then when the "Skaters' Waltz" was being played, she closed her eyes and said she could see herself skating. She then talked about how good a skater she had been. The therapist suggested that she could still go skating if she wished. Lazarus and Abramovitz (1962) have used emotive imagery with children to "arouse feelings of self assertion, pride, affection, mirth and similar anxiety inhibiting responses". Perhaps relaxation could be further increased with adult patients under LSD conditions by the systematic use of emotive imagery. She was then told to take a good look at herself in the mirror. From this time on the patient was relaxed and quite cheerful. At 3.00 p.m. she was given 100 mg sparine intramuscularly and at 3.30 p.m. she went home with her husband.

Three days later the patient reported that she was both happy and relaxed and began to talk about her daughter and the fact that her daughter's husband was actually a fine person. She was also beginning now to look forward to the grandchild. One year later she wrote in a letter: "I wish to report that this past year has been a most happy one for me. I have not had one day of depression". Two years later she was apparently still quite happy.

CASE 3. PERVASIVE ANXIETY

Wolpe (1964) lists pervasive anxiety as the fifth feature giving complexity to a neurosis. "The anxiety...appears to be conditioned to various more or less pervasive aspects of stimulation in general". He refers to space, time, one's own body, light ,verticality, light and shadow contrasts as pervasive aspects of experience that may be conditioned to anxiety.

Miss Z was a second year student nurse, aged 22 years with a verbal I.Q. of 144 and a performance I.Q. of 106 on the Wechsler Adult Intelligence Scale. She frequently experienced periods of panic. Typical remarks were "I can just go into a room and this feeling comes over me". "Sometimes when I look at someone in the street, I feel it." These feelings had grown worse since the age of 18 years. Her work in the hospital was below average and she was becoming withdrawn and depressed.

No attempt was made to use the usual desensitization procedures with the patient since it was not possible to find any regular stimulus to anxiety. After three sessions during which the patient's problem was investigated she was given 400 μg of LSD on one day in the manner described for the two cases discussed previously.

With the two cases discussed earlier an attempt was made (by the use of soothing music and by drawing the patient's attention at times to specific topics of discussion) to limit the amount of confusion and unhabitual perceptions of space and time produced by the drug. With the present case, an attempt was made to enhance the unusualness of the experience, by rapid changes in the kind of music played and by drawing attention to cracks in the wall, the folds of the drapes and the spatial properties of the room. After an initial slight resistance, the patient became amused by her unhabitual perceptions and was shortly laughing heartily. It was strongly suggested to her that acute perceptive ability and particularly an ability to perceive things in an unusual manner was an asset. She became quite relaxed and talked more freely than she had done previously. The session was terminated at 3.30 p.m. by sparine.

The patient was seen three days later and reported that she had a comfortable feeling and had not experienced any panic attacks. One year later she said that she had remained much more relaxed and happy than she had ever been before. She now perceived things as being beautiful rather than frightening.

CONCLUSIONS

Lazarus (1961) has noted that the prerequisites for the effective application of desensitization are: (1) that "reasonably well defined stimulus configurations can be identified..." and (2) "...the ability to conjure up reasonably vivid visual images which elicit emotional reactions comparable to the feelings evoked in the real situation".

In the case of complex neurotic conditions, it is sometimes difficult to satisfy such conditions. It is proposed that structuring the LSD experience in terms of behaviour therapy techniques may enable one to treat complex neurotic illnesses.

Though there has been no experimental testing of the hypothesized therapeutic processes, therapeutic results to date give some confirmation of the hypothesis. It is planned to attempt to test experimentally the hypothesized effects of LSD and to measure objectively the therapeutic results of LSD administration. It is noteworthy that other therapists such as Sandison (1954), Robinson, Davies, Sack and Morrissey (1963) though not using behaviour therapy techniques, have found LSD most useful in those patients with "free floating anxiety", conditions which behaviour therapists have found difficult to treat (Lazarus, 1963). Zigler and Philips (1961) noted in their examination of 793 patients admitted to Worcester State Hospital during a 12-year period that whereas general tension states occurred in 37 per cent of the cases, phobias occurred in only two per cent of the cases. Though it may be argued that phobias would probably occur more frequently in an outpatient psychiatric population, it is suggested that the difference, if any, would be slight. These findings indicate the need to develop methods of treatment for general anxiety states.

The most puzzling factor about the effects of LSD is the effectiveness of one administration of the treatment. Unger (1963) says we have in the LSD experience "...a situation in which formerly 'dominant' or high probability responses in a repertoire were 'suddenly' greatly reduced in frequency of occurrence; and *vice versa* uncommon responses, or those formerly *low* in a hierarchy would appear with greatly elevated frequency". This matter has still to be thoroughly investigated. Unger (1963) has indicated that "The only experimental paradigm which appears even to have approximated this order of events have revolved on *direct intra-cranial electrical stimulation*" (Olds and Milner, 1954 etc.). He notes: "Certainly, with response contingent reinforcement of this kind, the repertoire of many rats and monkeys have been dramatically altered in a very few moments...".

The implications of LSD treatment for mental health programs, if therapeutic results continue to hold up, are impressive. Lazarus (1961) has suggested that desensitization can be administered in groups with little loss in effectiveness for phobic sufferers. Slater, Morimoto and Hyde (1957) found that normal subjects showed less anxiety after taking LSD when in groups than when individual sessions were conducted. Perhaps a combination of LSD, behaviour therapy and group psychotherapy will enable us to make sizeable inroads on the extensive mental health problem facing us.

A word should be added regarding the negative aspects of LSD administration which have recently received much publicity. To date no harmful physiologic effects have been noted. The psychological effects are very dramatic and as has been indicated in this paper, may be used therapeutically. The effects have been harmful apparently when LSD has been administered in a party atmosphere embellished with beatnik and occultist jargon. This, of course, should do no more to the reputation of LSD as a therapeutic adjunct than the dire effects of surgery on a kitchen table would do to surgery conducted properly in the proper setting.

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