Letters to the Editor

LSD and Schizophrenia

To the Editor.—Vardy and Kay,[1] reporting on LSD and schizophrenia, have addressed a significant issue for those attempting to define the nature and etiology of schizophrenic illnesses. The role of LSD and other hallucinogens, dopamine, and other amines (endogenous or exogenous) in functional psychoses still remains to be clarified. There has been dispute as to whether intoxication with LSD is a good model for schizophrenic psychosis (with the predominance of opinion being that it is not), and uncertainty as to the relative role of monoaminergic pathways in schizophrenic illness. With respect to LSD (which is clearly active in serotoninergic systems[2]) and serotoninergic activity in schizophrenics, at least eight studies have suggested serotoninergic abnormalities in schizophrenia.[3-8] The conclusion reached by Vardy and Kay was that, in most respects, their patients who had LSD-induced psychosis could not be significantly differentiated from control schizophrenics.[1] There are problems with their study, however, which make interpretation difficult.

The course of illness in terms of subsequent hospitalizations for the two groups was similar during the next three to five years. However, no information was given as to whether subsequent hospitalizations represented recurrences of drug-induced psychosis in patients who did not manifest psychotic symptoms when free of drug use, or whether in fact recurrent psychotic episodes developed in those patients without further drug abuse. This would be pertinent to the question of an underlying predisposition to schizophrenia in those patients.

The incidence of parental illness requiring hospitalization was found to be essentially the same in the groups with LSD-induced psychosis and schizophrenia. The relevant issue, however, is the incidence of *schizophrenia* in the parents of subjects in these two groups. In their study, Vardy and Kay included all parents with a history of "mental illness requiring hospitalization," which would likely include a significant proportion of parents with major depressive episodes, bipolar disorder, and other conditions in addition to schizophrenia.[1] The sample was sufficiently small so that pursuit of the records of hospitalized parents might be feasible to clarify this issue. A related problem is that the incidence of schizophrenia in parents of schizophrenics was obtained from the literature rather than from the parents of the control group. Since the control group was from the same institution, was it feasible to obtain the incidence of schizophrenia from the case records of parents for a more valid comparison?

A significant study, not noted by the authors, was done using patients in a Veterans Administration Hospital,[9] and supports the conclusion by Vardy and Kay that hallucinogen abuse might precipitate chronic psychosis in the schizophrenic spectrum.[1] Due to the methodologic limitations mentioned, however, I think it is premature for the authors to have stated that the family history and subsequent course of schizophrenics and patients with LSD-induced psychosis do not differ. Further exploration is warranted.

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In Reply.—Dr Weaver has posed some thoughtful questions about our article that deserve a point by point reply.

1. Regarding the nature of the rehospitalizations of our patients who used LSD, patients' self-reports on follow-up interview, as well as their hospital records, indicated that their readmissions were not related to LSD or other hallucinogenic drugs. As a matter of fact, only two of the 21 patients in the LSD follow-up group reported that they had used LSD occasionally since their first hospitalization, but they were *not* among those who were readmitted. Some of the rehospitalized patients reported some occasional use of marijuana or alcohol, but there is no evidence that their use was related to their relapses.

2. As we have noted in our report, we could not with confidence rule out the possibility (which we suspected) that there were major depressive or bipolar illnesses among the reported cases of parental psychosis requiring hospitalization. Unfortunately, the patients' family reports on which the data were based did not include specifics on the exact diagnosis of the hospitalized parent. Furthermore, in most cases, the hospitalization of the parent occurred many years before that of the offspring and in hospitals other than our own, so that these records could not be pursued reliably.

3. To compare the incidence of parental psychosis in our LSD-using sample (n = 52) with the small number of schizophrenics in our comparison group (n = 29) would have opened the study to the strong likelihood of type II error, ie, affirming the absence of difference when indeed one may have existed.[1] This is especially true since the effect size, ie, the incidence of parental psychosis in LSD-using patients (13.5%), was also small, and only a vast difference between the two groups would have achieved statistical significance. Therefore, we chose instead to use the larger epidemiologic sample of Fowler et al,[2] which increased the statistical power and decreased the chance of bias in the direction of type II error, allowing us to conclude with greater confidence that patients with LSD-induced psychosis are not different from schizophrenics in their rates of parental psychosis.

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LSD Flashbacks

To the Editor.—I read with interest Abraham's article on "Visual Phe-

nomenology of the LSD Flashback."[1] The description of visual flashbacks and the apparent reduction in symptoms with the administration of a benzodiazepine called to mind the case of a woman I treated whose major difference from the patients in Abraham's group was the absence of a history of LSD ingestion.

This patient had experienced the onset of visual symptoms at the age of 17 years during a near-psychotic upheaval, without any known exposure to hallucinogens. Of the 16 visual symptoms described by Abraham, my patient reported 14. Of the remaining two, she did not spontaneously endorse color confusion or positive afterimages but did not deny them. These visual distortions had persisted during the 20 years since their onset, although with decreased frequency. During short trials of two neuroleptics (thiothixene and trifluoperazine hydrochloride), she reported an increase in symptoms. With small doses of diazepam, symptoms decreased in frequency as well as intensity.

Various hypotheses might be raised as to the cause of her visual disturbances. The patient reported deliberate induction of some of her visual symptoms during adolescence but others appeared unbidden. She may have unknowingly ingested a hallucinogenic substance during a period of time when she occasionally ate wild plants, but she never used marijuana or other street drugs. As Abraham mentioned concerning the LSD flashbacks, these visual symptoms might represent a seizure equivalent as evidenced by the reduction after administration of a benzodiazepine. Perhaps a kindling effect caused an increase in spontaneous occurrence after deliberate induction in the past. The patient's visual distortions might also represent a migraine prodrome as she occasionally suffered migraine headaches with preheadache fortifications and, on one occasion, homonymous hemianopia followed by unilateral headache and nausea. Color flashes occurred during stressful situations when the patient was unable to express anger. A several-week trial of propranolol hydrochloride did not decrease the frequency of visual symptoms and was discontinued because of side effects. At the time I saw this patient (20 years after the onset of the visual symptoms), she was never psychotic and not abusing any exotoxin. Visual evoked potentials were normal and an EEG was read as a grade I dysrhythmia.

It would be interesting to know if the non-LSD–using control group in Abraham's study contained a few patients endorsing many of the 16 visual distortions ranked, or if reporting of various individual visual symptoms appeared to occur randomly. Have others encountered similar symptoms in patients without a history of hallucinogen ingestion?

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1. Abraham HD: Visual phenomenology of the LSD flashback. *Arch Gen Psychiatry* 1983;40:884-889.

In Reply.—Dr Hoffman's suggestion that one may find many of the visual disturbances that were described in my article[1] in non-LSD–using persons is well taken. The diagnosis of the LSD flashback syndrome, like that of epilepsy, is primarily made by carefully obtaining a history. But before drawing such a conclusion, the clinician has the responsibility of excluding the possibility of potentially more dangerous and treatable conditions that appear as visual disturbances. These include anatomic lesions and infections of the brain, toxic and metabolic aberrations, deliria, dementias, disturbances of sleep and consciousness, and entoptic imagery arising from disorders within the eye itself.

Among the non-LSD–using subjects in my study, there were two who reported eight and nine different types of visual disturbances, respectively. No diagnostic explanations could be found. The other control subjects reported five or less such disturbances. In addition, one non-LSD–using subject who was interviewed as a control for a subsequent study of psychophysical functions was rejected from that study because of a clinical diagnosis of grand mal epilepsy. This patient reported six distinct visual disturbances. Finally, one subject was included in the original report after she had ingested LSD four times, and subsequently reported six visual disturbances. But a follow-up three years later revealed that in that patient the clinical picture of temporal lobe epilepsy developed, which was responsive to treatment with carbamazepine.

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1. Abraham HD: Visual phenomenology of the LSD flashback. *Arch Gen Psychiatry* 1983;40:884-889.

Research Couple Finds Novel Use for ARCHIVES

To the Editor.—We recently had an interesting experience that we would like to share with other readers of the ARCHIVES. On Jan 18, one of us (J.B.W.W.) went into labor prior to giving birth. Both of us had attended classes in the Lamaze techniques for natural childbirth. The techniques of minimizing the pain of labor included coach (R.L.S.)-assisted relaxation, various types of breathing, and concentration on a visual focal point in the room, such as a picture.

As labor progressed, we tried these techniques but encountered several difficulties. First of all, J.B.W.W. had difficulty sustaining concentration on the picture chosen as the focal point because the stimulus of the picture never varied. Second, R.L.S. had difficulty sustaining the constant repetition of the relaxation litany. As verbal output by R.L.S. decreased and contractions of J.B.W.W. increased, she finally admonished, "Talk to me!" R.L.S. replied: "I don't know what to say." J.B.W.W., with a burst of creativity, suggested that during the contractions he read aloud articles from the January 1984 ARCHIVES that he had brought along to read during the first stage of labor.

The effect of steady reading by R.L.S. from various ARCHIVES articles was immediate and substantial: J.B.W.W. found that this constantly varying and engaging stimulus was much easier for her to concentrate on as a distraction from the labor pain. This beneficial effect appeared to be unvarying across articles with only one exception. Toward the very end of labor, R.L.S. started to read an article reporting a study of the factors associated with a higher incidence of schizophrenia in persons born in the winter months.[1] This caused more anxiety than relief of pain.

We recognize the limitations of these nonblind, single-case, crossover design observations. Future research is necessary to determine if the effects that we found are specific to the reading of the ARCHIVES, or as might be the case, if they can be obtained with the reading of any engaging material.

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