Papers and Originals

Abuse of Methylamphetamine

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Summary: Seventy-four regular users of methylamphetamine injections were interviewed in four settings by use of a relatively structured standardized questionary. All but two had injected methylamphetamine within the previous 48 hours and had on average been using methylamphetamine continuously for 19 months.

Significant features found in those interviewed were British nationality, single status, under 25 years of age, and a history of parental separation, absence, or bereavement. Educational standards were poor and a history of consistent truancy from secondary school was frequently reported.

Comparison of their best and present occupations showed that downward drift had occurred. Forty-one per cent. of the sample had some definite or tentative evidence of neurotic disturbance in childhood. Twenty-three per cent. had been sentenced to detention centre, approved school, or Borstal training, and 20% had been sentenced to prison. Sixty-five per cent. had been charged with offences of one sort and 24% had been convicted of both drug and non-drug offences.

A significant number had been heavy drinkers in the past, while most had been, and in many cases still were, multiple-drug users who had first started to use drugs between the ages of 16 and 20 years. They tended to have obtained methylamphetamine initially from people they knew or from sellers. While the majority were currently getting methylamphetamine from doctors, the fact that 40% gave non-medical agents as their major source of drugs suggests that a significant number were supplementing their supplies from illicit sources. More than one-half were rated as being continually involved in the "drug scene."

Most of those interviewed accepted frequent psychotic episodes as a side-effect of their use of methylamphetamine. Malnutrition, weight loss, and sleep disturbance were frequent.

Introduction

In the summer of 1968 an epidemic of methylamphetamine-injecting occurred in London. Young people with amphetamine psychosis were encountered by medical and social work agencies (*Lancet*, 1968 ; Glatt, 1968 ; James, 1968), and phrases such as "meth head" and "speed freak" became part of the underground vocabulary. Some doctors working in private practice or hospitals prescribed methylamphetamine as a substitute for cocaine. By the spring of 1968, however, two doctors were prescribing quantities of the drug to an extent which contributed directly to the growth of the illicit market. In October the manufacturers, by arrangement with the Ministry of Health and the British Medical Association, withdrew methylamphetamine from retail pharmacists, and this particular epidemic was curtailed.

The aim of this paper is to report the characteristics of some of the young people who were involved in this epidemic and to describe the effect which the drug had on them.

The Study

This study lasted from the beginning of June to the end of July 1968. Those interviewed were a relatively heterogeneous if not representative sample of methylamphetamine users drawn from four different settings, all in London.

Setting	No. of Subjects Interviewed
Single-handed general practice which included a large number of patients using amphetamines	33
Group practice treating a number of addicts by clinical and community means	12
Outpatient clinic of a psychiatric hospital	15
Community centre run by a central London church ...	14

All of those interviewed were rated as reasonably co-operative and none refused to be seen when approached. There were five interviewers—two psychiatrists and three psychologists. Three of the interviewers completed 88% of the schedules and interviewed subjects in all four settings. All five interviewers had experience of using the schedule finally adopted before interviewing subjects included in the sample.

Results

Description of Sample

Demographic.—The sample was predominantly of British nationality (97%).[1] The ratio of males to females was about 4:1. Seventy-four per cent. were single, 7% were currently married, 9% admitted to cohabiting, and another 9% were either separated or divorced. The average age of those interviewed was 21·5 years, with a standard deviation of 3·5 years and a range of 17–36 years. Eighty-two per cent. were under 25 years of age.

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[1] In all cases where percentages are quoted they have been calculated with reference to the total number of 74. They therefore represent minimum estimates. Where the relevant information was not obtained in all cases this is indicated.

Home Environment.—The fathers of 16% had died when the subjects were on average 12 years old; there were 13% whose mothers had died when the subjects were on average 13 years old. In a further 20% of instances parents had separated when the subjects were on average 6 years old (range 1–14 years). In 5% of cases information relevant to separation was lacking. In 32% of instances patients' fathers had been absent from the home for two or more years before the patient was 16, excluding those cases in which the father had died before the patient was 16. The comparable figure for mothers was 8%. Five per cent. of those interviewed had been formally adopted. Of the total sample slightly less than half (34) had suffered parental bereavement or separation before they were 16 years old. Comparison of the fathers' socioeconomic grouping with that of economically active and retired males aged 15 and over in the Greater London area (General Register Office, 1967) showed that the fathers diverged very little from this norm.

Family Pathology.—In 18% of cases the subject's father or father surrogate had a drinking problem which was defined in terms of social, physical, or mental impairment of a non-transitory kind. Seven per cent. of fathers had criminal convictions and in 3% there was evidence of drug abuse other than alcoholism. Five per cent. had either been admitted to a psychiatric hospital or consulted a psychiatrist. In 9% insufficient information was obtained. The incidence of social pathology among the mothers or mother surrogates was much lower. In only 3% of cases was there any evidence of a drinking problem, though 4% appear to have abused other drugs. None had been convicted of criminal offences. In 14% a history of psychiatric disorder was noted. Four per cent. of subjects were unable to provide sufficient information. No attempt was made to differentiate between the siblings of the same subject, so that if *any* sibling had a drinking problem this was noted. As a consequence the actual degree of disturbance present in siblings of a comparable age is unknown, since many of the subjects had siblings considerably younger than themselves. Even so 7% of the subjects had siblings who displayed a drinking problem and 16% had siblings who abused other drugs. Nineteen per cent. had siblings with criminal convictions and 12% had siblings who had a history of psychiatric disorder. No relevant information relating to siblings was obtained in 5% of cases.

Current Situation

Diet.—Thirty per cent. of those interviewed had only occasional snacks in the previous 24 hours and 4% had eaten nothing at all. Only 23% had what could be regarded as three adequate meals in the previous 24 hours. Seventy-six per cent. of the sample had observed a significant weight loss since starting to use methylamphetamine.

Employment and Income.—Forty per cent. claimed to be currently employed (about half in regular jobs), while 57% were not working at all. Two women described themselves as housewives. In the previous week 46% had derived income from regular or casual work, 46% drew welfare benefits, 36% were dependent on their families, 38% received income from illicit activities (selling drugs, prostitution, etc.), and 72% borrowed from their friends. In that any one individual might have several sources of income these categories and the percentages calculated from them are not mutually exclusive.

Residence.—Thirty-eight per cent. were either living with their parents or wife and 43% had some other fixed abode. The 19% who had no fixed abode tended to be accommodated by a circle of acquaintances and friends. Sixty-eight per cent. of those questioned had slept "rough" at one time or another, but only 18% had ever used a reception centre or similar residential hostel.

"*Involvement.*"—Assessing the extent to which those interviewed were involved in the drug scene, we found that 61% were "continually involved" in that they spent most of their time either obtaining or "fixing" drugs and were constantly in the company of other drug users. Thirty-one per cent. appeared to be only "occasionally involved," and 7% were isolated from the scene, since their only contact with other drug users occurred when they collected their prescriptions.

Sleep.—Only 22% had slept for more than two hours in each and every one of the previous seven 24-hour periods, while 4% had not slept for this length of time in any of the previous seven 24-hour periods. The actual distribution of "nights" slept in the previous week is shown in Table I. Thirty-eight per cent. of those interviewed had slept in different places in the previous seven days/nights and 34% of the total had slept in other than a bed. Fifty-seven per cent. kept abnormal hours, which in the main consisted of going to bed in the early hours of the morning and waking at midday.

TABLE I.—*Number of "Nights" Slept in the Previous Week*

"Nights"	No. in Study	%	"Nights"	No. in Study	%
7	16	22	3	11	14
6	13	18	2	4	5
5	13	18	1	1	1
4	13	18	0	3	4

Personal History

Schooling.—Sixty-five per cent. had attended secondary modern schools, 8% comprehensive schools, and 15% grammar schools; 8% had been boarders at public schools; and in 4% the relevant information was not obtained. The average age at leaving school was 15·38 years, with a range of 13–18 years. Eight per cent. left school before reaching 15, 61% left in the year they turned 15, while 30% continued their formal education beyond the permissible leaving age. Sixty-five per cent. had not taken any examinations while at school, 12% had taken some O levels, and 5% had progressed to A levels; 14% had taken other certificates. In 15% there was some indication of scholastic decline as indicated by a downward change in "stream." The majority (81%) had not pursued any further education on leaving school, and of the 10% who did part-time courses 80% had discontinued these. A similar trend was apparent among those who began full-time further education; of the 9% who started 78% had discontinued this at the time of the interview. Consistent truancy, defined as frequent absence for one or more half-days per week, was relatively rare in primary school, being found in only 1%; 3% admitted to occasional absences. By contrast consistent truancy was relatively common in secondary school, being reported in 43% of cases, while a further 8% were occasionally truant. In both instances the figures given are minimum estimates, as in 30% of cases information was not obtained for primary schooling and in 22% for secondary schooling. Truancy in secondary school mainly occurred in the year in which the subjects left school and often immediately preceded their leaving.

Employment.—In addition to details about previous and current employment, subjects were asked whether they had entered into any training or apprenticeship on leaving school. Thirty-four per cent. of the sample had entered some form of apprenticeship but two-thirds of these had discontinued this training and only 11% had completed their course. Table II compares, according to the Registrar General's Classification of Socioeconomic Groups (General Register Office, 1967), the subjects' present and best-ever occupations. Most of those interviewed had at best been employed in semi-skilled occupations. Compared with their fathers they were employed in occupations having a lower socioeconomic classification. A comparison of their best and present occupations showed that there had been a downward drift.

Medical and Psychiatric History.—Forty-one per cent. of the sample had some tentative or definite evidence of neurotic

disturbance in childhood. Definite psychological disturbance was inferred from actual psychiatric referral, while frequent and intense nightmares, school refusal, and eating and sleeping disturbances were accepted as tentative evidence of disturbance. Eleven per cent. of the sample had been referred to a psychiatrist during adolescence for treatment which was not associated with their drug-taking.

TABLE II.—*Socioeconomic Grouping by Occupation (Percentages in the Body of the Table)*

Classification	Socio-economic Groups	Population Statistics*	Patient's Best Occupation	Patient's Present Occupation
1	3, 4	5·4	—	—
2	1, 2, 13	11·8	1·4	1·4
3	8, 9, 12, 14	34·1	32·4	21·6
4	5, 6	23·1	23·0	21·6
5	7, 10, 15	14·3	21·6	24·3
6	11	8·1	14·9	23·0
7	16, 17	3·2	1·4	—
Not applicable			4·1	1·4
Not known ..			1·3	6·8

* Economically active and retired males aged 15 and over (Greater London Area, 1966).

Criminality.—Twenty-three per cent. of the subjects had been sentenced to detention centre, approved school, or Borstal training, and 20% had been sentenced to prison (excluding remand). In all, 32% of the total sample had been sentenced to one or other institution and 11% had been sentenced to both. A larger percentage of the sample admitted to delinquent or criminal behaviour, though in many instances this did not result in prosecution. Sixty-nine per cent. admitted to stealing, 19% to breaking and entering, 22% to vandalism, and 42% to the illegal use of a motor-car. Twenty-two per cent. had been charged with violence, usually resisting arrest and using abusive language. Forty-five per cent. of the sample had been charged with a drug offence, and almost all had been frequently searched by the police. An identical percentage (45%) had been charged with other (non-drug) offences. Sixty-five per cent. of the sample had been charged with offences of one sort or another and 24% had been convicted of both drug and non-drug offences.

Sexual Behaviour.—Twenty-four per cent. of the males and 56% of the females questioned stated that they first had sexual intercourse when aged 15 or less. In only 3% of cases, all male, was sexual intercourse denied. In a further 11% of cases, again all male, the relevant information was not obtained. Five per cent. of males admitted to prostitution, compared with 31% of females. Half of the females admitted to homosexual activities, compared with 19% of the males. In 8% of cases, all males, insufficient information was obtained on this question.

[2] A more detailed table showing the actual distribution of ages at which drugs were used is available on request.

Drug History

Use of Alcohol.—Whereas 89% of the subjects had drunk alcohol on fewer than three days in the previous week and 58% had not had a drink at all in that period, 24% of the sample reported evidence of the problem of drinking in the past. In most cases problem drinking predated the use of other drugs. Only 3% of the sample reported having a drink on each of the previous seven days.

Table III gives the mean age at which drugs were first used together with the frequency with which they were reported as having been taken.[2] While the age of first use varied from 12 to 35 (depending on the drug in question) usually drugs were first taken between the ages of 16 and 20. That the subjects included in the sample had been, and in many cases still were, multiple drug users is illustrated by the fact that over half reported having taken heroin, methadone, hallucinogens, sedatives and tranquillizers, cannabis, amphetamine/barbiturate tablets, or amphetamine tablets in addition to methylamphetamine. The fact that all of these drugs were taken in the main between the ages of 16 and 20 suggests that they were used concurrently.

TABLE III.—*Mean Age at Which Drugs Were First Taken and the Frequency of Their Report*

	Mean Age at First Use	Standard Deviation	Range	N (Frequency of Report)	Not Taken	Not Known
Amphetamine tablets	16·88	2·40	12–23	54 (73%)	16	4
Amphetamine/barbiturate mixtures ..	16·96	2·42	13–25	65 (88%)	7	2
Cannabis	17·16	2·14	12–23	67 (91%)	5	2
Sedatives and tranquillizers ..	18·64	2·51	14–25	39 (53%)	31	4
Other (mainly ephedrine)	18·66	4·22	14–25	6 (8%)	66	2
Cocaine	18·67	2·42	14–24	34 (46%)	33	7
Glue and solvents ..	18·76	3·65	14–28	13 (18%)	58	3
Other opiates (mainly opium)	18·96	2·18	15–25	28 (38%)	39	7
Hallucinogens ..	19·24	2·35	16–26	37 (50%)	33	4
Heroin	19·82	3·45	14–34	64 (86%)	10	0
Methylamphetamine injections ..	19·82	3·20	15–35	74 (100%)	0	0
Ritalin (methyl phenidate) or preludin phenmetrazine injections ..	19·88	2·39	15–24	17 (23%)	54	3
Methadone ..	20·95	3·53	16–34	44 (59%)	28	2

Table IV shows that as well as their regular use of methylamphetamine about half of the sample had at one time been regular users of cannabis, amphetamine/barbiturate tablets, heroin, or amphetamine tablets. About 20% were at one time regular users of hallucinogens, sedatives and tranquillizers, methadone, or cocaine.

As regards their *current* use as well as their present use of methylamphetamine about 30% of the sample were also regular users of amphetamine/barbiturate tablets, methadone, cannabis, or heroin. Sixteen per cent. continued to use sedatives and

TABLE IV.—*Maximum and Current Intensity of Drug Use (Percentages in the Body of the Table)*

	Methyl-amphetamine Injections	Cannabis	Amphetamine/ Barbiturate Mixtures	Heroin	Amphet-amine Tablets	Methadone	Sedatives and Tran-quillizers	Hallu-cinogens	Cocaine	Other Opiates	Ritalin or Preludin Injections	Glue and Solvents
Maximum intensity of use: Known to have taken but nothing more recorded ..	3	4	5	0	12	4	5	7	8	5	5	4
Isolated use ..	0	8	1	8	4	15	3	8	14	22	12	11
Intermittent use	1	26	20	28	12	19	19	23	12	18	8	3
Regular use ..	95	45	61	50	42	23	24	15	19	1	1	3
Not taken ..	0	7	9	14	22	38	46	45	46	53	73	78
Not known ..	1	0	3	0	8	1	3	3	1	1	0	1
Current intensity of use:												
Not using now	3*	35	40	36	49	20	23	28	38	35	20	19
Occasional use	1	32	11	28	11	14	12	19	5	7	4	0
Regular use ..	96	24	34	22	11	26	16	3	4	1	0	0
Not taken ever	0	7	12	14	23	38	42	45	47	53	73	80
Not known ..	0	1	4	0	7	3	7	5	5	4	3	1

* The 3% shown as not currently using methylamphetamine represent two subjects who had not injected methylamphetamine within the previous 48 hours (the period accepted as defining current use of methylamphetamine) but who were otherwise regular users of the drug.

tranquillizers at regular intervals and 11% used amphetamine tablets regularly.

A comparison of maximum intensity of use and current intensity of use shows that in all cases, with the exception of methylamphetamine and methadone, maximum use exceeded present use.

There was considerable variation in the quantity taken either maximumly or currently (Table V), and in the case of both methylamphetamine and heroin the average maximum dose exceeded the average current dose. This decrease in dose is particularly significant in the case of heroin, where it parallels a decrease in the number of persons currently using heroin. The decrease in the average dose of methylamphetamine taken reflects a diminution in the quantity reported taken, as all of those included in the sample were currently using methylamphetamine.

TABLE V.—*Maximum and Current Dose of Methylamphetamine and Heroin*

	Daily Dose of Methylamphetamine (Ampoules)*		Daily Dose of Heroin (grains)	
	Maximum	Current	Maximum	Current
Mean	8·65	5·00	2·92	1·27
Standard deviation	8·46	2·34	3·43	1·77
Range	2–20	1–12	1–16	1–5
N	67	72	50	30†
Not known	7	2	14	7
Not taken ever	0	0	10	10
Not taken now		0		27

* One ampoule of methylamphetamine contains 30 mg. and 1 grain of heroin is equivalent to about 60 mg.
† Included among the 30 subjects whose current dose of heroin was known are 17 whose current daily dose was less than 1 gr. (60 mg.). Some of those using very low doses were, however, regular users.

Methylamphetamine: Supply and Pattern of Use

Table VI shows that initial suppliers tended to be either people the addict knew or sellers. By contrast the majority of those interviewed said that their current major source of supply was a doctor. This significant increase in the number of persons receiving methylamphetamine from medical practitioners is partly a reflection of the fact that three of the settings in which patients were seen were medical establishments. What is significant, however, is the fact that so many bought methylamphetamine initially from people they did not know, or at most had only a passing acquaintance with. The finding that 40% gave non-medical sources as their current majour source of supply despite the fact that the majority were also getting methylamphetamine from doctors suggests that a significant number were supplementing their supplies from illicit sources. This is also confirmed by the fact that 23% gave a "seller" as their current major source of supply.

TABLE VI.—*Initial and Current Major Source of Supply of Methylamphetamine*

	Initial Supplier	Current Major Source of Supply
Doctor	8%	57%
Person known to subject	47%	16%
Other giver	9%	1%
Seller	32%	23%
Not known	4%	3%

Forty-one per cent. of those interviewed said that they first took methylamphetamine orally as opposed to 30% who injected it intramuscularly and 12% who injected it intravenously. In 15% of cases the relevant information was not obtained and in 3% only that a needle had been used was recorded.

In the 85% of cases in which information was obtained the average period elapsing between first and daily use of methylamphetamine was seven weeks, with a range of 0 to 130 weeks. In all, those included in the sample had used methylamphetamine for an average of 19 months, though the length of use varied from 2 months to 10 years. Only 3% of cases had used methylamphetamine for three months or less, suggesting that in this sample at least there had been no tendency for methylamphetamine to have been first taken following the restriction of heroin and cocaine in April 1968, though the indirect influence of restrictions placed on individual doctors cannot be discounted.

In contrast to Kramer *et al.*'s (1967) finding, only a minority (8%) of those interviewed in the present study reported a cyclic pattern of use. By far the greatest number (70%) appeared to use methylamphetamine continuously, abstinences of one or two days occurring when they were unable to get supplies. Thirty-one per cent. reported that they had undergone one or more "voluntary" (non-hospital) withdrawals.

Heroin: Supply and Pattern of Use

Most of those who reported having taken heroin were initially supplied by either people they knew or sellers. Only 3% claimed to have been initially supplied heroin by a medical practitioner. While fewer people were currently using heroin than reported using it at one time, the principal sources of supply continued to be friends or sellers, with medical practitioners supplying a slightly increased number (Table VII).

TABLE VII.—*Initial and Current Major Source of Supply of Heroin*

	Initial Supplier	Current Major Source of Supply
Doctor	3%	8%
Person known to subject	53%	15%
Other giver	5%	1%
Seller	23%	26%
Not applicable	14%	45%
Not known	3%	5%

Those who had used heroin began taking it daily on an average of 17 weeks after first injecting it, though individuals varied considerably (range 0 to 84 weeks). In 11% of cases the rate of progression could not be established.

Nineteen per cent. claimed to have used heroin continuously. That the majority of the subjects who reported using heroin had been physically dependent on it is suggested by the fact that 57% reported suffering withdrawal symptoms.

Side-effects of Methylamphetamine

All subjects were asked whether they had experienced "the horrors" when taking methylamphetamine. In almost all cases the subjects then described the various adverse effects experienced. On those isolated occasions in which subjects asked what was meant they were instructed to describe any effect of their taking methylamphetamine. The question was phrased in this way in order to avoid stereotyped answers—for example, hallucinations, paranoid delusions, etc.—nevertheless, when coding the responses the answers given were cast in these conventional psychiatric categories. Particular care was devoted to the scoring of these responses in order to ensure a standard interpretation.

Table VIII shows that, with the exception of olfactory hallucinations, these phenomena were frequently reported—so frequently as to be accepted and adapted to by the methylamphetamine user. Despite their familiarity most of the subjects had no insight into the unreality of the delusional and hallucinatory phenomena at the time of their occurrence, though 58% stated that they appreciated their delusional nature now. Fourteen per cent. still appeared to lack insight. In 5% of cases insight appeared to be variable, present on some occasions but absent on others, and in 8% of cases the degree of insight could not be established. Only 15% of those questioned claimed to have insight at the time of their occurrence.

Delusions of persecution and ideas of reference most often referred to police activity, and in some cases probably had their basis in frequent police searching. That these assumed true psychotic proportions, however, is illustrated by their vividness and irrationality. Visual hallucinations almost invariably reflected concern with the police and tended to be more common at night and when the subject was alone. The most common form of auditory hallucination was for the subject to hear his name called, usually with ominous implications. Formication was the most frequent tactile hallucination, and itching was also common.

TABLE VIII.—*Delusional and Hallucinatory Side-effects of Methylamphetamine Abuse*

Delusions of persecution	77%	Tactile hallucinations	38%
Ideas of reference	55%	"Bugs"*	24%
Visual hallucinations	54%	Olfactory hallucinations	9%
Auditory hallucinations	59%		

* "Bugs" were not distinguished from tactile hallucinations in 31% of cases.

It did appear that these phenomena were to some extent dose-related, though a more common correlate was the degree of sleep deprivation of the subject. That this should be the case is hardly surprising when it is considered that sleeplessness itself is accompanied by an increase in hallucinogenic phenomena.

Other effects were equally prominent. Hyperactivity was reported in 49% of cases and anxiety amounting to panic in 36% of subjects. Aggression was felt by 45% of those questioned but was rarely acted out. The majority of those who reported feeling aggressive said they felt irritable and short-tempered. Aggression, agitation, and anxiety were most frequently associated with "coming down" and were at least partly contributed to by the need to obtain further supplies of the drug.

Being "hung up" was often reported (78%). While subjects varied considerably in their description of this phenomenon, and in some cases used it merely to refer to dependence, it was most frequently used with reference to a pattern of obsessional rumination and compulsive behaviour. Subjects reported obsessionally tearing up pieces of paper or tickets, meticulously searching drawers and pockets, and re-reading without comprehension.

Thought disorder was also reported in half the cases and was described as "like having too many thoughts in your head at once . . . great rapidity of thought . . . enabling one to anticipate what others are going to say." In some cases methylamphetamine was described as "sharpening" thought.

Despite the fact that 47% claimed to have overdosed at least once, only 24% had been medically treated for overdose. Nineteen per cent. of subjects had been admitted to hospital once following an overdose and 4% had two hospital admissions for overdose. Fourteen per cent. had contracted septicaemia, but only one had been medically treated, while 35% had had hepatitis, of whom only slightly more than half (14) had been medically treated for this condition. In addition 26% said they had developed abscesses or ulcers, which in 47% of those affected resulted in medical treatment.

Very few of those interviewed had been admitted to hospital for drug withdrawal. Fifteen per cent. had one such admission, 5% had two admissions, 3% had three admissions, and one person had been admitted five times.

Discussion

The design and execution of our study are open to several criticisms. The final strategy represents a compromise between the niceties of research method and the limitations imposed by realities of the situation. While considerable care was exercised in the design and standardization of the questionary and its subsequent coding, its use was affected by several factors over which we had no control. Patients were frequently in a very agitated state, often coming to the interview after injecting methylamphetamine or else threatening to terminate the interview to accomplish this. The garrulousness caused by methylamphetamine made the interviews exercises in discursiveness and imposed extreme difficulties in ensuring that comparable answers were obtained to standard questions. The fact that in some instances the information was not obtained attests to these difficulties. Seeing patients in various and in some cases unconventional settings also imposed limitations which were justified only by the desire to survey a heterogeneous sample.

The difficulties in conducting the interview must raise questions as to the validity of the information obtained—as does the fact that we were never able to obtain independent evidence about the accuracy of the information given. The estimates of antisocial and criminal behaviour obtained are therefore likely to be underestimates rather than overestimates. Despite these reservations we were impressed by the willingness with which subjects talked about their criminal involvement once assured of the confidentiality of their answers—a willingness no doubt facilitated by their use of methylamphetamine.

Who are the Methylamphetamine Users?

It is obvious that methylamphetamine users do not conform to any one stereotype. In the sample were middle-class girls brought up, and in some cases continuing to live in, conventional middle-class homes, and East End boys who had been involved in a variety of criminal activities since early adolescence. What was common to these various subjects could often be directly attributed to the drugs they were taking. The fact that in 22% of cases regular heroin use preceded regular methylamphetamine use while in 12% of cases methylamphetamine use preceded heroin use may reflect a differential identification with the drug culture; a differential involvement which the present form of analysis does not allow us to pursue.

To what extent does personality disturbance in childhood precede drug use in adolescence? While the data obtained in this study are no substitute for those obtained from school records and interviews with parents, they do suggest that a significant proportion of those interviewed displayed personality problems before becoming drug users. The fact that 45% of the sample were consistent truants from secondary school and that 41% showed neurotic disturbances in childhood is at least indicative of the importance of predrug adjustment, though the absence of normative data prevents one from attaching more significance to these findings.

The finding also that half the girls interviewed admitted to homosexual activities suggests some failure of psychosexual development. That 46% of the sample had suffered either parental bereavement or separation before they had turned 16 and the apparently excessive degree of social pathology in the parents and siblings of those interviewed is likely to have contributed to their maladjustment.

Of equal importance to the role of personality disturbance in drug abuse is the individual's involvement in a pre-existing deviant subculture. Reconstructing a person's subcultural affiliations, however, is no less difficult than delineating his premorbid personality. Nevertheless, we consider that a significant proportion of methylamphetamine users were members of a delinquent subculture and that their membership of this subculture, in so far as it reinforced antisocial activities, contributed to their later adoption of drugs.

Once they were regular users of methylamphetamine about two-thirds of those interviewed appeared to be "on the scene"—they associated almost exclusively with other drug users and engaged in what were almost wholly drug-related activities. The existence of this cohesive group enabled a large percentage of its members to exist without recourse to the welfare state or their parents for means of support and accommodation.

The fact that so many of the sample were initially (and currently) supplied heroin or methylamphetamine by people

they knew reinforces the view that there exists within the drug subculture a "grey market," in which drugs are the currency of previous and present friendship. That a significant percentage bought their drugs initially from sellers whom they did not know and in many cases continued to rely on these sources emphasizes, however, that drugs are also deployed for commercial purposes within this society. Sociological field research is sorely needed for better understanding of these processes.

Drug of Choice

Our evidence suggests that to talk of methylamphetamine takers as if they were a singular type of person exhibiting a circumscribed deviance is fallacious. To focus on methylamphetamine as the problem is quite arbitrary and puts untoward emphasis on the particular drug taken at one point in time, frequently in the context of a long history of drug taking. It would be arbitrary even to give most of those interviewed a specific identity as methylamphetamine users, since many of them were currently using other drugs as well.

Methylamphetamine use must be seen in the context of other drug use which was extensive in the past and is extensive in the present. We were very impressed with the ease with which a methylamphetamine user would use heroin when this was available and the comparable ease with which methylamphetamine was substituted for heroin. The willingness of those interviewed to alternate between two drugs with such totally contrasting pharmacological action suggests that any theory which seeks to relate specific drug choice to personality or to a particular type of reaction against society is simple-minded.

The frequency of childhood neurotic disturbance and previous problem drinking reported by those interviewed suggests that not only should present methylamphetamine use be seen in the setting of other drug use but that it must itself be seen as only one type of symptom manifestation. How many of those seen would otherwise have exhibited prodromal symptoms of alcohol addiction is an interesting question which this study raises but does not answer.

Consequences of Methylamphetamine Use

The phenomenology of amphetamine psychosis as related to us by our subjects confirms the classical account given by Connell (1958). The frequent occurrence of these episodes suggests that those seen in hospital today represent a small proportion of the total occurring in the community.

That anyone taking high doses of methylamphetamine by injection for long can lead a normal life is very doubtful, though some of those interviewed made adjustments which allowed them to approximate this state. Some, for example, took barbiturates at night to ensure they slept, and others took tranquillizers during the day to prevent too great excitement; yet others ensured they ate an adequate diet and thus counteracted the weight loss and malnutrition associated with methylamphetamine use.

The frequency of sleep disturbance, weight loss, malnutrition, and physical complications, together with the frequency of psychotic disturbance, all point, however, to the extreme difficulty the methylamphetamine user would experience in maintaining a job and normal social and personal relations.

Indirectly, their use of methylamphetamine often led those interviewed into illegal activities directed at obtaining money for further supplies and thus into involvement with an anti-social subculture. It certainly could not be argued from the evidence obtained that the adverse effects of methylamphetamine are attributable to society's response to the methylamphetamine user—the damage suffered by the user, whatever society's reaction, is largely determined by the drug he has taken.

Implications for Policy

To suggest that the findings of a rapidly mounted study carried out in circumstances deserving of critical scrutiny have implications for policy is to display a rash temerity.

The principal implication of this study is the need for further investigation. Nevertheless, the results do suggest certain relationships warranting further comment. The role of premorbid personality deserves further study, as does the means of introducing and maintaining the drug habit. The need to view the use of any one drug in a historical context suggests that longitudinal studies will be more profitable than those concerned with behaviour at any one point in time.

Policies of prevention or treatment are unlikely to prove efficacious if they focus on one particular drug or drugs. It would, for example, be misleading to talk of the "treatment of methylamphetamine abuse" rather than to consider the help required by disturbed young persons who might in addition be taking methylamphetamine. This is not to suggest, however, that their use of methylamphetamine can be considered irrelevant.

That methylamphetamine was so readily available during the period over which the study was conducted is itself a disturbing feature. Eight per cent. of those questioned reported obtaining their initial supply from doctors. The view of some doctors that methylamphetamine was a less dangerous drug than cocaine undoubtedly contributed to their willingness to supply this drug as a substitute for cocaine. Again the evidence of this study suggests that there is little validity in this assumption. Methylamphetamine is not a substance which can be considered suitable for medical "maintenance" prescribing.

While the drug problem is not going to be solved by restrictive measures directed against any one drug there is an obvious need within the total programme for action to be taken against the danger presented by massive overprescribing of a dangerous substance. Action directed against one drug is likely to be unsuccessful in the long run, however, except that the question of overprescribing per se is dealt with, as the recent increase in the use of amphetamine sulphate illustrates.

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Implosion (Flooding)—a New Treatment for Phobias

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Summary: A new technique is described for the treatment of phobic patients which may be more effective than other available methods to date. Three out of four patients treated by implosion (flooding) became almost symptom-free after a mean of 14 sessions and remained so over six-and-a-half months' follow-up. The mechanism of action of the method is not yet clear.

Introduction

A decade ago the introduction of desensitization by Wolpe (1958) marked an important milestone in the treatment of phobic disorders. The technique, however, is time-consuming and only partly effective (Gelder *et al.*, 1967 ; Marks, 1969). Recently the different technique of implosion, or flooding, has also been shown to reduce avoidance behaviour in volunteers (Kirchner and Hogan, 1966 ; Hogan and Kirchner, 1967), and early indications suggest that it might be a more potent treatment than desensitization.

The present paper is a preliminary report on results of implosion in psychiatric patients. The only other report of its application in phobic patients is a single case report by Malleson (1959).

Method

In desensitization treatment the patient is taught to relax while slowly re-entering the phobic situation first in imagination and then in real life, the anxiety being kept to a minimum at all times. By contrast, in flooding treatment the patient is instead asked to enter the worst possible phobic situation and to experience the fear at maximum intensity for up to an hour until he is no longer capable of experiencing further fear. The procedure is first done in imagination and then in real life. In successive sessions the patient finds it increasingly difficult to feel frightened in the phobic situation until finally he can enter it with equanimity. As an example, a patient with a spider phobia might have two or three hour-long sessions a week, as follows: she would sit in a comfortable chair and be asked to imagine as vividly as possible that she was alone in a room in which there were numerous black hairy spiders which surrounded her on all sides and began to crawl up her legs and arms and bite her and enter her mouth and nose, while she screamed uncontrollably and helplessly. The therapist would maintain a running commentary on the scenes she was to imagine for the full hour, aiming to produce maximum anxiety as long as possible. Similarly, agoraphobic patients were asked to imagine themselves travelling in public places while feeling terrified, fainting, and being ridiculed by family and strangers.

The degree of phobic anxiety was judged by the patient's behaviour—for example, by grimaces and clenching of fists—by the patient's self-report, and by continuous monitoring on a polygraph of galvanic skin resistance and heart rate during the session. As soon as anxiety appeared to be diminishing new variations of the phobic scene were introduced into the fantasy material. At the end of the session the patient was asked to repeat to herself at home those of the fantasied experiences in therapy which had produced anxiety during the session. After a few sessions on these lines in fantasy the patient lost her anxiety to the fantasied scenes and was then asked to re-enter the phobic situation in real life, both by herself and in the presence of the therapist—for example, when a patient with a spider phobia was shown a spider by the therapist she would be asked to touch it immediately, and was told that it was a dangerous creature which would bite her slowly and painfully, etc.

Before treatment began all patients were told that the treatment was experimental, that it would be unpleasant at first, and that they were free to terminate any session at any time, but that for the treatment to be effective it was necessary for them to experience fear as long as possible until it became tolerable.

All patients were taken off drugs during treatment by implosion.

Experimental Basis of the Treatment

Conditioned avoidance responses in animals are in some ways paradigms of human phobias and are very hard to extinguish unless the avoidance response is blocked (Baum, 1966). Phobic patients usually avoid the phobic situation as much as possible, or if placed in it will attempt to escape immediately. There is thus little opportunity for phobic patients to learn that prolonged exposure to the phobic situation will cause no harm, just as conditioned avoidance responses prevent animals from learning that harmful consequences may not follow exposure to the conditioned stimulus. The only way to produce this learning is by preventing the avoidance responses from being made, thereby ensuring that the animal is placed in prolonged contact with the conditioned stimulus without noxious consequences ensuing. Flooding, or implosion, can be seen as analogous in certain ways to this procedure.

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