It seems to be proper to consider young drug-addicts exposed to road accidents more easily than normal young people, because of the use of drugs which alter the relations with realities.

The regular use of cannabis provokes severe distortions of perception, the reduction of cognitive functions and of psycomotory abilities. These effects usually depend on the dose of drug and may be observed also when moderate amounts of substance are used. Cannabis produces opposed effects on the memory of recent events, on attention and vigilance: all these senses have to be regular when a person works with machine manually.

It is not clear if the use of cannabis is responsible for road accidents, but moderate doses of cannabis are thought to provoke severe reductions of the ability necessary for driving. Cannabis addiction, however, would be considered a factor that could increase the risk of road accidents.

It has not been ascertained if the disposition for driving as well as a lowered ability to drive are to be considered among the main causes of road accidents; above all the ability to drive is a factor of primary importance.

As it is often seen among alcoholics, it is probable that many drug-addicts use to drive under the influence of cannabis without any clear difference between alcoholics and cannabis-addicts.

Moreover, alcohol and cannabis can be used at the same time with the addition of their effects.

As regards the use of heroin, we would speak at first about its proba-
ble effect on the central nervous system. At present, the researches on the harmful consequences of heroin addiction have not been performed and it is possible to know only the results of the modification detectable by means of electroencephalogram (EEG). Such alterations are due to the increase of $\theta$ and $\delta$ waves, which follows the initial increase of $\alpha$ waves (Volavka et al. 1970), to give a pattern like that obtained during sleep. As long as the drug acts, the pattern of EEG is the same of sleep accompanied by a state of attention and, thus, of vigilance.

This kind of phenomenology has been defined 'Pharmacologic dissociation between scheme of behaviour and sleep pattern of EEG' (Wikler, 1952).

Volavka et coll. (1974) studied the alteration of EEG in 19 subjects who had previously been detoxicated after intravenously injection of heroin (25 mg) and correlated some physiologic parameters to performance tests. They could observe that:

1) there is a significant decrease of the mean frequency of EEG
2) at the same time the respiratory frequency decreases and cardiac frequency and myosis increase
3) during a test of attention the number of omission mistakes increases and the mood is so altered that the subject becomes excited.

It is thus clear that heroin alters the electric activity of the central nervous system with changes in behaviour associated with a loss in performance ability. It is possible to say that the subject, who is under the influence of heroin, is not fit for driving vehicles.

Official statistics show that the percentage of road accidents is higher among young people (range of age: 18-29 years) than among older people.

The data concerning the high mortality rate and the damages to vehicles are very interesting.

The main parameters of evaluation used in the official analysis of road accidents are: exposure to risk, experience, skill in driving, social and cultural conditions, type and condition of the vehicles, behaviour of the drivers, use of alcohol and other drugs.

Many data are known about the effects of alcohol on a driver, whereas a few researches have been performed about the consequences of opiates on drivers.
Our purpose was to investigate this specific field and we begun our research on 100 young drug-addicts who were followed in our Service. We present the data of 63 subjects who appeared to be objective and reliable.

Among these subjects 47 were male and 16 female. The mean age was 22.87 years (+ 0.55 S.E.M.) and the range of age was 16-41 years; 1 person was 16 years old and 1 was 41, while all the others were between 18 and 29.

In each case we have filled a form where we have recorded:
the anamnestic data about the use of opiates, the news about the use of vehicles, the road accidents if they occurred.
If a subject had been involved in 1 or more road accidents we have investigated about the substances that he had assumed in the period and at the moment of the accident(s), how the accidents took place, the entity of damages and casualties and the penalties.

All the subjects used many drugs; the mean period of addiction was 5.10 years (+ 0.21 S.E.M.) with a range of 1 - 10 years. All them were heroin-addict since 3.86 years (+ 0.26, range 0.5-8 years).

59 subjects used methadone (mean period of addiction: 2.24 years +0.19, range 0.5-6 years) Moreover, 6 drug-addicts were alcoholics since 7.17 years.

As regards the use of vehicles, 34 had obtained driving licence for cars, 7 for motor-cycles only, while 22 were not qualified for driving even if 2 of them drove irregularly.

Out of the drivers with licence, 31 subjects made regular use of vehicles and 12 irregular use. The data obtained by the authorities show that, in 1979, 4132 road accidents took place in the province of Bologna: 1979 of them in the city and 2153 in the suburbs. More of the 50% of these accidents involved people between 18 and 29 years old: 1015 cases in the city and (51.3%) and 1277 in the suburbs (57.5%).

Drug-addicts may usually be set in this range of age. Our investigation is referred not only to the accidents occurred in 1979 but to those of the last three years.

Among the subjects, whom we have interwied, 7 reported to be involved in 9 road accidents on the whole before they became drug-addict. 35
had had 71 road accidents on the whole after they begun to use drugs. 44 of these accidents were caused by the drug-addicts and 27 by a third person.

It is important to note that 13 young drug-addicts were under the influence of one or more drugs whe the accidents (21 on the whole) took place. 2/3 of these accidents were provoked by the addicts. Moreover, in 3 cases the accident involved a drug-addict in 'withdrawn' and in 4 cases a drunk drug-addict.

We have correlated also the road accidents with the kind of drug which had been used in the period and at the time of the accidents. Thus, we have observed that 18 subjects had used heroin, 3 methadone, 9 more than one substance (in 6 case alcohol was assumed with other drug) and 1 amphetamines in the period of the road accident. 4 subjects were giving up the habit of addiction.

When the accidents took place 13 subjects had taken drugs: 3 of them were under the influence of heroin, 4 of methadone, 4 of alcohol, 1 of both cannabis and alcohol, 1 of amphetamines while 3 were in withdrawn.

The consequences of the road accidents were always not very serious. No one died because of these accidents: in 3 cases slight and in 2 cases moderate casualties were recorded.

Vehicles were slightly damaged in 15 cases and more seriously in 6. 8 subjects reported to have destroyed their vehicles.

Only 1 person was inflicted a penalty because he was driving without licence.

On the basis of these data we can say that the number of road accidents where drug-addicts are involved, is unexpectedly low when compared that of the other youngs, who are not drug-addicts.

We must consider that few drug-addicts have driving licence and that, moreover, the licence is revoked by the judges preventively when a drug addict is arrested.

It is clear that drug-addicts know very well how the drugs act and that they are conscious that driving could limit the benefits of the psycho-physic effects of the drug.

It is also clear that the subjects under the influence of methadone, take less care in driving than the heroin-addict and, proportionally,
the drug-addict under the effects of alcohol do.
We can conclude that in the subjects who use opiates, compensative mechanisms appear and that they may be ascribed to the fact that these people worry about a possible arrest as consequence of a road accident so that they pay more attention in driving and/or limit the use of vehicles.

References


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