

THE SIXTH THOMAS JAMES OKEY MEMORIAL LECTURE

Vietnam veterans' rapid recovery from heroin addiction: a fluke or normal expectation?

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Abstract

Between 1972 and 1974, the outcomes of army enlisted men who had served in Vietnam during 1970-71 were evaluated and compared with that of a matched group. This paper reports the major findings of that study with respect to frequency of narcotic addiction in and after Vietnam, and the major risk factors for Vietnam addiction and later relapse. Extraordinary access to records facilitated drawing the sample, locating it, and verifying interview responses. The surprisingly low levels of readdiction and the rarity of addiction to narcotics alone as compared with poly-substance dependence are findings still not entirely incorporated into public and scientific views of heroin addiction. Some defenses against that incorporation are examined.

Introduction

When planning this paper, I was asked to look back at my study of Vietnam veterans (Robins, 1973, 1974b) to answer whether at the time I had thought it would be important, and to say how the results have fared over the last 20 years. I am grateful for the opportunity to indulge in this exercise of nostalgia.

The paper will begin by saying something about how the study happened to be done. Then it will summarize how the study turned out both technically and substantively. It will end by saying whether the findings seem to have been correct and generalizable, and if so, whether they have been integrated into the expert or public view of heroin addiction.

Why the Vietnam study was done

Vietnam was linked to the general concern in the United States about drug use from the time soldiers were sent there as 'advisers' in the early

1960s. First the concern was about marijuana. It was not until 1969 that heroin appeared in Vietnam. Rumors of its use by servicemen were confirmed dramatically in 1971 when two congressmen who travelled to Vietnam announced that many servicemen were addicted. Nixon then declared heroin addiction to be the nation's "No. 1 Public Health problem". He created the Special Action Office on Drug Abuse Prevention (SAODAP) in the White House, and tapped Dr Jerome Jaffe to head it. President Nixon persuaded Dr Jaffe to give up his academic life by arguing that wars had stimulated scientific discoveries in the past. Dr Jaffe accepted the argument, and agreed to take up the challenge of controlling heroin use in Vietnam, because if he failed, at least his efforts would yield a good scientific study. In June 1971, he went to Vietnam and established a urine screening program, which required that any man due to leave Vietnam be tested and have a 'clean' urine before

boarding the airplane. Urine initially positive by the FRAT test was to be re-tested with gas chromatography. If the test was again positive, the man was to be sent to detoxification for about a week, and his urine re-tested before he was allowed to leave the country. As soon as Dr Jaffe returned from Vietnam, he invited me to design a study to estimate the size of the problem both in Vietnam and after return.

My selection for the job was based on our having served together as members of the Narcotic Addiction and Drug Abuse Grant Review Committee of NIMH. I had been appointed to this committee based on a single published paper. My first major research effort was a follow-up of a child guidance clinic population and a matched normal control group (Robins, 1966). That study showed an impressive continuity between childhood antisocial behavior and adult outcomes, but I worried about the study's generalizability, because the subjects were patients, all white, and all born between 1907 and 1919. I decided to replicate it in a non-patient, later-born, non-white sample. In 1965-66, I interviewed 235 St Louis-born black men in their early thirties, selected from records of the St Louis elementary schools, which had been racially segregated in their childhoods. In both studies I looked at drug use and abuse as one outcome. While drug use was rare in the first study, the black schoolboys reached adolescence just after World War II, when drugs had entered the black ghettos but had not yet reached middle-class white America. By the time I followed them, illicit drug use had reached the white middle class and was a raging concern throughout the country. Half my sample said that they had used an illicit drug, and 10% said they had been addicted to narcotics. Although that was only 22 narcotics addicts, this was the first study of heroin addiction in a 'non-captive' adult population, i.e. neither in college nor in treatment. The paper reporting on their drug experience (Robins & Murphy, 1967) led to an invitation to serve on the Narcotic Addiction and Drug Abuse Grant Review Committee.

When Dr Jaffe invited me to do the Vietnam study, I was captivated. When I went to discuss it with him at the SAODAP office and found him working all hours, I began to realize the study might be important politically, as well as scientifically.

Why the study was a technical success

The study went well, helped by the government's concern about having exposed so many young men to what was viewed as a scourge.

It was possible to draw a sample representative of all enlisted Army men who left Vietnam in September 1971, the first month urine screening was in operation throughout the country. We selected two samples, one from a tape of 22 000 men made for us by the Department of Defense (DoD) from the computerized Active Duty Roster of November, 1971. That roster was purged every month of those discharged 4 months before. Thus, the November 1971 tape still contained all men in service in September. Men were selected if they were listed as leaving Vietnam that month. We were able to enrich the number of heroin users in the sample by sampling as well from records of those who tested positive at departure, records held in the Surgeon General's office. The military records of both groups were then checked to verify their departure dates. From Selective Service records, we were able to draw a sample of draft-eligible civilians who did not serve but matched the veterans with respect to age, region lived in, and education at the time the veterans entered service. The high level of cooperation from the subjects made possible a remarkably high interview completion rate, 96% when the veterans had been back 8-12 months, of whom 94% were then re-interviewed 3 years after their departure from Vietnam.

We also had access to all the record information we needed from the military and the Veterans Administration. These records, plus testing the urines we collected at the end of each interview, allowed us to verify what the men told us in interviews. These checks showed remarkable honesty: 97% of those whose military record showed narcotics use told us about their use while in service, and tests of urine samples collected at the end of the interview showed no higher rates positive for current use than did their self-reports given before they knew they would be asked for a urine sample.

We were able to complete the first interviews within a 6-month period, which both enabled us to provide information to the Government promptly, and meant that the men all had had approximately the same length of time at risk of relapse between return and interview. We reinterviewed the veterans and the comparison

sample when veterans had been back 3 years to learn whether the initial results would hold over time.

We began to feel confident about our sampling strategy when the DoD was not upset by our estimate that the number of men who returned in September 1971 was only 13 280, rather than the 22 000 on the tape given us. Our lower estimate was based on finding that many of the men we initially selected from the tape had to be dropped because their military records showed either that they never served in Vietnam or that they had left before September. While we were in the field, the DoD revised their estimate of men who returned in September based on landing documents from the airplanes that brought the men home, and we had hit within 3% of the revised number!

The study's assets

(A) A number of factors led to the high cooperation rate and the accuracy of our estimates. First, Dr Jaffe had involved multiple agencies—the National Institute of Mental Health, the Department of Defense, the Veterans Administration, and the Department of Labor—in its funding. This opened all the files we needed for sampling and follow-up.

(B) Urine testing in Vietnam had begun in July, 1971, 2 months before we designed the sample. This 2-month experience with testing had informed the DoD that the vast majority of heroin users were Army men below the officer level, and they advised us to restrict the study to this group.

(C) Being able to sample from the Surgeon General's list of men who had tested positive allowed us to over-sample heroin users so that we interviewed over 600 men who used narcotics in Vietnam. It also enabled us to estimate the proportion detected as drug-positive by the military at departure. Duplications between those we sampled from the Surgeon General's list and those we sampled from the Active Duty Roster gave us the needed data. Knowing the proportion positive then allowed us to weight the over-sample of positives back to their true representation in the population.

(D) All service records of those discharged happened to be stored in St Louis, making it convenient for us to review the complete military record to check whether the man had actually

served in Vietnam and left in September, 1971. This turned out to be very important because the Army was in a 'stand-down' phase, during which manpower in Vietnam was being reduced by shortening the scheduled 1 year tour of duty there. Many of the names on our 'September' departure tape belonged to men who had actually left earlier. The military record also provided name and addresses of the next of kin, which helped us locate the man, as well as information about disciplinary actions and reported drug use, against which we could check honesty of the interview.

(E) Even though the men selected lived all over the US, and a few were stationed overseas, they were not difficult to find. Those who entered via the draft were drafted at 18 for 2 years. They typically arrived in Vietnam at age 19 after almost a year Stateside, served in Vietnam for 1 year, and were discharged soon after return, at 20 or 21. At this age, most could still be reached at their parents' home. The men who enlisted voluntarily had a 3-year obligation, and more of them signed up for another term of service. The military's Worldwide Locator made it possible to locate them at their current station.

(F) We had excellent support from the National Opinion Research Center, the group selected to carry out the interviewing. This was my first experience with employing an interviewing organization; on previous studies, I had hired and supervised interviewers myself. However, this study required rapid completion. An excellent study director and field director were willing to do extraordinary things, such as shipping interviews to Canada to preserve confidentiality through a double-link file, and collecting urines and shipping them to Canada for confidential testing. These extraordinary precautions to preserve confidentiality were vital to the enthusiastic cooperation of the interviewers, who were very concerned about possibly harming the veterans. (The men themselves seemed remarkably unconcerned.)

(G) A delay in funding, that looked ominous initially, turned out to be helpful in the end. Dr Jaffe had originally asked that we interview the men when they had been back 2–3 months. The funding delay meant that they had been back 8 months before we could enter the field. This delay gave them time to be discharged and return home, making them easier to find. It also made the findings more meaningful. If they

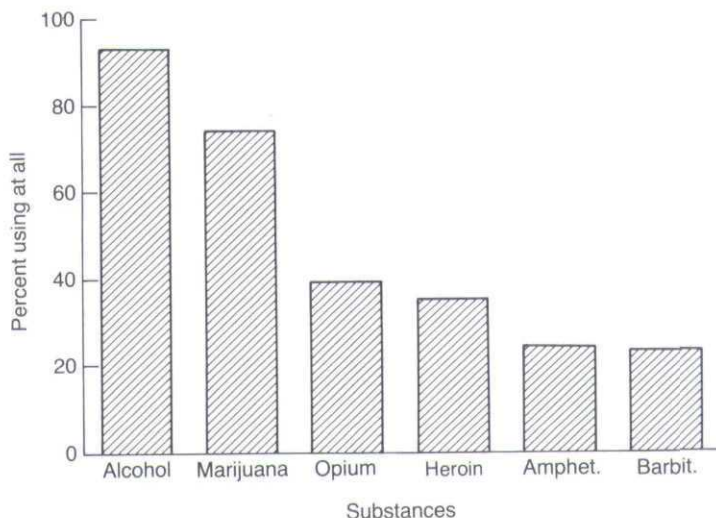


Figure 1. Substance use in Vietnam.

wanted to use heroin in the States, they had had ample time to locate a supply and begin to use it.

(H) Before the 3-year follow-up was due, the draft ended and selective service registrations were moved to a few Federal Records Centers. This made the location of civilian control subjects a great deal more efficient than if we had had to approach the Draft Board in each subject's home town to find a civilian who matched him. The DoD even provided us with members of Army Reserve Units, who spent their required yearly 6 weeks of active duty in going to the Federal Records Office to select civilian matches for our second follow-up. This overcame the problem that as civilians we could not legally have access to Selective Service records (although we accompanied the Reservists to be sure they selected cases properly.)

I believe these were the reasons that the study went well, along with the veterans' wish to be heard. But a technically successful study is exciting only if the results are interesting. Let me summarize what I see as the five major findings.

The major findings

(1) First, the DoD had greatly underestimated the size of the narcotics problem in Vietnam. Almost half (45%) of Army enlisted men there in 1970-71 tried narcotics; 34% tried heroin and 38% tried opium. While fewer used heroin or opium than alcohol or marijuana (Fig. 1), narcotics were used at a truly astounding

rate. These figures reflect the fact that these drugs were cheap—even an addict need spend only about \$6.00 per day—and pure—they need not be injected, a method which repelled many soldiers. Instead heroin could be mixed with tobacco and smoked. That opium was used so widely was a particular surprise; the press had reported only on heroin use.

Addiction was also more common than reported—20% claimed that while in Vietnam they had felt strung out or addicted to narcotics. To see whether that claim really meant physiological addiction, we asked for frequency and length of use and withdrawal symptoms. Those who claimed addiction had almost all used narcotics heavily for a considerable time and suffered the classic symptoms of withdrawal for at least several days. We concluded that their claims of addiction were correct.

Almost 11% of Army enlisted men's urines tested positive at departure. If the urine screen captured only those so addicted they could not stop their use when warned that they would be screened, as Dr Jaffe intended, this would mean that about 1400 recently or still addicted enlisted soldiers were arriving in the US per month (plus a small number of addicted officers and enlisted personnel in other branches of the military).

Serving in Vietnam was associated with greatly increased use of marijuana as well as narcotics; close to 80% of enlisted men used marijuana while in Vietnam. Other drugs were used too, but it was use of marijuana and narcotics that

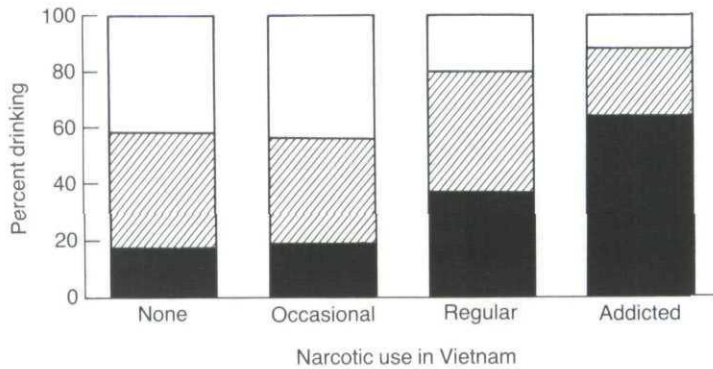


Figure 2. In Vietnam, narcotic use and drinking were inversely related (Drinking frequency: ■ less than monthly; ▨ less than daily; □ daily).

was distinctively greater in veterans than in the comparison sample.

(2) A second finding was that the orderly sequence of substance use described as a Guttman scale, in which no one progresses to an illicit drug without having used the legal drugs, alcohol and tobacco, and no one progresses to a 'hard' illicit drug without having used a 'softer' illicit drug (Kandel, 1975), had been turned topsy-turvy in Vietnam. Before and after Vietnam, heavy alcohol use was almost a prerequisite for narcotic use; in Vietnam, they were inversely correlated (Fig. 2). (This may have been explained by military rules against selling alcohol to soldiers under 21; for the average enlisted man, who arrived in Vietnam at 19, heroin was more available than alcohol.) This displacement from the expected sequence also occurred for amphetamines. Before service, amphetamines were often used without narcotics or barbiturates, but narcotic use virtually never occurred without amphetamine use. In Vietnam, amphetamines were essentially used *only* by users of barbiturates and narcotics. These sequence reversals show that a drug's position in the sequence has more to do with its availability than either with its intrinsic 'hardness', by which I think we generally mean its addiction liability, or with popular beliefs about its dangerousness.

(3) In my study of young black men, I had found a history of deviant behavior strongly associated with drug use (Robins & Murphy, 1967). One might have expected the much greater availability of drugs in Vietnam and stresses of serving in a war to break the link with deviance. But they did not. The same relationship between

early behavior problems and drug use held in Vietnam. We counted occurrence and severity of five pre-service behaviors: fighting; truanting; drunkenness; arrest; and school expulsion. Each was scored as not present, present mildly, or present at a serious level. Both a larger number and greater seriousness increased the risk of using narcotics in Vietnam (Fig. 3).

(4) In the first year after return, only 5% of those who had been addicted in Vietnam were addicted in the US (Fig. 4; Robins, Davis & Nurco, 1974b). This finding was totally unlike the outcomes of young men treated in Lexington, the Federal Narcotics Hospital at the time. When those young men were followed 6 months later, two-thirds were found to already be re-addicted (Stephens & Cottrell, 1972). Even veterans still on narcotics at departure from Vietnam were doing very well 8–12 months after return. The curve showing the likelihood of any use, heavy use, and addiction for veterans was the mirror image of that for treated civilians. Nor was this good result transient. When we followed veterans at 3 years, only 12% of those addicted in Vietnam had been addicted at any time in the 3 years since return, and for those re-addicted, the addiction had usually been very brief.

It was not treatment that explained this remarkable rate of recovery. Only a third of the men addicted in Vietnam received even simple detoxification while in service, and only a tiny percentage of Vietnam enlisted men went into drug abuse treatment after return—less than 2% of those who used narcotics in Vietnam, 6% of those who were positive at departure, and 14% of those positive at departure who continued to

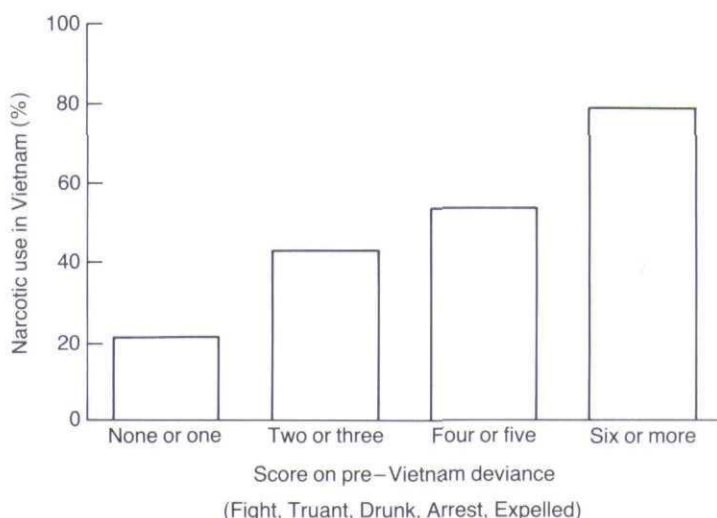


Figure 3. Behavior before Vietnam and narcotic use in Vietnam.

use after return (Robins, 1975). Yet, those who *did* enter treatment had relapse rates as high as the young civilian men in Lexington—two-thirds had relapsed by the time we interviewed them. Relapse often occurred the very day they left the hospital (Fig. 5).

Nor did recovery require abstinence. Although nearly half the men addicted in Vietnam tried narcotics again after return, only 6% overall got re-addicted (Fig. 6). Some were spared by using only narcotics other than heroin; some by not injecting, some by using only occasionally. But even regular heroin users became re-addicted in only half the cases (Robins *et al.*, 1980).

This surprising rate of recovery even when re-exposed to narcotic drugs ran counter to the conventional wisdom that heroin is a drug which causes addicts to suffer intolerable craving that rapidly leads to re-addiction if re-exposed to the drug.

(5) In the US, many drug programs have been set up especially for heroin addicts, for whom methadone, experimental narcotic antagonists, or group therapy is provided. We found little evidence for a group of veterans whose main problem is heroin addiction (Robins *et al.*, 1978). Those who used heroin after return were also using a great variety of other drugs. More than 80% used amphetamines, more than 70% used barbiturates, and almost all used marijuana. Those addicted to heroin often had multiple

dependencies. When heroin addicts were asked what their 'main' drug was, more than half named alcohol or marijuana rather than heroin.

We found little to justify the view of heroin as an especially dangerous drug. Heroin *was* associated with more adverse outcomes (crime, unemployment, illegal employment, divorce or separation, violence, transiency, credit problems, alcohol abuse, drug problems) than barbiturates and amphetamines, but *not if pre-service behavior problems and the number of other types of drugs used was held constant*. When they were, barbiturates and amphetamines were associated with as many problems. Indeed, the *variety* of drugs used was a better predictor of adverse consequences than *which* drugs were used.

These then were the major conclusions: narcotic use and narcotic addiction were extremely common in Vietnam (although not as common as use of alcohol and marijuana); availability was the main explanation; those with a history of deviant behaviour *before* Vietnam were particularly at risk; addiction was rare and brief after return, even when men continued to use narcotics; veterans re-addicted *and entering treatment* had as high a relapse rate as civilians; and heroin's adverse effects were no greater than those of amphetamines or barbiturates when juvenile behavior and concomitant use of other drugs was taken into account.

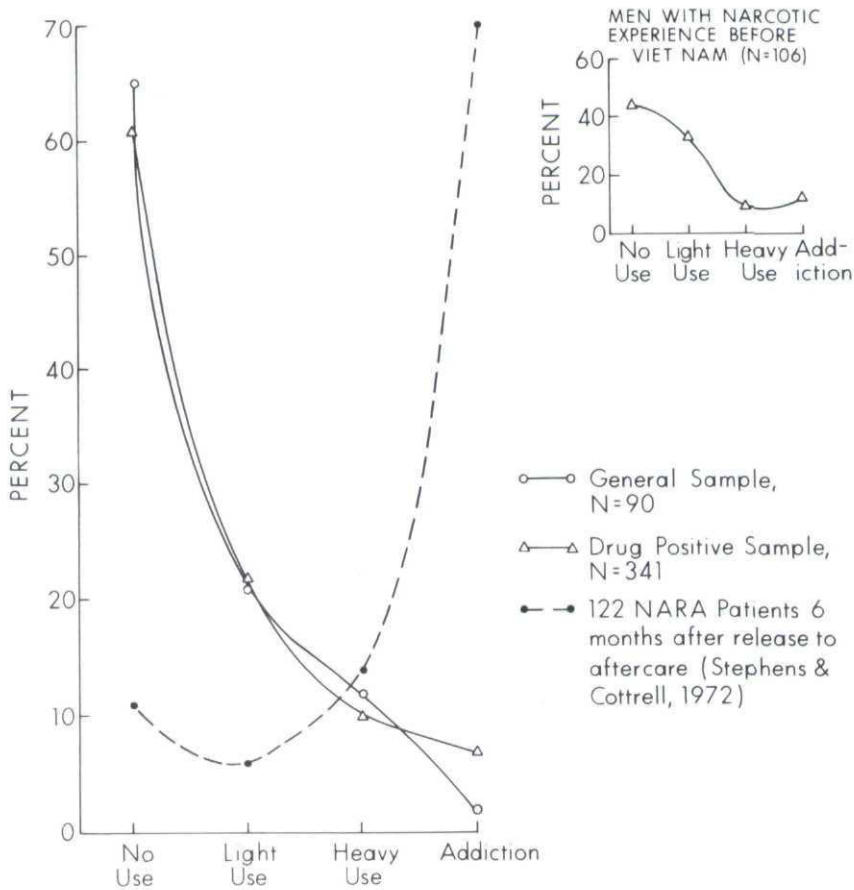


Figure 4. Narcotic use in the 8-10 months post Vietnam by men first addicted in Vietnam.

The response to the study by the DoD, the press, and the research community

Even though our study showed that the amount of heroin use in Vietnam had been underestimated, the DoD was pleased with the findings, because they showed that Vietnam veterans had not been consigned to a life of unrelenting dependence on drugs. (Our only problem was with one general who wanted to take credit for having cured the addicts with a little Valium during detoxification, and claimed that our study proved that methadone maintenance was unnecessary.)

The press and the research community were more skeptical. They resisted giving up the beliefs that heroin was a uniquely dangerous drug, to which a user became addicted very quickly, and addiction to which was virtually incurable.

They maintained these beliefs by offering three interpretations of our findings:

- (1) The results could be wrong. Perhaps the findings were tailored to exonerate the DoD; the men might have been addicted after return more often than we reported. (The suspicion that the results were politically manipulated may have been encouraged by the DoD's insistence on sponsoring the press conference which announced initial results.)
- (2) Addiction in Vietnam was explained by the extraordinary setting—the misery of war that made addiction a 'normal' reaction; so the relatively benign outcome of addiction in Vietnam was irrelevant to addiction in the US.
- (3) The drop in addiction on return was

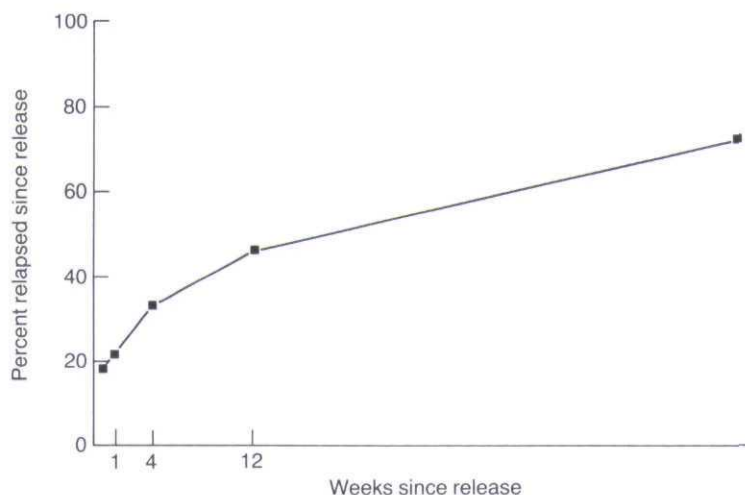


Figure 5. Relapse to drug use following VA in-patient treatment.

caused by a change in setting. In the US these men would not know where to get heroin, and the settings in which they lived and worked would not be associated in their minds with use or withdrawal symptoms, and therefore would not serve as stimuli to relapse. Thus again, the study findings would be irrelevant to addiction beginning in the US.

I will argue that each of these views fails to fit the facts.

(1) The idea of a whitewash by the DoD was extensively investigated by a New York Times (NYT) reporter who had recently returned from the newspaper's Saigon office. He was following up on a NYT news story in which a number of scientists had commented on the study, some with doubts about the results. During the 2 months' preparation of his article, he went over the study in great detail, often calling me to challenge what he took to be discrepancies between statements in my report. I spent a lot of time explaining how the results had been reached, and that percents *should* differ when the group being described shifts from the whole population of enlisted men to sub-populations, such as men who had already used drugs before arriving in Vietnam. When the article finally appeared, the Vietnam study was barely mentioned in it. To get only one line in the two-page story that had been intended as an exposé

showed that he could not support suspicions of a DoD whitewash.

Of course, the idea that there was a high rate of addiction after return was even more definitively disproved by the failure of veterans to apply for treatment. One of the original motivations for the study was the VA's concern that returning addicts would overtax their services; but the anticipated large demand never occurred. A small increase in cases occurred only because of a change in DoD regulations a few months after the men's return, allowing the Army to delay discharge by 30 days, which drug-positive soldiers would spend at a VA drug treatment program. The DoD wanted men to become familiar with the VA system so that they would return to it if they relapsed. However, they arrived at the hospital already detoxified, and in no obvious need of treatment. The VA generally transferred them to the hospital nearest their homes and allowed them to go home on leave, while remaining on the hospital books as patients, as required by the regulation.

(2) The argument that addiction in Vietnam was a response to war stress, and therefore remitted on exit from the Vietnam war theatre, is still frequently cited as though it were self-evident, because it sounds so plausible. Yet accepting this argument is difficult in the face of the facts: Heroin was so readily available in Vietnam that more than 80% were offered it, and usually within the week following arrival. Those who became addicted had typically begun use early in

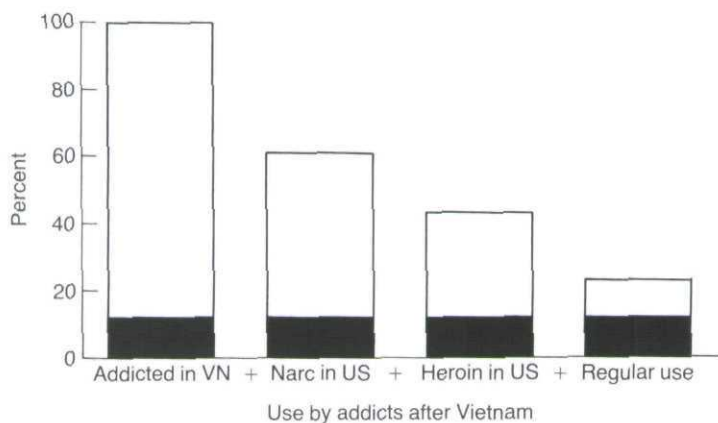


Figure 6. Risk of re-addiction depending on degree of exposure (■ re-addicted; □ not re-addicted).

their Vietnam tour, before they were exposed to combat. Further, the dose-response curve that is such a powerful causal argument did not apply: those who saw more active combat were not more likely to use than veterans who saw less, once one took into account their pre-service histories. (Those with pre-service antisocial behavior both used more drugs and saw more combat. Their greater exposure to combat was presumably because they had none of the skills that kept cooks, typists, and construction workers behind the lines.)

While combat had little effect, deviant behavior before service was a powerful predictor, as we have seen. So was pre-service drug experience (Fig. 7); the greater the variety of drugs used before entering service, the greater the likelihood that narcotics would be used in Vietnam. Like the St Louis-born young black men we studied earlier, the best predictors for use of narcotics in Vietnam were earlier antisocial behavior and experience with precursor drugs.

Finally, when we asked men why they used heroin, they did not tell us that they were overcome by fear or stress. Rather, they said it was enjoyable and made life in service bearable (Table 1).

(3) The argument that men addicted in Vietnam would not relapse because they would not be re-exposed in the US to stimuli associated with their drug use and withdrawal symptoms experienced abroad is based on Abraham Wikler's conditioned response theory of relapse (Wikler, 1973). This theory has been the basis for successful treatment programs, which gives it

empirical support. However, it fails to account for the fact that among the one-half of the Vietnam addicts who *did* use heroin after their return, most did not become re-addicted, and those who did become addicted were addicted only briefly. Only one-fourth of those re-addicted by the time of their first interview at 8–10 months after return were addicted at any time in the next 2 years, even though, having been addicted in the US, they presumably had the opportunity to develop conditioned responses to the US stimuli associated with addiction and withdrawal (Fig. 8). Their claim not to be still addicted was validated by finding few of them to have positive urines at either the first or the second follow-up interview.

Where to the Vietnam study's findings stand now?

What then are my views of heroin addiction twenty years after the Vietnam study? I have still not found a serious flaw in the study, and I think the findings are consistent with those of other studies. For example,

(1) Charles Winick (1962), using the Federal Bureau of Narcotics records and the New York Narcotics Register, found that names tended to drop off at ages 35–40, or after 5 years. Because he carried out no personal interviews, he could not prove that his critics were wrong when they argued that the addicts had left town or died or somehow managed not to get caught again. However, he believed that they had 'matured out'—i.e. recovered spontaneously.

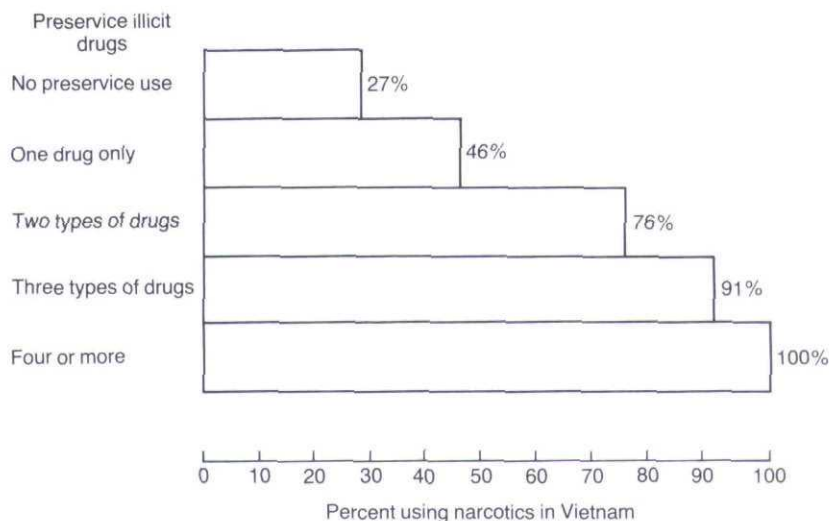


Figure 7. Preservice drug experience and use of narcotics in Vietnam.

(2) Waldorf & Biernacki (1979) did an ethnographic study of 50 untreated heroin addicts who had been free of addiction for at least 2 years, and reported that the median duration of their addiction had been only 5.7 years.

(3) Our own small study of young black men (Robins & Murphy, 1967) included 22 who reported having been addicted to heroin. Only four of these addicts had used any heroin at all in the year prior to interview at age 31–35. And only four had had any treatment. Heroin addiction for them, as for Vietnam veterans, was associated with use of a large number of other drugs. Like the Vietnam veterans, they experienced an accretion of drug types, not a 'stepping stone' pattern of moving from milder to stronger drugs. Indeed, heroin use preserved, rather than replacing, the use of other drugs.

(4) A study of young men 18–28 registered with Selective Service (O'Donnell *et al.*, 1976), conducted at the same time as our 3-year follow-

up of veterans, showed that only 13% of those reporting heroin use had had any treatment, and only 27% of the untreated had used heroin within the last year, while 65% of the treated had. This suggested that treated cases are those who cannot stop on their own—and often do not stop when treated.

(5) A follow-up of Harlem youth (Brunswick, 1979) showed that only 25% of young people 18–23 who had used heroin twice or more had used any in the current year; the rate of recent use was particularly low among the untreated—16%.

(6) Norman Zinberg identified a group of 'chippers'—recreational users of heroin who never became addicted (Zinberg & Jacobson, 1976).

(7) The Epidemiologic Catchment Area study of all major psychiatric disorders in random samples of US adults in five geographic areas asked all affected the age of first symptom and the age of most recent symptom, and whether they had ever discussed their illness with a physician (Robins, Locke & Regier, 1991). Subtracting age of first problem from age at the last problem gives an estimate of duration. Substance abuse had the shortest mean duration of any of the psychiatric disorders—only 2.7 years. And only one in five of those dependent on or abusing an illicit drug had had any treatment. Most of these cases were not heroin addicts; marijuana was the most common drug of abuse. Still, this study

Table 1. Why men used narcotics in Vietnam

| Reason volunteered | % |
|---------------------------|----|
| To feel high | 40 |
| Tolerate Army regulations | 13 |
| Relieve boredom | 9 |
| Relieve depression | 9 |
| Relieve fear | 8 |
| Pass time | 5 |
| Be one of the group | 3 |

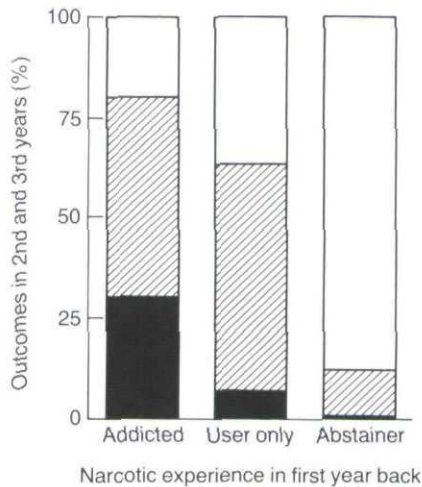


Figure 8. Fate of year 1 addicts, users, and abstainers in the next 2 years (■ addicted year 2-3; ▨ user, non-addict; □ abstainer, year 2 and 3).

shows that drug addiction tends to remit quickly, even in the absence of treatment.

So, I am unrepentant. I think the results were both correct and not unique. This is not to deny that the Vietnam situation was one quite unknown previously. Surely there has never been a time when so many young men were addicted to opiates in the absence of typical risk factors. Few of the Vietnam addicts would have become addicted if they had remained in the US. However, their history of brief addiction followed by spontaneous recovery, both in Vietnam and afterwards, was not out of line with the American experience; only with American beliefs. Nor was their ability to reuse without becoming re-addicted very unusual.

I think there are three important implications for policy in this study, which still have not been fully incorporated into our understanding of heroin addiction. First, addiction looks very different if you study it in a general population than if you study it in treated cases. The small number of Vietnam addicts who came to treatment relapsed as rapidly as do other young men in treatment. Their having become originally addicted as a response to stress or in an exotic situation was of no help to them. Those who did not come to treatment were able to get themselves off heroin without help. The implications are first, that heroin addicts are not doomed for life, and should be helped to remain in or re-

enter conventional society, and second, that drug users who appear for treatment have special problems that will *not* be solved just by getting them off drugs.

Second, I think the evidence that heroin is not an exceptional drug has stood the test of time. Its association with long-term addiction and crime appears to be as much a function of its bad reputation, that relegates its use chiefly to people with little regard for social proprieties, as to its intrinsic effects on brain and behavior.

Third, at least in the US, the 'heroin addict' for whom current treatment programs are designed is a mythological creature. Most users of heroin use many substances, and may be as or more dependent on one of these other drugs as on heroin. They are almost all (in the US) also dependent on alcohol and tobacco. Yet treatment slots are still mainly available for heroin use and heroin users. In the Epidemiologic Catchment Area study conducted in the early 1980s, we found that persons with heroin problems in the last year had a reasonable chance (35%) of being seen in a drug treatment facility. Those with problems with other drugs only were very unlikely to receive treatment in a drug program (less than 2% did). Yet they were only a little less likely than those with heroin problems to receive some kind of psychiatric care (Fig. 9). The segregation of treatment by drug type seems misguided to me. It is no wonder that drug



Figure 9. Treatment this year; heroin (□) vs. other illicit drugs only (▨).

treatment is not more successful when only a small part of the total problem is being addressed.

As I look back at the Vietnam heroin experience, I conclude that soldiers had no special readiness to use narcotics or to recover from addiction to them. Their remarkable rate of use was a response to market conditions—both the high availability of opiates and the lack of alternative recreational substances, to the absence of disapproving friends and relatives, and to the fact that serving in Vietnam was not seen as part of their real-life career. Their readiness to recover from addiction did not differ from that of other users. The reason that the press and scientists alike were surprised was because studies of the general population's drug dependence were and continue to be so rare. Their expectations were based on the rates of relapse found in patient populations, made up of addicts who tried but failed to get themselves off drugs.

It is not likely that the lack of general population studies will be remedied. Even large studies of general populations, such as the National Institute of Drug Abusers regular National Household Survey of Drug Use and yearly Monitoring the Future, which follows high school seniors into adulthood, do not study addiction because there are too few cases. The Epidemiologic Catchment Area study, committed to the study of disorder, not just use, reported on drug abuse and dependence as a whole because only

0.7% of the population met criteria for opiate abuse or dependence.

Beliefs about heroin based entirely on results in treated populations have created a self-fulfilling prophecy. Heroin is or was (perhaps now surpassed by 'crack') thought of, by law enforcement personnel and users alike, as the 'worst' drug, virtually instantly and permanently addictive and creating craving so extreme that it overcomes all normal ability to resist temptations to theft and robbery to acquire it. Users who share that view show by their use that they are ready to commit themselves to their concept of an addictive life style. The public's ranking of drugs with respect to 'hardness' probably has more to do with the drug's legal status, the government's commitment to discouraging its use, and its price than with any intrinsic addictive liability. This is best demonstrated by tobacco, a highly addictive drug ranked as 'soft'.

The fact that heroin addiction is not always interminable is still being 'discovered', even by scientists. Just last year the Neuroscience Institute at Harvard University published an article entitled "Addiction: What Science Knows" (Hyman, 1992). It reassured readers that *craving* does not condemn the user to indefinite use: "In the past, it was thought that physical withdrawal symptoms appearing with drug cessation were the key indicators of drug addiction . . . (Now, indeed, despite the 'common wisdom', avoidance of physical withdrawal appears to be a

Table 2. Variables that failed to predict re-addiction among veteran addicts who returned to narcotics

| |
|---|
| Behavior problems before service |
| Parents' substance abuse, arrest, psychiatric care |
| Substance use in Vietnam (types, duration, injection) |
| IQ |
| Draftee or volunteer |
| Combat |
| Military discipline problems |
| Demographic characteristics |

relatively minor factor in maintaining addiction even for . . . opiates . . ." But the article still supported the view that addiction is largely irreversible. Accepting this 'common wisdom' triggered straining after some biological basis for an irreversibility that may well not exist: "What causes the compulsive use? . . . (O)piates tap into (a) critical circuit in the ventral tegmental area . . . that interacts with the nucleus accumbens and . . . the cerebral cortex . . . , the 'brain reward pathway' . . . With repetitive drug use the brain reward system . . . undergo(es) adaptive changes involving . . . dopamine . . . When the drug is taken away, these neurons now function abnormally, producing dysphoria and intense drug craving . . . for many years." The author is too sophisticated to think that dopamine is the whole story: "Factors relevant to individual vulnerability include . . . heredity, . . . unknown developmental factors, . . . other psychiatric disorders, . . . pain, . . . stress. Sociocultural factors also . . . modify the risk of addiction, includ(ing) drug availability, and pressures for or against drug use in one's family, subculture or peer group."

Such a complicated explanation for a belief that addiction liability is relatively permanent is very difficult to test, particularly when the facts indicate that such permanence is rare rather than universal. The solution to achieving some simplification may lie in shifting our focus from addiction as a unitary phenomenon to the transitions between use, addiction, and recovery. In the Vietnam study, the social and behavioral variables that had been so useful in explaining who would use narcotics enough to become addicted to them in Vietnam and which ex-addicts would use them again after they returned to the US were of no use at all in explaining which relapsers would become re-addicted (Table 2). Vulnerability to re-addiction if re-exposed may

indeed be biological. We don't know whether that biological vulnerability is present from birth or created by action of the addictive substance on the brain, as the Newsletter article suggested. What we *do* know is that *different* factors operate at each of the critical transitions: from the drug naive state to use; from use to addiction; from addiction to remission; from remission to relapse.

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