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POLICE SCIENCE

WHO IS THE DEADLY DRINKING DRIVER?

JOSEPH W. LITTLE

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The drinking driver has long been recognized as a particular hazard to all who may encounter him on our highways. For many years the safety authorities and the public have apparently assumed that these drinking drivers were average people, much like most of us so far as their drinking-driving habits were concerned, but just unluckier than the rest in having a mishap. In line with this assumption, most protests against the drinking driver have demanded more rigorous police enforcement and stiffer penalties by courts. Presumably, those who demand these measures do so in a belief that they themselves would respond to them as effective controls against drinking and driving.

In fact, this traditional view of the control or drinking-drivers may be correct in part. Research is now underway to determine the influence of the present controls on the drinking-driving behavior of the population at large as contrasted to known delinquent groups. However, much of the recent research in the field points to *alcoholic* drinkers, and *not* average people "like you and me," as the culprits in a large proportion of accidents involving drinking-drivers, and particularly in serious accidents. This is not to say that the so-called average "social drinker" has been exonerated because his role in accidents has not been adequately researched. It does say, however, that a peculiar group of drivers have been identified as high accident risks, compared to the general population, and against whom the traditional measures of control may not be effective; that is alcoholic behavior, including drinking and driving, is not likely to be altered by social pressure, educational drives aimed at the general (nonalcoholic) public, or even by threats of greater fines or longer jail

sentences. Therefore, new measures may need devising and implementing.

Fortunately, a new look at this problem is in the offing. The Congress of the United States in enacting the Highway Safety Act of 1966 directed a "thorough and complete study of the relationship between the consumption of alcohol and its effect upon highway safety and drivers of motor vehicles . . ."¹ The National Highway Safety Bureau (NHSB),² created to implement that Act, initiated a number of research programs to comply with that mandate and is expected to report them to Congress soon.³ In the meantime, NHSB has established a framework for using the new as well as the existing knowledge about drinking-drivers. That framework is a Highway Safety Program Standard entitled "Alcohol in Relation to Highway Safety," which was issued by the Bureau in June 1967.⁴ It is one of the first of a number of

¹ The Highway Safety Act of 1966, 72 stat. 885 was enacted "To provide for a coordinated national highway safety program through financial assistance to the States to accelerate highway safety programs, and for other purposes." §204 contained the language directing the alcohol study referred to above. §201 created the National Highway Safety Agency (later changed to a bureau) to administer the Act. The same bureau administers the programs in companion legislation, The National Traffic and Motor Vehicle Safety Act of 1966, 80 stat. 718, signed into law concurrently with the Highway Safety Act. The preamble to the National Traffic and Motor Vehicle Safety Act stated its purpose was "To provide for a coordinated national safety program and establishment of safety standards for motor vehicles in interstate commerce to reduce accidents involving motor vehicles and to reduce the deaths and injuries occurring in such accidents."

² See note #1.

³ §204 of The Highway Safety Act called for a report on or before July 1, 1967. The reporting date was extended to allow time for research.

⁴ §101 of The Highway Safety Act of 1966 directed that uniform standards be issued to guide the States in

standards to which all 50 states will be expected to conform in their highway safety programs.

It should be evident that more activity and, perhaps, a different approach, may be expected in the drive to diminish the losses charged to society by the drinking driver. These things will follow as a clearer definition of the problem and its solutions evolve from direct investigations. The purpose of this paper is to suggest a series of questions whose answers may lead to a solution of the drinking-driving problem; to point out the answers that have been provided thus far; and to indicate the information voids that need filling.

1. Does ingestion of alcohol cause deterioration of the driving skills?

To anyone familiar with out-and-out "drunkenness" this question may seem absurd. Obviously, a drunk who can hardly walk or talk would experience similar difficulty with his driving. However, an investigation of the drinking-driver must not concentrate on drunks. We need to know the varying effects on the driving skills of drivers from levels of alcohol consumption starting with a single drink up through enough alcohol to completely intoxicate. In short, we need to know whether the drinker who has consumed only one or two drinks can drive as well as he can when sober, and we need to know how to determine when the amount consumed is great enough to affect his skills.

This problem has been investigated by measuring the effects of alcohol on driving skills in laboratory experiments⁵ and in actual road tests.⁶

developing highway safety programs. The first group of standards promulgated under the authority of the Department of Transportation [the parent organization containing The National Highway Safety Bureau] contained in addition to "Alcohol in relation to highway safety" standards concerned with: Periodic Motor Vehicle Inspection; Motor Vehicle Registration; Motorcycle Safety; Driver Education; Driver Licensing; Codes and Laws; Traffic Courts; Identification and Surveillance of Accident Location; Traffic Records; Emergency Medical Services; Highway Design; Construction and Maintenance; and, Traffic Control Devices.

⁵ GILBERT FORBES, The Effect of Alcohol on Psycho-Motor Reactions as a Possible Index of the Degree of Alcoholic Intoxication, *THE MEDICO-LEGAL JOURNAL*, 1946, pp. 23-38.

KJELL BJERVER AND LEONARD GOLDBERG, EFFECT OF ALCOHOL INGESTION ON DRIVING ABILITY, *Karolinska Institutet, Stockholm*, 1950.

T. A. LOOMIS AND T. C. WEST, THE INFLUENCE OF ALCOHOL ON AUTOMOBILE DRIVING ABILITY, University of Washington School of Medicine, 1957.

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The studies unanimously indicate that alcohol consumption affects driving skills adversely and that the amount of impairment increases with the increase in the amount of alcohol consumed. Although the studies show that the skills of some drinkers are impaired at lower alcohol levels than others (larger people and "hardened" drinkers are apparently not affected as soon as others), most of them indicate that impairment begins with the ingestion of small amounts of alcohol.

2. Are drinking-drivers⁷ found to be frequently involved in highway accidents?

This question must be answered emphatically in the affirmative. Numerous good studies can be cited supporting this conclusion. For example, in 1934 it was reported⁸ that 74 of 119 consecutive automobile accidents producing hospitalized victims in the Uniontown, Pennsylvania Hospital involved alcohol and left 10 dead and 155 injured.

ABRAMSON, Alcohol and Driving, *QUARTERLY JOURNAL OF STUDIES ON ALCOHOL*, Vol. 11, 1950, pp. 1-30.

HENRY NEWMAN AND EDWIN FLETCHER, The Effect of Alcohol on Driving Skill, *AMERICAN MEDICAL ASSOCIATION JOURNAL*, 9 November, 1940, pp. 1600-02.

H. M. VERNON, The Relation of Alcohol to Road Accidents: A Preliminary Study, *THE HUMAN FACTOR*, Vol. 10, 1936, pp. 255-66.

A. R. LAUER, The Effects of Alcohol on Driving, *IOWA STATE MEDICAL SOCIETY JOURNAL*, Vol. 29, July 1939, pp. 282-85.

RUDOLF G. MORTIMER, Effects of Low Blood-Alcohol Concentrations in Simulated Day and Night Driving, *PERCEPTUAL AND MOTOR SKILLS*, Southern Universities Press, 1963, pp. 399-408.

⁶ NEWMAN, FLETCHER, AND ABRAMSON, *Op. Cit.*

BJERVER AND GOLDBERG, *Op. Cit.*

B. B. COLDWELL, D. W. PENNER, H. W. SMITH, G. H. W. LUCAS, F. R. ROGERS, AND F. DARROCH, Effect of Ingestion of Distilled Spirits on Automobile Driving Skill, *QUARTERLY JOURNAL OF STUDIES ON ALCOHOL*, Vol. 19, 1958, pp. 509-616.

HERMAN A. HEISE AND BENJAMIN HALPORN, Medicolegal Aspects of Drunkenness, *THE PENNSYLVANIA MEDICAL JOURNAL*, December 1932, pp. 190-95.

R. B. FORNEY, F. W. HUGHES, H. R. HULPIEV, AND C. A. DAVIS, Performance in a Gymkhana Sports Car Event with Low Levels of Blood Alcohol, *RESEARCH REVIEW*, September, 1961, pp. 8-12.

H. WARD SMITH AND ROBERT E. POPHAM, Blood Alcohol Levels in Relation to Driving, *CANADIAN MEDICAL ASSOCIATION JOURNAL*, Vol. 65, October, 1951, pp. 325-28.

⁷ Hereafter, the term "drinking-drivers" will refer to drivers who had been drinking at the particular time in question such as when they were involved in a highway mishap. It is not intended to differentiate between drinkers and abstainers. Thus a particular person would be a "drinking driver" on those occasions when he drinks and drives and a "nondrinking driver" when he drives without drink.

⁸ HERMAN A. HEISE, Alcohol and Automobile Accidents, *AMERICAN MEDICAL ASSOCIATION JOURNAL*, Vol. 103, No. 10, 1934, pp. 739-41.

In 1958 it was reported that 58 (37.2%) of 156 drivers killed in consecutive fatal highway crashes in Baltimore "were under the influence of alcohol or drunk at the time of death."⁹ In addition, 26.3% of the fatally injured passengers and 30.9% of the fatally injured pedestrians were under the influence or drunk at the time of death. In 1961 it was reported¹⁰ that 89 (64.5%) of 138 U.S. Air Force airmen involved in private car crashes admitted to taking two or more drinks within four hours before their accidents. These results are consistent with all known reported studies in the United States as well as in Europe in finding that drinking-drivers are involved in a great proportion of automobile crashes involving personal injuries or fatalities.

3. Is the proportion of drinking-drivers involved in highway mishaps greater than would be expected based on the proportion of drinking-drivers in the population at large?

In order to establish that drinking is a major cause of accidents it is not enough to know that drinking drivers are frequently involved. We must also establish that the number of drinking-drivers involved in accidents is significantly greater than would be expected by chance. For example, if we find that six out of every ten drivers on the road is a drinking driver, and only six drivers out of ten in accidents are drinking-drivers, then the ratio of accidents involving drinking drivers is no higher than would be expected by chance. On the other hand, if one out of ten accidents involves a drinking driver, *but* only one out of every 100 drivers is a drinking driver, we can reasonably state that drinking drivers have "more" accidents than nondrinking drivers.

However, chance is not to be blamed for accidents involving drinking drivers. The drinking-driver has been shown conclusively to be involved in mishaps much more frequently than one would expect by chance. Indeed, recent studies show not only that the risk of mishaps for drinking drivers is greater than for nondrinking drivers but that the risk begins to increase at relatively low blood alcohol levels and soars to relative risks as high as

⁹ HENRY C. FREIMUTH, SPENCER R. WATTS, AND RUSSELL S. FISHER, Alcohol and Highway Fatalities, JOURNAL OF FORENSIC SCIENCE, Vol. 3, No. 1, 1958, pp. 65-71.

¹⁰ J. E. BARNACK AND D. E. PAYNE, Injury-Producing Private Motor Vehicle Accidents Among Airmen. I. The Role of Drinking, HIGHWAY RESEARCH BOARD BULLETIN 285, 1961, pp. 1-11.

10:1,¹¹ 20:1,¹² 40:1,¹³ and even greater than 100:1¹⁴ for thoroughly drunk drivers. In addition, the more completely intoxicated drivers appear to be involved in more serious accidents. For example, of forty-three fatally injured drivers in a New York City study, 46% of those judged responsible for their accidents had very high blood alcohol levels as measured on an objective scale, indicating that those drivers were thoroughly intoxicated.¹⁵ By contrast, 19% of the group had lesser amounts of alcohol, and 27% indicated no alcohol. By comparison with the blood alcohol levels found in a test group of drivers not involved in accidents, the thoroughly intoxicated were overrepresented in the accidents as contrasted to the not-so-drunk, and the not-so-drunk were themselves overrepresented significantly as contrasted to the sober.

In short, the evidence indicates clearly that the drinking driver is a greater hazard on the highways than nondrinking drivers, and that the degree of hazard rises sharply with increased intoxication. Furthermore, the data seem to support the inference that the higher the degree of intoxication the more serious may be the accident in terms of bodily injury and death.

4. Can we assign the "responsibility"¹⁶ for the accidents involving drinking drivers to drinking?

Most of us are probably willing to accept drinking as a cause of many accidents involving drinking drivers on the strength of the high accident risks of drinking drivers compared to those of nondrinkers. However, one could argue from a highly rigorous point of view that nothing

¹¹ G. H. W. LUCAS, W. KALOW, J. E. MCCOLL, B. A. GRIFFITH, AND H. WARD SMITH, Quantitative Studies of the Relationship Between Alcohol Levels and Motor Vehicle Accidents, ALCOHOL AND ROAD TRAFFIC, 1953, pp. 139-42.

¹² R. BORKENSTEIN, R. CROWTHER, R. CHUMATE, AND W. ZIEL, THE ROLE OF THE DRINKING-DRIVER IN TRAFFIC ACCIDENTS, Indiana University, 1964.

¹³ RICHARD HOLCOMB, Alcohol in Relation to Traffic Accidents, AMERICAN MEDICAL ASSOCIATION JOURNAL, Vol. 3, No. 12, 1938, pp. 1076-85.

¹⁴ MILAN VAMOSI, Determination of Alcohol in the Blood of Motorists, TRAFFIC SAFETY RESEARCH REVIEW, September 1960, pp. 8-11.

¹⁵ JAMES R. MCCARROL AND WILLIAM HADDON, JR., A Controlled Study of Fatal Automobile Accidents in New York City, JOURNAL OF CHRONIC DISEASES, Vol. 15, 1961, pp. 811-26.

¹⁶ The terms "responsible" and "responsibility" are used here and on subsequent pages to mean "responsible (or responsibility) for accident," and thus the term "responsible driver" refers to the driver at fault.

is proved unless we can demonstrate that the drinking drivers are responsible for their accidents —i.e., that they are not themselves victims of other accident causes. Such an argument presupposes an almost fantastic series of events combining so as to result in a great many drinking-drivers becoming involved in accidents not of their own making.

Such an improbability has been disproved by at least two techniques. One has been to limit the investigations to accidents in which it has first been established that the driver was responsible. Studies of this sort have shown beyond doubt that drinking drivers are greatly overrepresented in groups of accident drivers believed firmly to be at fault.¹⁷ A second technique has been to evaluate reported accidents in terms of driver responsibility based on the accident situation (without regard to drinking), assign a "responsibility" score to each driver, and then to compare the responsibility scores of drivers with varying blood alcohol levels. The study¹⁸ has shown that the higher the level of blood alcohol at the time of the accident, the higher the assigned responsibility scores. These and other studies appear to remove any remaining doubts about the general responsibility of the drinking driver for his accidents.

5. Can we characterize the drinking drivers involved in highway mishaps by their drinking habits?

As was discussed earlier, drinking drivers involved in accidents have long been considered just the unlucky ones among otherwise ordinary social drinkers. Researchers have provided plentiful evidence in recent years to show that description to be inaccurate. Just as drinking drivers have been found to be greatly overrepresented in accidents, so have alcoholic drivers been found to be overrepresented in traffic mishaps involving alcohol. Two techniques have been used to demonstrate this. One method has been to investigate drivers involved in accidents to determine the presence of alcoholism. For one study, a detailed background investigation was made of accident drivers to discover alcoholism;¹⁹ others have depended upon

¹⁷ NATHANIEL J. EHRLICH AND MELVIN L. SELZER, AN IN DEPTH INTERVIEW STUDY OF DRIVERS RESPONSIBLE FOR FATAL ACCIDENTS, University of Michigan, 1967.

McCARROLL AND HADDON, *Op. Cit.*

¹⁸ REGINALD G. SMART AND WOLFGANG SCHMIDT, RESPONSIBILITY, BLOOD ALCOHOL LEVELS, AND ALCOHOLISM, A SYMPOSIUM, The University of Michigan, 1967.

¹⁹ EHRLICH AND SELZER, *Op. Cit.*

alcoholism clinic records,²⁰ or upon physical evidence of alcoholism plus arrest records in the cases of the fatally injured.²¹ All support the thesis that the drinking-driver problem in serious accidents is in large part an alcoholic-driver problem.

A second method of investigation has been to compare the driving records of known alcoholics to those of drivers from the general population. One study²² has shown that alcoholics have significantly worse driving records, which also supports the thesis stated above.

Consequently, we may say that alcoholics represent a considerable part of the drinking-driver problem, particularly in serious accidents.

We must not yet allow the nonalcoholic drinking driver off the hook, however, because a number of serious accidents are known to involve drinking drivers not identified as alcoholics. There is reason to believe that relative risks for these drinking drivers are less than for alcoholics, but significantly greater than for nondrinkers. Therefore, an important piece of research remaining to be done is to identify and characterize those accident involved drinking drivers who are not alcoholic. (They may, for example, be pre-alcoholic.)

Furthermore, the whole problem as it relates to less serious accidents (involving only property damage or minor bodily injury) is not well understood. Perhaps the drinking driver, and particularly the alcoholic, is not as culpable as in the serious accidents. Obviously, we need to understand what sorts of drivers are involved in these accidents.

In sum, we believe we can characterize drinking drivers involved in accidents by their drinking habits. We already know that alcoholics have major involvement in serious accidents, but our knowledge of the characteristics and involvement of non-alcoholic drinkers is unsure. Moreover, the characteristic of drinking drivers involved in less serious accidents have not been studied adequately. After we have characterized correctly the high-risk drivers, we will be prepared to reassess counter-measures for controlling them.

²⁰ WOLFGANG S. SCHMIDT AND REGINALD G. SMART, Alcoholics, Drinking, and Traffic Accidents, QUARTERLY JOURNAL OF STUDIES ON ALCOHOL, Vol. 20, 1959, pp. 631-44.

²¹ JULIAN A. WALLER AND HENRY W. TURKEL, Alcoholism and Traffic Deaths, NEW ENGLAND JOURNAL OF MEDICINE, Vol. 275, No. 10, September, 1966, pp. 532-36.

²² W. S. SCHMIDT AND R. G. SMART, *Op. Cit.*

6. Can we identify the high-accident-risk drinking drivers before they have their accidents?

Clearly, the purpose of this line of research is to gather the knowledge necessary for effective action to reduce the hazard associated with drinking drivers. This action will probably consist either of changing the habits of the offenders or of eliminating their driving while drinking. Since it is obviously desirable to identify and act upon these potentially hazardous drivers before they are involved in even one drinking driver accident, this implies a capability for identifying the high-risk drinking drivers by some objective test or criterion which can be routinely applied to *all* drivers; for example, as part of the driver licensing procedure. Although recent research has been conducted on the possibility of identifying alcoholics by a questionnaire procedure,²³ no proven test for identifying alcoholics, not to mention other categories of high-risk drinking drivers, is known to the author. Research toward this end may be expected to follow directly as we learn the characteristics of the high-risk drinking drivers that distinguish them from the low-risk drivers. Should an acceptable test for identifying them evolve, which is not at all certain, considerable progress in alleviating the accident involvement of drinking drivers may be within the grasp of society.

7. Can we develop acceptable and effective countermeasures for controlling the hazards of drinking drivers?

Characterizing and identifying high-risk drinking drivers, while it would be a significant

contribution, would not in itself solve their driving problems. As mentioned earlier, traditional countermeasures such as fines or jail simply do not affect the pathological alcoholic as they do the normal drinker. Furthermore, our society may very well reject the clean but drastic solution of completely withholding driving privileges from all problem drinkers. For these reasons other countermeasures such as therapy, the provision of alternate modes of travel, or "alcoholic-proof" automobiles may be needed. Fortunately, research coupled with creative public programs and increased public awareness of the problems may be expected to produce suitable countermeasures. The more exactly we can characterize and identify the high-risk drinking drivers, the more effective these programs may prove to be.

CONCLUSION

This paper has discussed some pertinent questions concerning the involvement of the drinking driver in highway mishaps. We saw that he is significantly overrepresented in the accident population and that the involvement of alcoholics is great, particularly in serious accidents. Although we know alcoholics present a major problem in serious accidents, the characteristics of accident-involved nonalcoholic drinkers having serious accidents and the characteristics of all drinking drivers in less serious accidents are not well known. We believe significant progress can be made when these characteristics are known, so that controls may be tailored to fit the offender. Furthermore, progress in accident prevention would be measurably enhanced if objective tests could be developed to identify the various high-risk drinking drivers during some routine examining procedure—*before* they have their accidents.

²³ NATHANIEL J. EHRlich AND MELVIN L. SELZER, A SCREENING PROGRAM TO DETECT ALCOHOLISM IN TRAFFIC OFFENDERS, University of Michigan, 1967.