Self-Estimates and Objective Measurement of BRAC in Young French Drivers: A Field Study and its Preventive Aspects

Jean-Pascal Assailly

INRETS, 2 Av. du General Malleret-Joinville, 94114, Arcueil Cedex, France

ABSTRACT

The decision of young drivers to drink and drive is influenced by various determinisms: self perception of intoxication, environmental pressures, possibility of alternative behaviour. For example, we know from previous works that three types of self-estimates of BAC exist: underestimators, overestimators, even estimators. The probability or the frequency of drunk driving are different between the three groups.

Five breathanalyzers have been set up in five French discos. We have conducted interviews with a sample of French young drivers (N=71). The interviews, the subjective estimates and the objective measures of BAC took place when the young driver was entering the disco and when he was leaving.

We will present: the correlates of under- or over-estimation of BAC (age, sex, social background, traffic safety records, attitudes); the implications for road safety of: the underestimation and over-estimation of BAC by young people, the introduction of breathanalyzers in discos and bars; an analysis of young drivers attitudes, knowledges and opinions (for example, knowledges about the legal limit, about the impairment thresholds; strategies used for decision making of young riders such as the evaluation of the state of drunkenness of a driver; opinions about the effects of alcohol on driving, the countermeasures of DUI; etc.)

INTRODUCTION

The decision to drink and drive (or, for passengers, to be driven by a driver under the influence of alcohol) is subject to various factors. Some of these factors go back a long way and are part of the psychological history of the subject and his lifestyle. The relationship of an individual to alcohol, as with any psychotropic drug, is rooted in the early stages of childhood development. This paper will focus on the influences that operate in the immediate present, the “Here and Now” of the accident (or violation) process.

One of the various preventive measures in this field has been the introduction of a device to measure or estimate BRAC (breathanalyzers, ethylometers, alcohol cards, computerized BRAC estimations). Over the past twenty years, these devices have been tested in a variety of situations. The general conclusion so far is that these experiments have produced mixed results (Calvert-Boyanowsky et al., 1978; Mackiewicz, 1990).
All the experiments in question deal with the self-monitoring of BRAC and are based on the idea of providing the subject with an informative feedback on his stage of drunkenness prior to decision-making.

The use of breath analyzers for prevention purposes is based on the idea that the decision to drink and drive is to some extent influenced by self-perception of intoxication, although other factors may intervene. Previous work carried out by Beirness (1984, 1987, 1993) has indicated that there are three types of self-estimation of BAC: underestimators (who think their BAC is lower than it actually is), overestimators (who think it is higher than it actually is) and accurate estimators. The frequency of drinking-driving would seem to differ from group to group.

Further research is still, however, required on this issue as data has been collected only in Canada and using a general sample of drivers. It was therefore decided to apply this study to young French drivers using a different experimental approach.

**METHODOLOGY**

Four public breath analyzers were installed in four French discotheques (two in the West of France i.e. Brittany, one in the East in Strasbourg and one in the South in Toulouse).

71 interviews were conducted with a sample of young drivers and passengers (aged between 18 and 30). Four BRAC estimates were obtained for each subject:

- two were conducted on arrival at the discotheque (a subjective estimate, asking the subject to estimate his BRAC at that specific time and an objective measurement using the breath analyzer);
- two as the subjects were leaving the discotheque (a subjective estimate, asking the subject to estimate his BRAC at that specific time, and an objective measurement using the breath analyzer).

The interviews also covered the different types of behaviour, knowledge and attitudes related to the drink and drive problem.

**RESULTS**

Preliminary note: as this study involved 71 subjects, the results presented here should obviously be considered to be only exploratory. They provide hypotheses that will have to be confirmed using other samples.

**Subjective Estimate of BRAC When Arriving at the Discotheque**

<table>
<thead>
<tr>
<th>BRAC Description</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Zero BAC</td>
<td>50%</td>
</tr>
<tr>
<td>BAC under legal limit</td>
<td>25%</td>
</tr>
<tr>
<td>BAC over legal limit</td>
<td>25%</td>
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The subjects were classified into three groups, based on the different BRAC estimates provided: 50% indicated a zero BRAC (generally because they had not consumed any alcohol before entering the discotheque), 25% stated it was between zero and the legal limit.
(at the time the study was conducted, the legal limit in France was 0.4 mg per liter of air i.e. 0.8g per liter of blood. In 1994 this limit was reduced to 0.7g), and 25% considered they were over the legal limit.

**Objective BRAC Measurement When Arriving at the Discotheque.**

<table>
<thead>
<tr>
<th>BRAC Status</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Zero BAC</td>
<td>70%</td>
</tr>
<tr>
<td>BAC under legal limit</td>
<td>30%</td>
</tr>
<tr>
<td>BAC over legal limit</td>
<td>0%</td>
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</tbody>
</table>

**Type of Estimation When Arriving at the Discotheque**

By comparing the subjective estimation and the objective measurement the following distribution is obtained:

- Underestimators: 14%
- Overestimators: 52%
- Precise estimators: 33%

N.B.: obviously this analysis was performed only for subjects who had consumed alcohol before arriving at the discotheque and whose BRAC was positive (i.e. 35 subjects or 50% of the sample group), as those who had not consumed any alcohol and who considered their BRAC to be zero cannot be said to be giving an estimate: this is not subjective, purely a matter of common sense!

What is striking, therefore, in terms of the subjects on arrival at the discotheque is the phenomenon of overestimation. This also corroborates what was indicated in the introduction, that is to say that only one third of the subjects is able to give an accurate estimate of their BRAC.

**Subjective Estimate of BRAC When Leaving the Discotheque**

<table>
<thead>
<tr>
<th>BRAC Status</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero BAC</td>
<td>58%</td>
</tr>
<tr>
<td>BAC under legal limit</td>
<td>30%</td>
</tr>
<tr>
<td>BAC over legal limit</td>
<td>14%</td>
</tr>
</tbody>
</table>

**Objective Measurement of BRAC When Leaving the Discotheque**

<table>
<thead>
<tr>
<th>BRAC Status</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero BAC</td>
<td>48%</td>
</tr>
<tr>
<td>BAC under legal limit</td>
<td>34%</td>
</tr>
<tr>
<td>BAC over legal limit</td>
<td>18%</td>
</tr>
</tbody>
</table>
Type of Estimation When Leaving the Discotheque

underestimators 40%
overestimators 28%
precise estimators 32%

A comparison of estimates and measurements on arrival and on departure reveals an apparent paradox. When leaving, more subjects state they have a zero BRAC than on arrival, and fewer subjects state they are over the limit, although they have spent the entire evening in a discotheque!

The figures for type of estimation when leaving clearly reveal that although the proportion of accurate estimates remains unchanged (one third before and after), there is an increase in the number of underestimations and a decrease in the number of overestimations.

CONCLUSION

It can therefore be concluded that the results of this experiment are relatively negative in terms of the preventive value of breathanalyzers in discotheques. Obviously there is no scientific evidence to prove that it is the breathalyzer itself that has produced this negative progression in subjective estimates; other factors may have intervened e.g. the interview situation. The main observation to be made is that whereas young people are often seen as a homogeneous group, as “risk takers”, as “underestimators of risk”, etc this study has shown:

• firstly, that this is not a homogeneous group. Some drink no alcohol at all, even though they spend an entire evening in a discotheque, some drink moderate amounts of alcohol and some drink a lot. When they have consumed alcohol, some drive and others do not. This heterogeneity should be taken into account when dealing with alcoholism and road safety prevention and the relevant measures should be adapted to the various groups.

• secondly, for a majority of young people, the spontaneous and subjective estimates indicated before the measures were taken are relatively conservative as they underestimate the amount of alcohol they must consume to reach the legal limit. This raises a paradox in terms of prevention, perhaps it is preferable not to provide them with accurate informative feedback and to leave them with this impression.

• Finally, this could be one of the many examples where information does not lead to prevention. Information might be useful for prevention purposes at some stages of the process but it is clearly not sufficient to deal with such complex behaviour as drinking-driving. Complex behaviour requires complex treatment and further improvements in this field may no longer be obtained by means of education or information, but by reducing the risks to which young people are exposed (e.g. providing free transport to take them home from discotheques), or changes in the social context in which drinking and driving occurs (e.g. encouraging young people to designate a non-drinking driver).
REFERENCES


