YOUNG PEOPLE, DRINKING HABITS, TRANSPORTATION AND PEER RELATIONS. A QUESTIONNAIRE STUDY

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INTRODUCTION

Drunk driving is a serious problem in traffic. This is true even in Scandinavia where the number of drunk drivers in traffic is lower than in most other countries. In Sweden about a drunk driver is involved in about 25 % of all fatal traffic accidents. The risk of traffic accidents is higher for young people than for older drivers. There is ample evidence that a combination of young age and alcohol use is a strong risk factor in traffic. Also male drivers predominate the accident statistics with drunken drivers. This is also the situation in Sweden although the legal BAC is lower than in most other countries (0.02%) and the number of drunk drivers in traffic is comparatively low. Most of the discussion concerning this problem has dealt with drunk drivers. However, passengers riding with a drink drivers are also at risk (Everett et al, 2001) and as passengers they are in a position where they might have some influence on driver decisions. In Sweden attempts are being made to persuade young persons to intervene when they observe their friends that are driving after alcohol consumption. They can show their concern by avoiding riding with a drunk driver or by trying to stop him or her from driving. In the present study the experiences and intentions of young males and females concerning their interventions against drunken driving were investigated. Such situations can be expected to involve social interplay between individuals and especially between friends or family members. Social factors have also been suggested to provide a possible explanation for drunk driving behaviour (Åberg, 1993).

The Theory of Planned Behaviour (TPB (Ajzen, 1991)) is a theoretical approach to explain human decision making based on attitudes, social norms and perceived behavioural control. Especially this last factor is of interest as most people are aware that alcohol intake makes it difficult control decision-making and behaviour. Therefore in the present survey an attempt was made to apply the TPB on young peoples self reported behaviour and intentions concerning drunken driving problems in transportation.

A questionnaire was designed aiming at explaining behaviours like to ride with a drunken driver or to try and stop an intoxicated driver from driving. In the construction of items for the questionnaire the TPB was used as a frame of reference.
2. METHOD

2.1 Questionnaire

In the questionnaire questions were asked about four different kinds of behaviour of which two, to prevent a drunk driver to drive and to refuse a ride with a drunk driver, were focused in the present paper. Behaviours, evaluations of behaviour, and social factors of importance for young peoples decisions were obtained from focus group investigations of altogether 100 subjects (Englund, Nyberg, and Thiseus, 1996). For each behaviour (self reported) the choice and design of questions were based on the TPB as a frame of reference. Questions were also asked about drinking habits, knowledge about the drunken driving problem, driving experience, etc.

2.2 Subjects

A questionnaire about drinking and driving was mailed to a random sample of 2300 young people. The sample was stratified on age and gender and all subjects came from Uppsala County, Sweden. After two reminders 1249 questionnaires were returned, 54.3%. The subjects aged between 15 and 24 years with 47.4% males and 52.6% females. Number of subjects with a driving licence was 582 (286 males and 296 females). The age and gender distribution of the subjects are described in figure 2. There are ten different age groups with a little more than 100 subjects in each group. Between 75 % and 80 % of the subjects had a drivers licence for cars.
2.3 Structural equation modelling

In the analysis of data LISREL-analysis (Jöreskog and Sörbom, 1993) was performed separately for each behaviour. As most items of the questionnaires produce ordinal scale data before the analysis the variables were treated with data program (PRELIS), a procedure that corrected data for discontinuity and skewness in distributions (using polyserial correlations). In the LISREL analysis the compatibility between a theoretical model and empirical data is investigated. The basic principles of the analysis are presented in Appendix.

3. RESULTS

3.1 Drinking habits

The habits of drinking alcohol increased from a mean of three to four times a year at 15 to between one to two times per month after 18 years of age. There was no difference due to gender. A similar pattern, although on not so frequent, was obtained when the item concerned how often they drunk so much that they felt very drunk. There was a difference after 17 years between sexes as males were drunk more often. The subjects though they could drink between two and three cans of strong beer before they becomes slightly intoxicated and between 6 and 7 cans before they becomes really drunk.

It was believed that a male person weighing 70 Kg could drink one to two cans of strong beer, if he is going to drive an hour later, without having a BAC above 0.02 % (the lower BAC limit in Sweden). No differences due to age or gender. The same person was believed to be able to drink 4-5 cans of strong beer before he passes the upper limit (BAC = 0.10 %). Again there were no differences due to age or gender.

3.2 General attitude towards drunk driving

The subjects were asked a question about their general attitudes towards drinking one hour before driving. After 2 or 5 cans of strong beer (beer with 5-7% alcohol). The result is presented in Figure 3.
Almost all subjects consider it wrong to drive after 5 cans of beer and 60-80 % that it is wrong after 2 cans. The younger subjects were somewhat more permissive.

### 3.3 To prevent a drunk driver from driving

Several questions were asked concerning the subjects’ intentions and experiences of situations where they prevented someone to drive after drinking. Except for the youngest subjects - that had very little experience - between 20-40 % reported experience from persuading a driver to withhold from driving and10-20% that they had taken the keys from the driver. When asked if the would prevent a friend that had drunk 2 or 5 cans of beer from driving the subjects’ mean answers are presented in Figure 4.
Most subjects report that they think they would stop a friend from driving after having consumed 5 cans of beer. About 75% would do so if the friend had drunk 2 cans of beer.

Structural modelling was used to investigate if the TPB satisfactorily could explain the correlations obtained between different variables.

The result is depicted in figure 5.
Figure 5 Schematic picture of factors influencing intentions to prevent a friend from drunk driving

The result presented in Figure 5 shows that the TPB provides a satisfactory explanation for intention to prevent a friend from driving after alcohol consumption. If both direct and indirect effects are considered the social norm is most important (.42), then there is gender (.36), PBC (.31), attitude (-.25), and age (.07) is least important. Drinking habits did not improve the model.

3.4 To ride with a drunk driver

Asked if they during the previous three years had had a ride with a drunk driver about 50 % of the subjects admitted that. The distribution of subjects over age and gender is presented in Figure 6.

Figure 6. Experience of a ride with a drunk driver (percentages)Results from application of the TPB-modell on the “riding” data are shown in Figure 7.
If only the direct effects of the TPB variables are considered a model with attitude and PBC can predict intention and behaviour in accordance with the TPB. Also drinking habits have direct effects on both intention and behaviour. Social norm does not fit into the model unless it is assumed to affect both attitude and PBC. However, in that case social norm has the strongest total effect on behaviour (.42), stronger intention (.40), attitude (.37), Drinking habits (.37) and PBC (-.20). Even to explain intention social norm has a strong influence (.61), before PBC (.38), attitude (.35) and drinking habits (.16). The model including the Social norm had the best fit of the models tested with a RMSEA 0.052, indicating a fair fit and explaining 43 % of self reported behaviour and 58 % of the variation of intentions for the future.

4. DISCUSSION

The results of the present study are based on self-reported data from a sample with a quite low return rate. Thus it is possible that the subjects have a more negative view on drunk driving than young people in general. Such a bias will lead to reduced variation in TPB variables and make the model fit less likely. Still the TPB model fits the present data quite well. Also, a model that allows for indirect effects shows that the normative factor might be the most important influence on intentions and behaviours. A model that only allows for direct effects (like ordinary analysis of regression) will neglect influences from the social environment.

One interpretation of the results supports the idea in Sweden that efforts should be directed at young people, especially young females, that not themselves are likely to be driving intoxicated but that have friends that are more at risk. By influencing and supporting the “good” people it might be possible to prevent other persons from committing dangerous violations in traffic.

5. REFERENCES


**APPENDIX**

Using LISREL technique to test a theoretical model.

The intention of most researchers is to establish causal explanations between variables of interest. An experiment is necessary if the purpose is to be able to say that the state one variable is an effect of the state in another variable. If the analysis is based on questionnaire data solely the possibility to obtain causal explanations is not so easy or rather non-existing. It is possible though to state that data are in accordance with a theoretical model even if such a statement is not a proof of causality. Structural equation modelling (SEM) – of which LISREL is one example – provides a mean to discuss causal relations and suitability of theoretical models based on, for example, questionnaire data. Though SEM initially might be rather complicated to perform the basic ideas are not so difficult. Below an attempt is made to explain the use of LISREL to modify theoretical models.

Assume the following chain of causal relations (theoretical model):

\[ A \rightarrow B \rightarrow C \]

Variable A is assumed to affect B that in turn is assumed to affect C. In this way there is a direct effect C from B and an indirect effect on C from A.

To test if this theoretical model is in according with data the three variables are measured and inter-correlated, resulting, for example, in the following matrix:

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<th>A</th>
<th>B</th>
<th>C</th>
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<tbody>
<tr>
<td>A</td>
<td>-</td>
<td>.5</td>
<td>.4</td>
</tr>
<tr>
<td>B</td>
<td>-</td>
<td>-</td>
<td>.6</td>
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If the theoretical model (A-B-C) is true the relationships could be described as:

\[ \begin{align*}
A & \rightarrow .5 \\
B & \rightarrow .6 \\
& \rightarrow C
\end{align*} \]

Then the corresponding correlation matrix would be

<table>
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(the indirect effect of A on C is \(.5 \times .6 = .3\))
Thus the theoretical matrix deviates from the empirical. Correlation AC is .3 instead of .4.

However if a direct effect is allowed from A to C, e.g. the following model is suggested:

```
A  .13
  ↓   C
  .5
B   .53
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This model results in a correlation matrix that is identical with the original matrix. Thus according to the statistical analysis a new theoretical model including a direct path from A to C is suggested.

This is the basic principle behind the analysis presented in the present paper. The questionnaire was based on the TPB and after the subjects’ responses, correlation calculations and LISREL analysis a revised TPB model is suggested. However, no model can be modified based on data only. In addition there is need for theoretically sound arguments that supports the revised theory. Thus in the simple example used here, a direct path from A to C would improve the model fit but there should also some arguments why this path should be acceptable.