Risk Taking Tendency Among Construction Workers

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ABSTRACT


In line with a renewed interest in the role of individual characteristics in accidents, construction workers' risk taking tendency ($N = 284$) has been related to their accident involvement and safety behaviour. It has also been compared with the scores of a group of male alpine skiers ($N = 150$) and a group of male general practitioners' clients ($N = 61$). Two subscales ("Thrill and Adventure Seeking" and "Disinhibition") of a validated Dutch version of the Zuckermann Sensation Seeking scale have been used. The results may also give indications as to the usefulness of the risk homeostasis theory for the understanding of safety problems in work situations. To enhance the comparability of the three groups, a statistical correction has been made for sex, education and age. The results cast some doubt on the assertion which is sometimes heard that construction workers might be characterized by a relatively high risk taking tendency. The applicability of the risk homeostasis theory to the work situation is questioned.

INTRODUCTION

Having a job in construction industry is a risky way of passing the working day. If the number of working years is taken into account, in the Netherlands the number of lost time accidents is greater in construction industry than in any other branch of industry (Urlings et al., 1988). It amounts to 42 per 1000 working years, while 1.11 of every 1000 accidents is fatal. In other countries,
the situation is not really much better. Furthermore, Smit (1984) points out, that there is an unknown rate of underregistration: in official statistics, a number of industrial accidents that should have been reported appear to be missing. There is some evidence that 60–70% of all lost time accidents do not show up as such in the official accident statistics (Prins, 1985). Van Vliet (1986) makes a similar estimation.

Determinants of accidents in construction industry may be distinguished into:

- Macro level factors, such as the social-economic structure of construction industry, the contracting system and the mobility of the work force.

- Meso level factors: project factors, such as the selection of technical means and personnel, and the planning.

- Micro level factors: factors at the working site, such as problems with work load and cooperation, and individual factors like motivation, attitude and knowledge.

The so-called safety behaviour of the construction worker is often mentioned as one of the most important micro level factors in the occurrence of accidents. The intention to behave (un)safely at work and the risk taking tendency have been mentioned as relevant risk factors (Bullinga et al., 1987). Therefore, our study of the relationship between construction workers' attitude towards safety and their safety behaviour (Urlings et al., 1988) also included “risk taking tendency” as a variable whose role should be explored. This attribution to personal characteristics seems consistent with the “risk homeostasis theory” (Wilde, 1982) and with behavioural scientists' renewed interest in individual characteristics (like individual perception of risk) in connection with safety (Lennerlöf, 1986). Therefore, the risk taking tendency among construction workers was studied in the context of the risk homeostasis theory in the report presented here.

*Risk homeostasis theory*

Risk homeostasis theory was originally developed to account for traffic safety behaviour, but its advocates claim more general applicability, e.g., to safety behaviour in work situations (Hale and Glendon, 1987). Risk homeostasis theory postulates that individuals adhere to a target level of risk that they consider acceptable. This target level of risk presumably remains reasonably constant in time (Howarth, 1987; Sheehy and Chapman, 1987). In this view, not only those who participate in traffic, but industrial workers would also tune their safety behaviour in to the risk of accident that they consider acceptable (the “target level of risk”). As soon as the actual risk level deviates from the acceptable level, people will adapt their (safety) behaviour in order to reach this target level again. Risk homeostasis theory may, therefore, lead to the prediction that interventions for enhancing safety could have detrimental effects.
Such safety measures could lead to an unjustified lower level of perceived risk and thus to more riskful behaviour (Sheehy and Chapman, 1987). Risk homeostasis theory might, therefore, lead to a pessimistic view of the possibilities for accident prevention: as work situations are made more safe, workers will think that there is a greater chance that risky behaviour will not have negative consequences, which would increase the probability of risky behaviour. The net result would be, that this will at least partly undo the positive effects of safety measures in the long run (Hale and Glendon, 1987). Risk levels and accident rates in work situations would hardly change (Sheedy and Chapman, 1987). Concerning workers in construction industry, the implication of this line of reasoning would be that if working conditions were safer, this would be compensated by an increase in reckless behaviour. In this perspective, effective prevention will completely depend on lowering of the target level of risk by motivating construction workers into behaving more safely.

Several writers have criticized the risk homeostasis theory (McKenna, 1985; Howarth, 1987; Hale and Glendon, 1987; McKenna, 1987; Sheehy and Chapman, 1987). They point out methodological shortcomings and possible incomparability of traffic behaviour and work behaviour. The evidence in most studies is rather poor and results are not unambiguous (Hale and Glendon, 1987). It is also considered questionable whether people's behaviour is influenced to a great extent by considerations of risk. McKenna (1987), for example, argues that the construct of "sensation seeking" (Zuckerman and Neeb, 1980; Clement and Jonah, 1984) might be more appropriate than that of risk. Finally, embracing the risk homeostasis theory might serve as an alibi for refraining from taking adequate preventive measures.

An important problem in testing this theory is the operationalization of the target level of risk. Such a measure needs to be relatively constant over time and must not be linked to a specific situation. It should be close to the concept of risk taking tendency or recklessness; it should illuminate the acceptability of a certain level of risk. It has been argued that these desiderata can at least partially be met by the personality trait "sensation seeking" (SS) (Wilde et al., 1985; Zuckerman, 1979; Bouter et al., 1988; de Jong et al., 1988). The Sensation Seeking Scale by Zuckerman et al. (1980; see also Feij, 1978) is a scale for the measurement of this trait that has been described as "the need for varied, novel and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experiences" (Zuckerman, 1979). The SS scale consists of four subscales:

- TAS scale (Thrill and Adventure Seeking)
- ES scale (Experience Seeking)
- DIS scale (Disinhibition)
- BS scale (Boredom Susceptibility)

In our study, only the TAS scale and the DIS scale were used in a validated Dutch translation and adaptation of the scales (Feij and van Zuylen, 1984).
The TAS scale concerns the subject’s preference for physically risky activities. This subscale is assumed to be especially relevant in the context of safety behaviour. The DIS scale deals with a reference for hedonistic activities, like social drinking and pleasure seeking. This scale has been included because it concerns a rather different aspect of sensation seeking from the TAS scale, and because the exploration of its role in risk of accidents among construction workers seemed to be worthwhile.

HYPOTHESES

In discussions about accidents in construction industry it is often argued that construction workers are usually not careful and are inclined to take risks (Kjellén, 1984,a,b). In line with this argument and with risk homeostasis theory, construction workers would be expected to have rather high scores on TAS and DIS, absolutely and as compared with other populations; a relationship between TAS and DIS on the one hand, and safety on the other would also be expected. In the present study, safety will be expressed as involvement in accidents and safety behaviour.

To explore the part that thrill and adventure seeking as well as disinhibition may play in the risk of accident among construction workers and to gain more insight into risk homeostasis a an explanatory model, we will test the following hypotheses (see also Fig. 1):

1. There is a positive correlation between the TAS and DIS scores of construction workers on the one hand and their involvement in accidents on the other.

2. There is a negative correlation between TAS and DIS scores of construction workers on the one hand and aspects of their safety behaviour on the other.

3. TAS and DIS scores of construction workers will be higher than those of two other groups (skiers and clients of general practitioners) of whom comparable recent data are available.

Fig. 1. Model of the investigation.
METHODS

Hypotheses 1 and 2 will be tested by analyses of some data of a more extensive investigation among 304 workers with a Dutch construction firm (for details, see Urlings et al., 1988). The main emphasis in that project was on the relationship between safety attitude and safety behaviour in construction workers, testing a social-psychological model of attitude change (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980). The TAS and DIS scores of the subjects in the study by Urlings et al. were used in this article. Furthermore, the self-reported data on involvement in accidents as a construction worker and data on safety behaviour have been included. Hypothesis 3 was investigated by comparison of the TAS and DIS scores of the construction workers with data from a recent case-control study that was conducted among Dutch skiers (Bouter, 1988) and a study among general practitioners' (G.P.) clients in three practices in the Amsterdam region (Feij et al., 1987).

Sex appears to be correlated with TAS and DIS scores: males scored higher than females on both scales (Feij and Van Zuylen, 1984; Bouter et al., 1988). Because the construction workers were all males, only the data on male skiers and male G.P. clients were used. Also, to prevent educational level from having an undesired influence on the results, as well as to enhance the comparability of the three groups, only the skiers and G.P. clients whose educational level was comparable to that of the construction workers were included. This resulted in a number of 150 skiers and 61 G.P. clients who were included in the study. Age differences were accounted for by the use of covariance analysis. Due to missing values data from 284 of the 304 construction workers were suitable for further analysis.

The variables concerned were measured by means of a questionnaire. The following scales and items were used:

- **TAS and DIS scales**: Because of practical considerations concerning the group of subjects (construction workers, unused to verbal activities like reading and writing), only 5 out of the 12 items of each scale were used. The items with the highest factor loadings in the original validation of the SS scales were included (Feij and van Zuylen, 1984). For the skiers and the G.P. clients, data on the original 12-item scales were available. Therefore, it was possible to test the relationship between the abbreviated scales and the total scales.

- **Accident involvement**: In the questionnaire for the construction workers, the following two items were used regarding accident involvement (response alternatives were yes or no):
  - **EVER SELF.** Have you ever had an accident in your work yourself:
  - **RECENTLY SELF.** Did you have any accidents in your work during the past year:

- **Safety behaviour**: There were four questions on safety behaviour (5-point scale ranging from always to never).
BEHAVIOUR. Do you behave safely?

USE OF PPD. Do you use the personal protection devices that are necessary for your work?

ASKING INFO. Do you ask for information if you are unfamiliar with certain risks in your work?

WARNING COLL. Do you warn your colleagues in case of unsafe circumstances?

Data analysis was performed by means of SPSS (Nie et al., 1975; Hull and Nie, 1981). Firstly, the 12-item scores on TAS and DIS were correlated with the 5-item scores, and the internal consistency of the abbreviated TAS and DIS scales was computed for each of the three groups. The internal consistency of the accident involvement and the safety behaviour scales could, of course, only be computed for the construction workers. Secondly, the TAS and DIS scores of workers with and without accident involvement were compared. Also, the TAS and DIS scores of the workers were correlated with their self-reported safety behaviour scores. Finally, the three groups (workers, skiers and G.P. clients) were compared as to their scores on TAS and DIS, by means of covariance analysis.

RESULTS

Table 1 presents the number of respondents and the distribution of their ages. It can be seen from the table that the age distributions of the construction workers and the skiers are somewhat different. The skiers are younger on the average than the construction workers. Concerning the G.P. client group, we only had data from persons under 35. In subsequent analyses, a correction for age will have to be made.

**TABLE 1**

Number of respondents and age distribution

<table>
<thead>
<tr>
<th>Age categories</th>
<th>Construction workers</th>
<th>Skiers</th>
<th>G.P. clients</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>abs.</td>
<td>%</td>
<td>abs.</td>
<td>%</td>
</tr>
<tr>
<td>≤ 24 year</td>
<td>19</td>
<td>7</td>
<td>32</td>
<td>21</td>
</tr>
<tr>
<td>25-34 year</td>
<td>66</td>
<td>23</td>
<td>38</td>
<td>32</td>
</tr>
<tr>
<td>35-44 year</td>
<td>124</td>
<td>44</td>
<td>44</td>
<td>30</td>
</tr>
<tr>
<td>≥ 45 year</td>
<td>75</td>
<td>75</td>
<td>26</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>284</td>
<td>-</td>
<td>150</td>
<td>-</td>
</tr>
<tr>
<td>Average</td>
<td>39.8</td>
<td>-</td>
<td>33.9</td>
<td>-</td>
</tr>
<tr>
<td>S.D.</td>
<td>9.4</td>
<td>-</td>
<td>10.8</td>
<td>-</td>
</tr>
</tbody>
</table>
Abbreviated TAS and DIS

Table 2 shows the Pearson product-moment correlations between the abbreviated and the complete subscales for the skiers and the G.P. clients (as was mentioned before, only the abbreviated form was used in the case of the construction workers). These correlations are very high, and therefore it may be inferred that the abbreviated form is a satisfactory substitute for the original scale. In the subsequent analyses, only the results from the abbreviated form are used.

Internal consistency

The internal consistency figures (Cronbach’s $\alpha$) of the TAS and DIS scales for the different groups are presented in Table 3. The internal consistencies of TAS and DIS (ranging from 0.63 to 0.79) appear to be quite satisfactory.

### Table 2

Correlations between abbreviated and complete SS subscales

<table>
<thead>
<tr>
<th>Scale</th>
<th>Construction workers</th>
<th>Skiers</th>
<th>GP clients</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAS</td>
<td>-</td>
<td>0.90</td>
<td>0.92</td>
</tr>
<tr>
<td>DIS</td>
<td>-</td>
<td>0.86</td>
<td>0.90</td>
</tr>
</tbody>
</table>

### Table 3

Internal consistency SS subscales (Cronbach’s $\alpha$)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Construction workers</th>
<th>Skiers</th>
<th>G.P. clients</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAS</td>
<td>0.75</td>
<td>0.75</td>
<td>0.74</td>
</tr>
<tr>
<td>DIS</td>
<td>0.79</td>
<td>0.63</td>
<td>0.73</td>
</tr>
</tbody>
</table>

### Table 4

Construction workers' accident involvement

<table>
<thead>
<tr>
<th>Accident involvement</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%</td>
</tr>
<tr>
<td>Ever self</td>
<td>122</td>
<td>43%</td>
</tr>
<tr>
<td>Last year self</td>
<td>42</td>
<td>15%</td>
</tr>
</tbody>
</table>
Construction workers' accident involvement

Table 4 presents the number and percentage of construction workers who have been involved in accidents. It becomes clear that the accident involvement ratio decreases from 43% who say that they have ever had an accident themselves, to 15% who say that they met with an accident during the past year. This last figure is especially interesting, because it is surprisingly close to the estimates by Prins (1985) and van Vliet (1986) that about 2/3 of all accidents do not appear in the official statistics. In the introduction a number of 4.2 "official" accidents per 100 working years (i.e. 4.2%) was mentioned for construction industry, this being about 1/3 of the 15% mentioned by our subjects.

TAS and DIS scores for the different accident involvement groups

In Table 5, the differences between the means of the two accident involvement groups are presented separately. These have been tested for significance (T-test). From Table 5 it may be inferred that none of the differences tested are significant. In fact, the mean scores are virtually the same in each case. This means that hypothesis 1 is not confirmed: there does not seem to be a relationship between TAS or DIS scores, on the one hand, and accident involvement on the other. The construction workers' risk taking tendency does not appear to be related to their accident rates. This finding casts some doubt on the validity of the accident-proneness theory and is also unexpected in the light of the risk homeostasis theory.

TABLE 5

<table>
<thead>
<tr>
<th>Accident involvement</th>
<th>Variable</th>
<th>TAS mean</th>
<th>S.D.</th>
<th>T</th>
<th>P</th>
<th>DIS mean</th>
<th>S.D.</th>
<th>T</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever self</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>(n = 122)</td>
<td>2.5</td>
<td>1.0</td>
<td>-0.32</td>
<td>n.s.</td>
<td>2.9</td>
<td>1.1</td>
<td>0.72</td>
<td>n.s.</td>
</tr>
<tr>
<td>no</td>
<td>(n = 162)</td>
<td>2.4</td>
<td>1.0</td>
<td></td>
<td></td>
<td>3.0</td>
<td>1.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last year self</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>(n = 42)</td>
<td>2.5</td>
<td>1.0</td>
<td>-0.52</td>
<td>n.s.</td>
<td>2.9</td>
<td>1.0</td>
<td>0.26</td>
<td>n.s.</td>
</tr>
<tr>
<td>no</td>
<td>(n = 242)</td>
<td>2.4</td>
<td>1.0</td>
<td></td>
<td></td>
<td>3.0</td>
<td>1.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

n.s. = not significant.
Correlations between TAS, DIS and safety behaviour indices (only correlations with $p \leq 0.10$ are given)

<table>
<thead>
<tr>
<th></th>
<th>TAS</th>
<th>DIS</th>
<th>Behaviour</th>
<th>Use of ppd</th>
<th>Asking info</th>
<th>Warning colleagues</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAS</td>
<td>0.17</td>
<td>0.08</td>
<td>0.08a</td>
<td>0.26b</td>
<td>0.30b</td>
<td>0.57b</td>
</tr>
<tr>
<td>DIS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behaviour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of ppd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asking info</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* $0.10 \geq p > 0.05$
* $p \leq 0.01$.

**TAS and DIS scores in relation to safety behaviour**

In Table 6, Pearson's product-moment correlations between the relevant variables are presented. Table 6 shows that there does not seem to be a relationship between TAS or DIS score on the one hand and any of the behaviour indices on the other. This means that hypothesis 2 is not confirmed either: the construction workers' risk taking tendency does not seem to be related to their self-reported safety behaviour. Again, the risk homeostasis theory is not supported.

**Construction workers compared with skiers and GP clients**

Table 1 shows that the three groups have different age distributions. TAS and DIS scores decrease with increasing age, a finding that is consistent with the results from other authors (Feij, 1978; Feij and van Zuylen, 1984). Therefore, it seems wise to correct for differences in age (Bouter, 1988) when the three groups are compared. A covariance analysis, with age as a covariate, was conducted for this purpose. In Table 7, the uncorrected and the corrected mean scores on TAS and DIS for the three groups are presented.

From Table 7 it can be concluded that there is still a significant difference in TAS-score difference between the construction workers and the skiers, as well as between the construction workers and the G.P. clients group after correction for age. This means that hypothesis 3 is not confirmed as far as the TAS scale is concerned. Construction workers appear to score relatively low on the TAS scale. This difference is especially obvious when the construction workers and the skiers are compared. Construction workers seem to have relatively little need to engage in physically risky activities.

From Table 7 it may also be inferred that, concerning the corrected DIS scores, there is a significant difference between the construction workers and
### TABLE 7

Results of covariance analysis

<table>
<thead>
<tr>
<th></th>
<th>Average score before correction</th>
<th>Average score after correction</th>
<th>$F$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TAS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>constr. workers</td>
<td>12.2</td>
<td>12.5</td>
<td>80.9</td>
<td>0.00</td>
</tr>
<tr>
<td>skiers</td>
<td>17.6</td>
<td>17.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DIS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>constr. workers</td>
<td>14.9</td>
<td>15.0</td>
<td>15.3</td>
<td>0.00</td>
</tr>
<tr>
<td>skiers</td>
<td>13.2</td>
<td>13.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Construction workers (≤35 year, $n=85$) versus G.P. clients (≤35 year, $n=61$)

<table>
<thead>
<tr>
<th></th>
<th>Average score before correction</th>
<th>Average score after correction</th>
<th>$F$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TAS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>constr. workers</td>
<td>14.3</td>
<td>14.5</td>
<td>3.9</td>
<td>0.05</td>
</tr>
<tr>
<td>G.P. clients</td>
<td>16.5</td>
<td>16.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DIS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>constr. workers</td>
<td>15.6</td>
<td>15.8</td>
<td>1.5</td>
<td>n.s.</td>
</tr>
<tr>
<td>G.P. clients</td>
<td>15.0</td>
<td>14.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

the skiers, but there is not between the construction workers and the G.P. clients, although the tendency is obviously in the same direction here. When compared with the skiers (and less so when compared with G.P. clients) the construction workers appear to have greater need for disinhibition which is manifest in activities like social drinking and attending parties. Our explanation of this result will stress social–economical and social–cultural factors, pointing to the social values of the construction workers and to regional and cultural differences (see the discussion).

**DISCUSSION AND CONCLUSIONS**

When the results of this study are interpreted, a number of limitations to its validity have to be borne in mind:

1. Although a.o. Bouter (1988) and Wilde et al. (1985) put forward a number of arguments for using some or all of the subscales of the SS (sensation seeking) scale to measure the target level of risk (at least partly), it still seems necessary that more data on the validity of this assumption should become
available. In the context of this article an investigation into the adequacy of the TAS and DIS scales as an operationalization of the target level of risk in work situations would be especially interesting.

2. Abbreviated scales of the TAS and DIS have been used. The high correlations between the abbreviated and the original scales, as well as the satisfactory internal consistency numbers are indications that this hardly constitutes a problem.

3. The data are based on questionnaires. Especially in self-reported accident involvement and safety behaviour some bias might be present.

4. The three groups of subjects may not be representative of the populations concerned. They only constitute groups whose research data were available. Nevertheless, there is no reason to believe that the (lack of) empirically verified relationships between the variables concerned would not be valid for external populations.

5. There were some problems as to the comparability of the groups. These were, at least partly, solved by the use of only male subjects with comparable educational levels and by the use of covariance analysis to control for age. Yet, some unrecognized residual confounding might still be present.

The assumption that construction workers are not a very careful group, but that they are often inclined to take risks, would lead to the expectation that the scores on the TAS scale (specifically measuring preferences for physically risky activities) would be highest for the construction workers as compared with the other two groups. From the data presented here, the opposite seems to be true. When the results on the TAS scale for the three groups are compared, the construction workers appear to have lower scores than two other groups (chosen rather arbitrarily). Arguments for recklessness or inclination to take risks in construction workers seem to be based on false prejudices.

The data on the DIS scale indicate that the construction workers obtain higher scores than the skiers and (to a lesser degree) than the G.P. client group for this dimension. The DIS scale concerns preferences for hedonistic activities like social drinking and attending parties. A possible explanation of this result might be found in the norms and values of the construction workers as a social group with respect to these activities. Another, more social-cultural explanation, might be based on the fact that the construction workers in the sample are from the southern part of the Netherlands. The social norms and values in this Roman Catholic region concerning such activities are less strict than in other parts of the Netherlands where a Protestant ethic is more dominant. Arguments in favour of this view can also be found in Knibbe (1984) and Knibbe et al. (1987). Further research will have to shed more light on this problem.

When the safety problem in industry is discussed from the point of view of behavioural science, two kinds of determinants of unsafe behaviour are usually mentioned: situational and individual determinants (McCormick and Ilgen,
The results of our study indicate that it is probably not possible to explain the unsafe behaviour of construction workers that is often discussed by the workers’ supposedly greater risk taking tendency. Searching for other explanations is speculative. Although it is possible to think of other individual characteristics such as age, experience, knowledge and motivation, it now seems more obvious from a preventive point of view to concentrate on situational determinants. One might think of the role of meso level factors on the level of organization (such as leadership style and safety policy in the organization), but macro level factors (socio-economic or construction industry specific) might also play an important part (for example, coordination problems between main contractor and subcontractors). Arguments in favour of this line of thinking can also be found in Sigala et al. (1984), Westberg (1984), Bullinga et al. (1987), de Jong et al. (1988) and Abeytunga (1978).

It may be concluded that our data and analyses do not offer any support to the risk homeostasis theory. Firstly, the scores on TAS and DIS are not related to accident involvement. Secondly, the risk taking tendency among workers in an occupational group that is notoriously considered unsafe, appears not to be higher (even less so) than that in two other groups whose data were available. It must be kept in mind that this especially concerns the factor that seems most relevant to construction workers (TAS). As to the results on the DIS scale, other explanations have been put forward. The implications of our results for safety campaigns in construction industry will not give rise to optimism. No significant improvements should be expected from such preventive activities unless they are at least accompanied by the utmost effort to change structural variables on the level of the work site, the organization and the industrial sector concerned.

Finally, it may be concluded that there is still a lot of uncertainty about the explanation of unsafety and unsafe behaviour in the construction industry. It is important that studies aiming at a validation of the results and analyses reported here will be conducted. Then it might be possible to give a more definite answer to the question of the tenability of our (preliminary) conclusions. Such studies should be extended to larger and more representative samples in construction industry and to other populations and occupational groups. The role of organizational and other external factors should also be investigated more thoroughly.

REFERENCES


Knibbe, R.A., 1984. From everyday drinking to problematic drinking (in Dutch, with summary in English). Doct. Diss., Limburg University, Maastricht.


