

Attitude to health as a factor of accident-free truck drivers

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Abstract— The article discusses the factors related to health in connection with the accidents of truck drivers. The basis of the study of implicit attitudes towards health and disease lies in the model of orthogonal implicit attitudes. The study of long-distance drivers used the Double-Target IAT method (a modified version of the Single-Target IAT), based on a model of orthogonal implicit attitude.

Keywords— *Implicit attitudes to health, accident rate of drivers, type of injury*

I. INTRODUCTION

Despite the superior safety level of the roads and the fact that road infrastructure in European countries is well developed, labor protection specialists in many European countries consider the profession of long-distance driver to be the most dangerous one. According to European statistics, every tenth person killed at work was a long-distance driver. In Russia, this problem is even more urgent due to the low level of road infrastructure and the high level of congestion of Russian roads, the high popularity of road freight because of their economic profitability. These circumstances place increased demands on the safety of cargo transportation, as well as the profession of truck driver.

Long-distance drivers belong to the group of dangerous occupations: they often face traffic accidents, this professional group has sudden health problems, and there are frequent workplace injuries. According to Russian insurance companies, a frequent cause of road accidents is sudden and acute health problems of long-distance drivers (more than half of accidents are associated with stroke, cardiovascular diseases, and acute gastrointestinal disorders). The number of deaths due to health problems of long-distance drivers has increased.

To solve this acute problem, in Russia and abroad, research scientists, practitioners, and emergency specialists conduct research on the important professional qualities of "accident" and "accident-free" drivers, driving style, perform the analysis of the roads, etc..

II. METHODS

A. Purpose

According to the results of analysis of the industrial injuries of dangerous professions, the authors came to the conclusion, that there are groups of employees susceptible to injuries, damage to themselves and others (unintentional), as well as a tendency to the repeatability of injuries. The purpose of the study is to study the possibility of predicting human behavior in stressful and dangerous occupational situations according to the employee's "attitude to health" profile, as well as to analyze implicit attitudes towards health and illness in relation to the level of accidents and injuries of long-distance drivers..

B. Methods and methodology

The study involved 108 long-distance drivers of a large logistics company in St. Petersburg. Accident analysis was carried out using a method that has been used in the company for several years: the number of accidents per driver per year, the severity of the accident, and the damage to the driver's health. The indicator of drivers' productivity was also taken into account (timeliness of departure on the flight, delivery of cargo, etc.).

All men, from 28 to 56 years old, mean age 38.5 years, standard deviation 4.99. The number of accidents for the last year is from 0 to 9, the average number is 1.63, the standard deviation is 2.29. The number of trouble-free drivers is 27 people (33.3% of the total number of drivers). The company has a scale for assessing the severity of accidents from 1 to 10, with a similar variation for 54 drivers in accidents, the average severity rating was 3.83, the standard deviation 2.70. At the same time, 11 drivers (20.4% of those involved in accidents) suffered damage to their health. Also estimated the presence of absenteeism / disruption flights. 11 drivers (13.6%) at least once disrupted flights.

The basis of the study of implicit attitudes towards health and disease lies in the model of orthogonal implicit attitudes (Dominiak, Rodionova). The study of long-distance drivers used the Double-Target IAT method (a modified version of the Single-Target IAT), based on a model of orthogonal implicit attitude. [1], [2].

III. DISCUSSION

The basis of the research was the theory of E. Greenwald's implicit installation (Greenwald et al., 1998; Greenwald et al., 2002). We also took into account various interpretations of the nature of explicit and implicit attitudes and their relation to behavior (Wilson et al., 2000; Rudman, 2004; Perugini, 2005; Baron, Banaji, 2006; Rydell et al., 2006; Nosek, 2007; Petty et al., 2007 and others.) [3], [4], [5], [6], [7], [8], [9], [10], [11]. Important for understanding the research model was the analysis of the results obtained by V. I. Dominyak and L. V. Mararitz (2012, 2013) [12], confirming, rather, the dual nature of the facilities, on the one hand, and the observations made during the further use of their own computer technique. In this regard, we have assumed that along with various situational behavioral manifestations of an explicit and implicit installation, situational and behavioral manifestations can be distinguished and described with respect to various implicit attitudes towards antonymic value categories.

The space formed by two axes belonging to such categories and allowing to distinguish four types of relations (see Fig. 1) is called the "Model of orthogonal implicit installations"

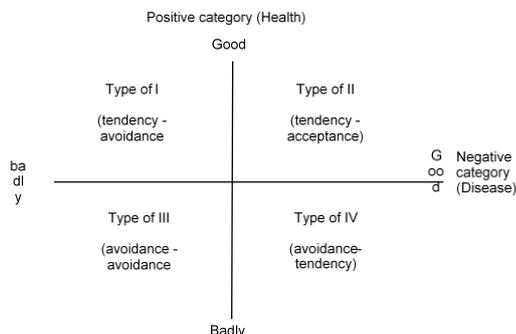


Fig. 1. Model of orthogonal implicit installations

The model involves the description of situational-behavioral manifestations of each of the four selected types. In particular, the desire for a situation associated with a positive category, but allows staying in a state associated with a negative category (acceptance).

The "positive category - good, negative - bad" (type I) quadrant implies a desire to create a state associated with a positive category, linking with a negative category (avoidance), which can contribute to the formation of strong (chronic) avoidable conditions.

The quadrant "Positive category - bad, negative - good" (type III) is associated with a tendency to the state associated with the avoidance of the state, associated with a negative category; for example, a defensive reaction. The most dangerous is the quadrant "positive category - bad, negative - bad" (type IV), which may suggest the presence of a third condition, worse (with worse consequences) than a condition associated with a negative category..

We hypothesized that the model of orthogonal implicit installations for the health-to-disease categories can be described as follows. Type I, the adherents of health, implies a desire for health and the avoidance of disease. Employees who are of this type may suffer from chronic diseases or extreme (peak) manifestations of diseases. Such workers will

demonstrate a moderate level of injury, which will be associated with "sudden" manifestations of the disease. This type will be characterized by a minimum level of absenteeism. Type II is an adaptive type, implying a desire for a state of health, but allowing, if necessary, to be in a state of illness (disease as a way to health). Such workers will demonstrate minimal injuries. It can also be assumed that moderate absenteeism will be characteristic of such workers for valid reasons. Type III - "care" for the disease under adverse external conditions. Moderate level of injury, high absenteeism. Type IV - avoiding both conditions implies the presence of a third, worst condition. For the state of the disease - a condition, presumably, death. High injury rates with serious consequences. Absenteeism is mainly associated with injuries (not only in the workplace).

To test the applicability of the model to truck drivers operating long-haul flights, we formulated the following hypotheses:

- 1) Type I - a moderate level of accidents with moderate accidents; minimal level of absenteeism.
- 2) Type II - the minimum level of accidents with the minimum severity of accidents; moderate level of absenteeism.
- 3) Type III - a high level of accidents with a high severity of accidents; moderate level of absenteeism
- 4) Type IV - moderate level of accidents with moderate accidents; high level of absenteeism.

IV. RESEARCH RESULTS

To test the hypotheses of the study, we identified four groups of drivers for their implicit attitude towards health and illness: I - health is good, illness is bad; II - health is good, illness is good; III - health is bad, illness is good; IV - health is bad, illness is bad.

For a clearer identification of types, an intermediate zone in relation to health and disease according to the polar group method was isolated and excluded from the study. As a basis for selecting groups, the data obtained in previous studies on an independent sample (N = 350) were used; the marginal value was half the standard deviation for each installation (health is good — more than 128; health is bad — less than -6; disease is good — more than 18 The disease is bad - less than -58).

A. Injury Study Results

For drivers who participated in the study, data were obtained on the number of accidents per year, the severity of accidents (with damage to health or not). We also considered cases of absenteeism. Cases of accidents were divided into light (without damage to health), moderate severity (light damage to health) and severe (with damage to health).

B. Types of health attitudes

Type 1 ("health is good, illness is bad"): the employee has a positive attitude towards health. His state of health is an attractive state for him. This can manifest itself in taking care of yourself and your health. For such a person, a healthy lifestyle can be attractive: a healthy diet, fitness classes, and sports. Staff 1 type to take care of their appearance, form. Most likely, the threat of bad habits is not very great. Employee type 1 consciously refers to them, which increases the

likelihood to get rid of them, if they are present. Along with a positive attitude towards health, type 1 shows a negative attitude towards the disease. The condition of the disease is a avoidable condition, type 1 tends not to hurt. If ill, then only in the most extreme cases. In general, this combination of installations is constructive: it is good to strive for health and to avoid illness. However, there are some risks here. In particular, type 1 can perceive the disease as a weakness or loss of time. Therefore, such an employee does not go to doctors, ignores the symptoms of the disease. Type 1 prefers not to take sick leave and to carry the disease "on the feet." This can lead to the appearance of "neglected" diseases that can develop into a chronic form.

Type 2. (Health is good, illness is good»). The state of health is an attractive state. Type 2 try to be healthy and not get sick again. Along with a positive attitude to health for type 2 is characterized by a positive attitude to the disease. Type 2 tends to health, but does not avoid the disease. The disease is a form of protection of the body, a form of rest, restoration of its efficiency. Injury risk: type 2 refers to the adaptive type. The risk of injury is minimal. In case of accidents, their severity is below average. The probability of a sudden acute manifestation of the disease is low. The probability of absenteeism is average.

- Type 3 ("health is bad, illness is bad"). Type 3 to health is negative. Health condition is a avoidable condition. Such a setting can manifest itself in ignoring a healthy lifestyle, in bad habits, sometimes in risky behavior. We assumed that the reasons for the emergence of such an attitude to health may be early childhood experience, when the child was in a state of health poorly, for example, due to increased demands, lack of attention, heavy workload. At the same time, 1 type of disease is negative. The condition of the disease is also a avoidable condition. This may mean that type 1 does not allow itself to get sick. Most likely, he prefers not to notice his illness, which can lead to the emergence of acute or chronic forms of the disease. Prerequisites for such an attitude to the disease could also be children's experience. The state of illness of the child was also bad. The complexity of this combination of attitudes is that while avoiding caring for one's health, finding forms of behavior that increase the risk of disease, the disease is also avoided as a condition necessary to cope with the disease. This can lead to the detection of diseases in the later stages, when it becomes much more difficult to treat them.
- Type 4 (health is bad, illness is good). Health condition is a avoidable condition. We assumed that the formation of such a setup is possible if a healthy child was faced with excessive demands, was deprived of the love and attention of parents. On the other hand, the disease allowed to get the missing, and became an attractive state. It could be the only way to prove something to others, relatives and friends, to get attention, care, love. We can say that the disease for lyuley 3 types - a way to draw attention to themselves. Such a hidden, in-depth

setting can lead to a "runaway" trend from a healthy state to a disease, since a disease state is subconsciously perceived as desirable. This can lead to frequent illnesses, or can cause long-term chronic illnesses. Emotional involvement in the disease, the expectation of the appearance of various signals, leads to the fact that the body responds with pleasure and gives these signals.

C. Investigation of accidents by group attitudes to health

To test the hypotheses regarding the differences between types according to the number and severity of accidents, the Mann-Whitney test was used, the probability of error is indicated taking into account the Bonferroni amendment (see Tables 1 and 2).

Table 1. Differences between types according to the number of accidents (N = 108)

	mean	Std.Dev.	I	II	III	IV
I	1.03	0.53		0.00003	0.024	0.00003
II	0.1	0.31			0.009	0.00015
III	6.8	1.69				
IV	62.2.	0.45				0.031

Drivers who belong to the 4th type of attitude to health (health is bad, illness is bad) are statistically significantly more accidents per year than employees who are related to 1, 2 and 3 types. One type 4 employee accounts for 7 accidents per year. A driver who belongs to type 1 (health is good, illness is bad) and type 3 (health is bad, illness is good) there are 1-2 accidents per year. The employees of type 2 (health is good, the disease is good) - 0 accidents per year.

Table 2. Differences between types of severity of accidents (only drivers who got into accidents) (N = 108)

	mean	Std.Dev.	I	II	III	IV
I	2.48	0.83	-	H.3.	H.3.	0.000042
II	2.0	1.41		-	H.3.	H.3.
III	3.0	1.23			-	0.031
IV	8.80	0.92				

A statistically significant difference in the empirical distribution of health damage among drivers in accidents and expected theoretical ($\chi^2 = 46, p = 0.00000$) was found. A statistically significant difference in the empirical distribution of the presence of absenteeism / disruption of flights and the expected theoretical ($\chi^2 = 50.3, p = 0.00000$) was found.

The severity of accidents in which drivers of types 1, 2 and 3 are rated at 3 points (maximum 10), while the severity of accidents in which drivers of type 4 fall is estimated at 8.8 points.

D. Damage to health and absenteeism

- Drivers who belong to the first three groups (1, 2 and 3 types of attitude to health) got into accidents with minimal damage to health. At the same time, drivers

who belong to the 4th group (health is bad, illness is bad) in all the accidents they got, they received damage to health. Including serious damage to health, including hospitalization.

- Drivers of types 1 and 2 (the health category is rated positively) showed a statically significant difference compared to drivers of types 3 and 4 in terms of absenteeism. Drivers of types 3 and 4 (the health category is rated negatively) committed cases of absenteeism during the year, while in 3 groups of such cases there were 2 times more than 4. This is because drivers of type 3 in a situation of stress, fatigue or stress fell ill, "" went into the disease ").

V. CONCLUSION(S) AND RECOMMENDATIONS/FUTURE DIRECTIONS

Implicit characteristics of attitudes towards health and illness are reflected in the model of orthogonal implicit attitude. According to the results of the study, four types of employees were identified that have their own qualitative characteristics and belong to risk groups, where type 1 is the lowest, type 4 is the highest in which there are employees most at risk of losing health and workplace injuries. It is dangerous to engage such employees in difficult and stressful work (Fig. 2).

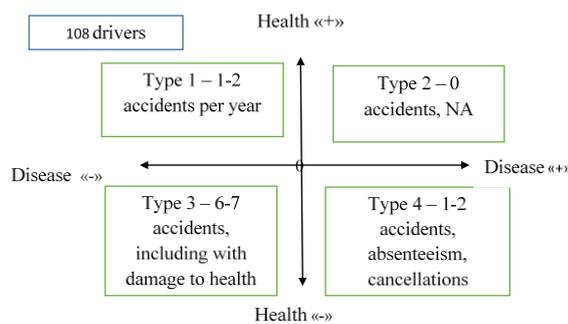


Fig. 2. The results of the accident rate of long-distance drivers in relation to the type of attitude to health

The study of the attitude to health in the context of professional activity is clearly of interest, since it reveals not only the possibilities of preventing the specialist's health problems, but also gaining theoretical and practical knowledge that allows creating conditions for preservation and development of regulatory properties of the organism, its physical, mental and social well-being. In turn, this ensures high reliability of professional activity, career longevity and maximum life expectancy. In this case, it is important to develop models of a professionally healthy employee and methods of diagnostics of the attitude to health.

The authors assume that not a single model can fully replace the studied object, since it displays only some of its properties. But sometimes, when solving certain tasks, in our case – the identification of types of employees that can be successful in a tense and dangerous professional activity, the dual model of attitude to health can be interesting and practically significant.

The study of the ratio of the true profound attitude to health and professional behavior also remains relevant. There is a need for a theoretical model of "occupational health"

based on the identification and classification of implicit and explicit factors that shape the attitude to health.

The authors suppose that the study of a person's attitude to health, to the issues of maintaining occupational health can fully reveal the nature and structure of a healthy personality, solve theoretical-methodological and methodical issues in developing programs of psychological support for specialists in maintaining occupational health.

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