

ISCHAEMIC HEART DISEASE AND THE BEHAVIOR TYPE INVOLVED IN THE DETERMINATION OF ISCHAEMIC HEART DISEASE

*Luiza Despina Demian*¹, *Mihaela Simona Popoviciu*¹, *A-R. Popa*¹, *Diana Aron*¹,
*Prună Camelia*¹, *Zourob Emadeldeen*²

¹ University of Oradea, Faculty of Medicine and Pharmacy, Emergency Clinical County Hospital, Department of Diabetes and Internal Diseases

² Neasher Hospital, Israel

Abstract

The role of type A personality in the predisposition towards ischaemic heart disease has been the object of extensive studies. The answer to psycho-emotional stress is modulated by the subjects' type of personality through neuro-endocrine mechanisms and this can modulate other well-known risk factors: blood pressure level, lipid profile alteration, life style changes etc. Some of the subjects exposed to continuous professional stress, through an adjusting/adapting process, are turning their type of behavior from type A to type B. The overall aspect found in our groups could be the result of subjects turning from type A behavior to type B behaviour managing to keep their body mass unchanged and without changing the smoking habits. Type A behaviour prevails in younger subjects, and type AB or type B is more common in elderly subjects. Analyzing Bortner test we concluded that the questions don't evaluate the hostility character type of type A behaviour, hostility being an even more important characteristic of this type than the lack of time, the original test allowed a looser self-evaluation between the two groups. Patients with ischaemic heart disease form the studied groups don't show a higher rate of type A behaviour, as we would expect. We have exposed the adaptive conversion hypothesis from type A behaviour towards type AB behaviour and type B behaviour in engine drivers permanently exposed to professional stress that could imply the situation described above. Speaking about ischaemic heart disease and sedentary life style, we concluded that in both groups we examined the physical efforts made by all the subjects are too large, thus showing that it cannot represent a factor for heart protection against ischaemic heart disease.

keywords: *ischaemic heart diseases, behaviour*

Type a behaviour

Rosenman and Friedman are the ones who defined the so-called type A behaviour and type B behaviour – yet, not wishing to issue another classification of personality structure it's just meant to group a certain type of answers given by the examined subject, put in front of different life situations.

Vast studies, as the one conducted at Framingham, have concluded that type A personalities have a decisive influence in inducing ischaemic heart disease, sometimes as important as all the other risk factors put together.

Type A personalities are ambitious, having an alert way of working or eating,

always checking if their activities are on time, loving competition, they seek to dominate the persons around them, showing a certain degree of aggressiveness towards their competitors, having the sense of responsibility, are preoccupied with avenging injustice, they constantly follow economical success and their ambitious mind and impulsive character pushes them to achieve more and more each day, with the down side of enjoying less their success. By grouping all of this, we can observe two major categories of characteristics: a state of hostility and a state of constant emergency, the first one is more than certain implied as a cardiovascular risk factor.

The examiner can observe an elevated musculoskeletal tonus that causes their attitude to appear stiff and an unrelaxed, also unexpected head movement, the subject is clenching his fists during an argumentation, and eloquent speech and a peculiar mimicry. The examination shows higher fluctuations of the pulse and the blood pressure and a superior costal breathing type.

Type B behaviour subjects are not excessively preoccupied by professional or social achievements, they are never running out of time, have a relaxed way of being, tempered character, and their speech is fluent and rhythmic.

Later on type X behavior was defined as type AB behaviour, for subjects that we could not include nor in type A or type B behaviour.

In the author's view, the type of behaviour is genetically determined but is possible that type A can be acquired either through education or professional requirements in accountants or military personal. Modern agitated life, with requests

more and more a fast way of living, more actions to complete in a shorter period time, taking quick decisions every day, on the minute, can favor switching to type A behaviour.

The behaviour type can be assessed with the help of special tests. Jenkins has put together a set of questions (Jenkins Activity Survey) made up of 52 questions. Besides the fact that this test has a precise structure, the questioner cannot be adjusted to the life style in our country. The Bortner test seems more adequate, thus being the reason it is used in some studies in our country.

Means and method

The study is a thorough and complete research; it has included engine drivers working at Oradea Roundhouse. 180 engine drivers were examined all of them working in Railway Safety according to the present country laws. For analogy, it was put together another group of subjects - the witness group - also made up of 50 male persons, between the age of 25 and 51, to compare it to the test group. The witness group included, like the test group, individuals working at Railway Safety, and the same methods were applied examining them when the periodically examination was conducted.

We applied the Bortner test to evaluate the behaviour type of the subjects. After evaluating them, certain score was given to each, according to the test, and they were included in the following categories:

- B1: a score between 0-29 points, indicated a behaviour scarcely associated to cardiovascular disorder;
- B2: a score between 30-59 points, indicated that the subject has a low risk for cardiovascular disorder;

- AB: a score between 60-79 points, indicated that the subject has a mixture of type A and B behaviour;
- A2: a score between 80-109 points, indicated that the subject has a predisposition for cardiovascular disorder, especially if other risk factors are associated;
- A1: a score between 110-140 points, indicated that the subject has a high risk for cardiovascular disorder.

The Holmes stress questionnaire

Each subject was asked to take the Holmes test to establish stress causes and their effect on their behaviour. The score obtained

by each subject permitted us to group the individuals examined as follows:

- 1: a score between 0-150 points, shows no significant stress problems;
- 2: a score between 151-200 points, shows a slight life crisis;
- 3: a score between 201-300 points, shows an average life crisis;
- 4: a score higher than 301 points signifies a major life crisis.

In fact, due to the work specificity of engine drivers, type A subjects should choose this line of activity.

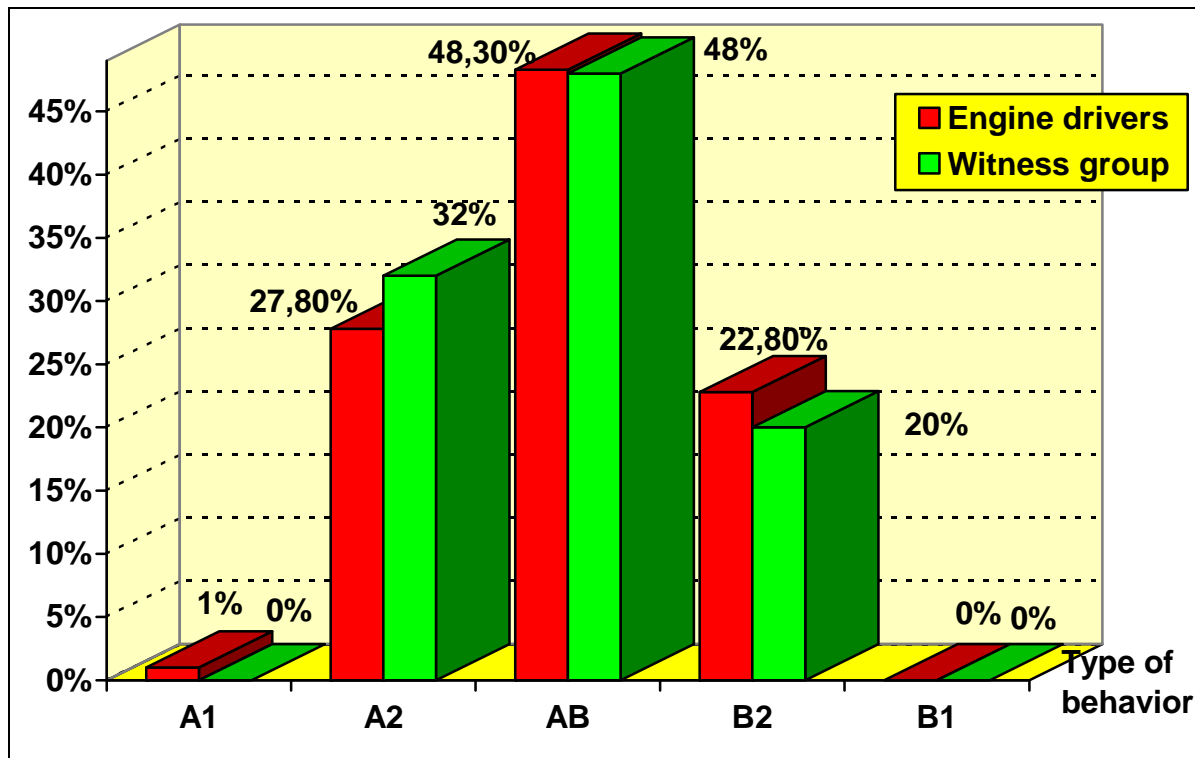


Figure 1. Analogy between behaviour types of engine drivers working at Oradea Railway Station in 2007 and the witness group

Estimating the distribution which we obtained from both our groups, with the maximum distribution in the intermediary type, which differs from the one theoretically normally present in the general population, we can issue the following hypothesis, valid for

anybody working at Railway Safety: that the subjects exposed to continuous professional stress, through an adjusting/adapting process, are turning their type of behavior from type A to type B.

Until now, the literature on this subject only followed one lead - the transformation from B type to A type of behaviour.

However, for the adjusting transformation from type A to type B behaviour pleads:

- The elevated percent of type AB behaviour in our study group;
- The tendency to show overweight at type B2 subjects by analogy with the type AB, and the type AB had an overweight tendency by comparing it to type A2. Traevison (citation no 12) found more overweight type A subjects than type B. The overall aspect found in our groups could be the result of subjects turning from type A behaviour to type B behaviour managing to keep their body mass unchanged;
- Comparing smoking habits of engine drivers showing type B2 behaviour to the ones showing type A2 behaviour, we concluded that the first ones are the heavily smokers, contradicting the known theoretical aspect. One can assume that engine drivers with type A2 have switched to type B2 behaviour through the earlier mentioned adapting process, without changing their smoking habits;
- Also type A behaviour prevails in younger subjects, and type AB or type B is more common in elderly subjects. If we have to group the subjects according to their age we can say that engine drivers, from the entire study group, between 24-29 years of age, 30-34 years of age and 35-39 years of age, manifest a type A2 behaviour, but between 40-44 years of age, 45-49 years of age and 50-54 years of age, type B2 prevails to type A2.

The critical analyze of Bortner test

We recorded the existence of only one subject, an engine driver with type A behaviour, when we have expected, in this line of work that requires a great amount of psychic concentration, to encounter more subjects with type A behaviour.

We asked ourselves if the Bortner test, in the form we used it and the form that is commonly used in other scientific papers from our country (7) hasn't introduced some comprehension errors.

To investigate/research this problem, we divided the examined subjects in three groups: A2, AB and B2 according to each type of behaviour and we studied if the answer from each of 20 questions belonging to the Bortner test, can be placed between the parameters we considered as average, that lead to order the subject in the group it belongs (Figure 2).

We are aware that the questions used by the Bortner test are investigating different aspects of the human behaviour and that commonly there have to be some distinctions between one individual and another and between the final score to each question of the same individual. Placing one individual in a certain type of behaviour cannot be done after just one answer from the test but looking at fig 2, we can notice some interesting things.

First of all, all deviations in addition or minus of the average axis to a certain question facing the average of all questions are concordant, in the same direction, for A2, AB and B2 behaviour types same as in the 2 groups examined. This way, in which the multiple choices for answers were introduced can't be the game of hazard. We will examine a few of the questions in which we observed unexpected differences that it should commonly appear.

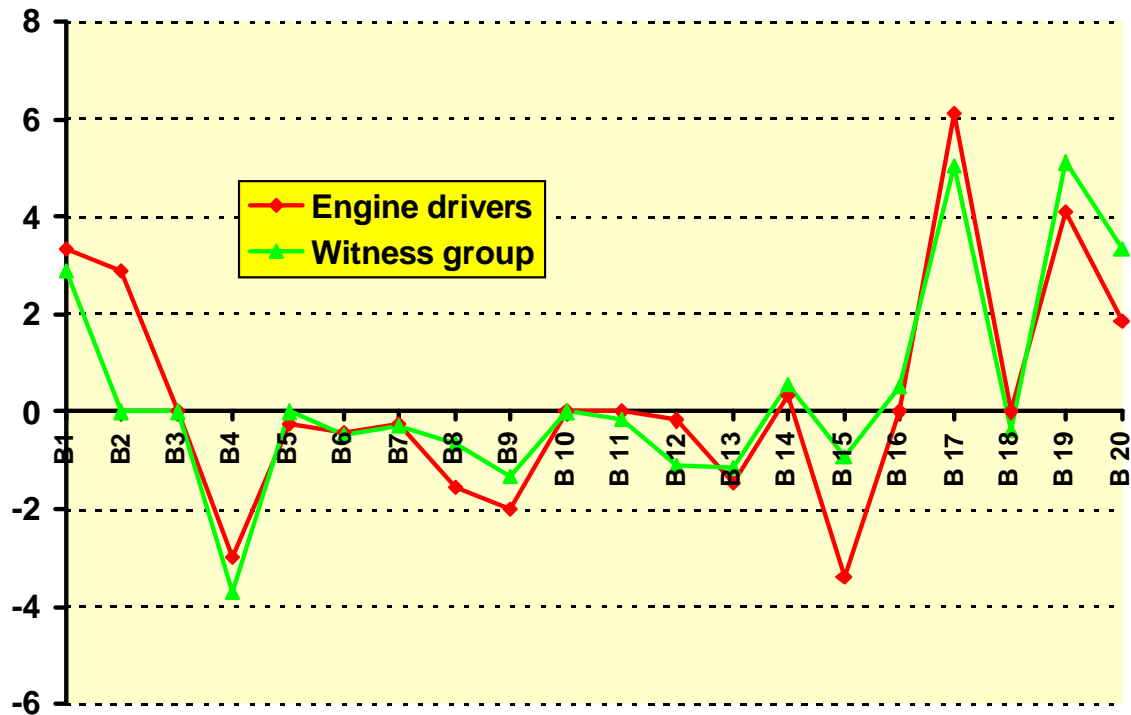


Figure 2. The sum of all deviations from the average axis in addition or minus of an answer from the Bortner test towards the average of the entire A2, AB or B2 group to which belongs the examined engine drivers working at Oradea Railway Station in 2007, comparing it to the witness group

At question 1, the subjects had two options: “I don’t mind if I put on hold the work I just started” or “I have to finish straight away the work I began”. The subjects’ choose the second option even the subjects belonging to type B2 or AB, not as we expected it.

At question number 4, we think that is more an extra betting that we can’t consider in concordance with the behaviour type from which the subject is part of when he chooses the following option: “I listen to what others have to say and I let them finish their ideas before I speak”.

At question number 17 all subjects opted for the following answer, even type B2 and AB: “I always show responsibility”. We ask ourselves if not just to show their attachment to their work the subjects’ choose intentionally this answer.

Question number 19 with the option choose by the majority of subjects: “ I take my work seriously, I work during weekends, I take some work home” could signify also the need to work more, not just an element belonging to type A persons, although this is not justified for engine drivers according to the monthly payment. Although the subjects from the witness group made the same choice this could mean that all of them gave the same answer motivated by the desire to present oneself willingly to work.

In addition, another option was overrated in question number 20 “I give a lot of attention to details”, answer that we don’t consider characteristic to type A behaviour although it was placed in the right upper corner of the test, where all the options which represent type A behaviour were grouped.

In return the 14-th question of the test is all wrong put together by the writers of the test, because the answer “I share a lot of extracurricular interests” should have been put in the right side of the test paper, if it has been decided by the way of awarding the points, that all the answers of one particular behaviour type should be grouped on one side of the paper.

The big picture is that all the subjects preferred to choose the first option from one pair of questions. The French- Belgian original Bortner test had a special zig-zagging arrangement, precisely to avoid this kind of mistakes. The original test allowed a looser self-evaluation between the two groups, without obligating the subjects to integrate itself in one of the seven squares.

Maybe the romanian test type is less performant, dividing the subjects into 5 different classes (A1, A2, AB, B2 and B1) instead of three classes like in the French-Belgian test, which respects the categories put together by Rozenman and Friedman. On the other hand, the space for the intermediary type is restricted, does not have a third of the space like in the original Bortner test.

At last, the final criticism that we would like to mention, is that the questions don't evaluate the hostility character type of type A behaviour, hostility being an even more important characteristic of this type than the lack of time.

Ischaemic heart disease and the behaviour type

The examined engine drivers with ischaemic heart disease presented the following type of behavior: 11 subjects (61,1%) type AB, 5 subjects (27,8%) type A2,

2 subjects (11,1%) type B2. None of the examined engine drivers presented type A1 behaviour, which is theoretically, better related with ischaemic heart disease. There was no connection relating ischaemic heart disease to type A2 behavior (Kruskal- Wallis $P>0.6$).

The examined subjects from the witness group with ischaemic heart disease have the following distribution: two of the subjects (50%) manifested type A2 behaviour, one subject (25%) manifested type AB behaviour, and one subject (25%) manifested type B2 behaviour. There was no connection relating ischaemic heart disease to type A2 behaviour (Kruskal- Wallis $P>0,6$) in this group either.

Patients with ischaemic heart disease from the studied groups don't show a higher rate of type A behaviour, as we would expect. We have exposed the adaptive conversion hypothesis from type A behaviour towards type AB behaviour and type B behaviour in engine drivers permanently exposed to professional stress that could imply the situation described above.

Ischaemic heart disease and sedentary life style

Five (27,8%) of the engine drivers with ischaemic heart disease from the studied group have a sedentary life style and 12 (66,7%) of them have an active way of life. We couldn't establish if one of the subjects from the study group had a sedentary life or an active life style. Ischaemic heart disease in engine drivers is dependent of the extra physical effort put by the subject outside work hours ($p<0.008$). Two aspects can explain this finding: either some engine drivers with ischaemic heart disease were advised to

practice a certain amount of physical exercise, or the extra exercises are excessive and harmful, the last explanation being more plausible.

In the witness group, just one of the subjects (25%) with ischaemic heart disease is associated with a sedentary life style the rest of the subjects, three (representing 75%) don't associate a sedentary life style. In this group, we couldn't find a connection between ischaemic heart disease and sedentary life style ($p>0.9$).

Conclusions

Some of the subjects exposed to continuous professional stress, through an adjusting/adapting process, are turning their type of behavior from type A to type B.

The overall aspect found in our groups could be the result of subjects turning from type A behavior to type B behaviour managing to keep their body mass unchanged and without changing the smoking habits. Type A behaviour prevails in younger subjects, and type AB or type B is more common in elderly subjects.

Analyzing Bortner test we concluded that the questions don't evaluate the hostility character type of type A behaviour, hostility being an even more important characteristic of this type than the lack of time, the original test allowed a looser self-evaluation between the two groups.

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Speaking about ischaemic heart disease and sedentary life style, we concluded that in both groups we examined the physical efforts made by all the subjects are too large, thus showing that it cannot represent a factor for heart protection against ischaemic heart disease.

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Correspondence Data:

LUIZA DEMIAN

e-mail: demianluiza@yahoo.com

telefon: 0723780612

fax: 0359463544