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Can and should Type A behaviour be changed?

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Summary: Both Type A behaviour and the component of hostility can be reduced by a number of different psychological interventions and such reductions are associated with reduced cardiac morbidity in patients with coronary heart disease. Reductions in Type A behaviour are not associated with significant changes in other risk factors nor with unwanted side effects such as reduced professional effectiveness.

Is Type A behaviour worth changing?

Type A behaviour (TAB), a pattern of behaviour characterized by intense competitiveness, sense of being under time pressure and easily provoked hostility, has been shown to be an independent risk factor for coronary heart disease (CHD) in case control and prospective studies (Haynes *et al.*, 1980, Jenkins, 1978, Rosenman *et al.*, 1975), to relate to coronary artery disease (CAD), as revealed by coronary angiography (Williams *et al.*, 1980) and to predict reinfarction in patients following a myocardial infarction (Jenkins *et al.*, 1976). Contrary results have been reported, e.g. TAB failed to relate to CAD in a well conducted study of patients undergoing angiography, (Dimsdale *et al.*, 1979). Case *et al.* (1985) have claimed that TAB did not predict reinfarction in a large but methodologically weak study of post-myocardial infarction patients and Shekelle *et al.* (1985) could find no relationship between TAB and CHD in the MRFIT study, a prospective study of over 3000 men at high risk for CHD.

While early studies essentially classified respondents into global Type A or B, more recent analyses have shown that at least five components can be identified, two of which are crucial; fast, explosive, emphatic speech (which relates primarily to overall assessment of TAB) and hostility (Dembroski & MacDougall, 1985). In a re-analysis of the Dimsdale studies of CAD the original finding that TAB and CAD were not related was confirmed but hostility was reliably higher in patients with CAD (MacDougall *et al.*, 1985). This has also been shown in other similar studies (Dembroski *et al.*, 1985). Shekelle and the MRFIT team have only reported on the global TAB scores.

Studies which have used the Structured Interview method of assessing TAB and have used component scoring have all shown that either TAB or hostility, or both, relates to CHD and CAD. It is therefore reasonable to claim that TAB is a risk factor for CHD, albeit a complex one, and the reduction of TAB worth attempting. If this could be achieved then not only might the incidence of CHD be reduced but the analysis of TAB could proceed from epidemiological, correlational studies, to more powerful experimental analysis.

The complexity of TAB, the legitimate controversy it arouses and our limited information on its prevalence suggests that it would be imprudent, as well as impracticable, to attempt large scale TAB change in otherwise healthy individuals. Initially therapy should be directed at patients who display marked TAB and are also high on other risk factors, such as documented CHD. It is also important to determine the incidence, if any, of undesirable side effects of TAB reduction.

What should be changed?

The description of TAB given above is deceptively simple. TAB is a conglomeration of rather diverse behaviours associated empirically with each other and CHD. Therapy should, obviously, be directed at those behaviours that carry the risk but it is not, as yet, fully clear which are the most important. Present evidence suggests that global TAB and hostility must be altered by an effective therapy and that this should be assessed on the structured interview since it is the best predictor of CHD and is less easily falsified than TAB questionnaires. There is no reason to believe that TAB change will, or should, alter traditional risk factors such as blood pressure or smoking since they do not relate to TAB.

How can Type A behaviour be changed?

There are four approaches to TAB modification: stress management, cognitive therapy, cognitive-behaviour therapy and beta-blockade.

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Stress management

Some hold that TAB causes CHD because it is associated with excessive cardiovascular reactions to psychological challenge (Matthews, 1982). Stress management, which is usually based on teaching relaxation as a coping skill, attempts to reduce such reactivity and is therefore not necessarily concerned with altering TAB *per se*. The early studies were little more than demonstrations of the feasibility of the method and have been reviewed previously (Johnston, 1982). Recently Roskies *et al.* (in press), who regards TAB as a form of excessive behavioural, as well as cardiovascular, reactivity, has described an extensive and well conducted study of twenty sessions of stress management compared with two forms of exercise. The subjects were 120 middle-aged executives with pronounced TAB. Outcome was assessed on the structured interview and by cardiovascular reactions to psychological challenges. Stress management was very effective in reducing many aspects of TAB including both speech style and hostility whereas exercise had little effect on either. None lead to a reduction in cardiovascular reactivity.

Cognitive therapy

Cognitive therapy assumes that TAB is based on inappropriate beliefs and should be changed by altering these beliefs. The nature of these maladaptive beliefs is not well understood and clinical practice has proceeded by assuming that the specific behaviours characteristic of TAB are associated with congruent beliefs, e.g. taking on more and more work is likely to be based on the belief that success can only be achieved by doing so many things, that quantity is more important than quality and, perhaps, that personal worth is determined by achievements. An early study by Jenni & Wollersheim (1979) suggested that cognitive therapy was more effective than stress management in reducing TAB. More recently Thurman (1985) has used similar methods in small studies of TAB in students and university faculty. Cognitive therapy was more effective in reducing questionnaire measures of TAB, irrational thoughts related to TAB, and hostility than simply informing the subjects about TAB and the desirability of change. Spouses and close friends of the participants also agreed that cognitive therapy had successfully altered their partners behaviour.

Cognitive-behaviour therapy

I have emphasized that TAB is a complex mixture of behaviours and it would be fortunate if an approach that focused on one aspect of TAB, be it stress or core irrational beliefs, could change all aspects of the behaviour effectively. Cognitive-behaviour therapy attempts to alter both thoughts and behaviour in the belief that both are important and that altering either can affect the other. Levenkron *et al.* (1983) described an approach with three main components, direct instruction in altering TAB, relaxation training and cognitive therapy. This was compared with a non-directive group support treatment and a minimal treatment control in 38 Type A executives. Cognitive-behaviour therapy was most effective in reducing many aspects of TAB.

By far the most ambitious study of TAB modification is the Recurrent Coronary Prevention Program (Friedman *et al.*, 1982, 1984), in which a very comprehensive cognitive-behavioural programme was used in an attempt to reduce TAB and cardiovascular recurrence in patients who had experienced at least one myocardial infarction. Approximately 900 patients were randomly allocated, on a 2:1 ratio, to either a group cognitive-behavioural programme or to systematic cardiological care. The behavioural intervention contained virtually all the procedures already described plus very specific homework assignments ('drills') designed to aid the overlearning of behaviours and attitudes incompatible with TAB, e.g. practising eating slowly or listening carefully to others. In a 3 year period experimental subjects attended on average twenty-nine 90 minute counselling sessions while the controls met their cardiologist twenty times. Using the intention to treat principle, TAB (on the structured interview) was markedly reduced in 17.6% of the subjects in the experimental group and only 3.7% of the controls. Both global TAB and hostility were reduced. These findings were confirmed on other measures of TAB and on spouse ratings of the participants' behaviour. The same programme was also applied to a sample of healthy, middle aged Type A senior army officers (Gill *et al.*, 1985). One hundred and eighteen officers were randomly allocated to either the intervention or to repeated TAB measurement. After 9 months TAB was markedly reduced in 22.5% of the treated group and none of the controls.

Beta-blockade

Two inconclusive studies have suggested that beta-blocking drugs reduce TAB. Kranz *et al.* (1982) found TAB to be lower in patients on beta-blockers but they were not randomly allocated to medication. Schmieder *et al.* (1983) in a pilot study of hypertensive patients found that beta-blockade led to small reductions in some aspects of TAB whereas diuretics led to increases. Neither drug affected hostility. There is, at present, no reason to believe that beta-blockade leads to substantial changes in TAB.

It is clear from this review that TAB and hostility

can be reduced by diverse procedures. There are few direct comparisons of the different procedures and subject and measurement differences make it difficult to generalize. However, Roskies' (1985) and Friedman's (1982) groups use essentially the same TAB interview and have presented their data in a standardized form. It appears that stress management reduces the TAB of middle aged executives by 1.2 standard units while the more complex package studied by Friedman reduces TAB by 0.9 in patients with CHD and 1.8 in army officers. These changes are consistent with the methods being of equal effectiveness.

Should Type A behaviour be changed?

The primary aim of TAB modification is to reduce cardiovascular morbidity. Only Friedman *et al.* (1984) have studied this and the results are remarkably positive. Over the 3 years of this study 35 of the 265 in the control group (13.2%) suffered a recurrent cardiovascular event compared with 42 of the 584 in the TAB modification condition (7.2%). The main difference was in the number of non-fatal infarctions. There was no difference between the conditions at any time on other factors which might explain these findings, such as the severity of the previous myocardial infarction, other risk factors or medication. In a subsidiary analysis it was shown that patients who had reduced their TAB in the first year of the study were four times less likely than the remainder to have a recurrence in the next 2 years. These results suggest very strongly that the TAB modification programme was associated with reduced cardiovascular morbidity and that this was brought about by a reduction in TAB.

There is no reason to believe that these striking benefits were achieved at the cost of undesirable side effects. Gill *et al.* (1985), in the study of army officers, attempted to allay the anxiety, frequently expressed, that TAB might be an effective method of achieving desired material goals and therefore TAB reduction could be accompanied by financial and professional failure. Each participant nominated a fellow officer to observe him during the 9 months of the study and then complete a brief questionnaire on his effectiveness. The intervention was not associated with any reduction in high professional competence of these men.

Conclusion

TAB can be reduced, such reductions are associated with reduced cardiovascular morbity and do not lead to unwanted side effects such as diminished professional effectiveness. This is of importance in the management of patients at great risk of coronary heart disease or myocardial infarction. These findings are also important because they extend the analysis of TAB from correlation to experimental studies that can start to establish cause and effect. In this regard TAB is now at least as well established as the traditional risk factors.

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