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*The contribution of psychological theory...*

# THE CONTRIBUTION OF PSYCHOLOGICAL THEORY TO THE UNDERSTANDING OF HEALTH BEHAVIOUR CHANGE AND MAINTENANCE. APPLICATIONS TO EXERCISE

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ABSTRACT: Human behaviour is still mysterious. Why do we do what we do? Why do we sometimes not do what we want to do? Why is it so difficult to change habits? The purpose of this paper is to examine how general psychological theory of health behaviour change and maintenance contribute to the understanding of initiating and maintaining exercise behaviour. Some popular models to identify what psychological factors influence our health behaviour and some models that try to describe the processes of health behaviour

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change and maintenance are examined and discussed in relation to exercise behaviour.

RESUMEN: La conducta humana sigue siendo misteriosa. ¿Porqué hacemos lo que hacemos?. ¿Porqué a veces no hacemos lo que tendríamos que hacer?. ¿Porqué es tan difícil cambiar de hábitos?. El propósito de este artículo es examinar cómo la teoría general psicológica del cambio y mantenimiento de conductas saludables puede contribuir al entendimiento de la iniciación y el mantenimiento de la conducta de ejercicio físico. Se discuten y examinan algunos modelos que identifican cuáles son los factores psicológicos que

## Health and health behaviour

The way we think about health has changed in our part of the world, with the changing patterns of illness. Disease and mortality are now to a much greater extent than before caused by lifestyle and environmental factors. Psychological theory is the theory about behaviour and mental processes, and it could be argued that psychology has contributed to new ways of thinking about health. Questions about behavioural causes of illness and health are now a central focus in modern medicine. However, here it is consciously avoided to present one definition of health, because in this context it is more important to determine what health concept is held by the individual. This will vary with cultural background, age, gender and social class, to mention some variables (Cornwell, 1984; Naidoo and Wills, 1994; Sek, Scigala, Pasikowski, Beisert and Bleja, 1993). As an example: Some mountain climbers asserted recently in a newspaper that risk behaviour contributes to their health by giving life more meaning and joy (*Dagbladet*, May, 1997). Obviously, others would not share their health definition.

Even if a health definition may be a personal preference, some types of behaviour are generally agreed upon as important for health. Taking risks may be considered healthy by some, but injury is generally considered detrimental to health, as is alcohol or drug abuse, smoking, negative stress over long periods, etc. Other behaviours are generally accepted as positive for health, such as maintaining a balanced diet, getting a reasonable amount of exercise, enough sleep, engaging in positive relationships with others, etc. When concerned with health behaviour change, I choose to focus on a change in behaviour toward more positive health promotion or protection. It may be to adopt a new positive behaviour, like moderate exercise, or reduce or change a detrimental type of behaviour, like physical inactivity. Psychological theories try to explain why and how some factors influence health behaviour, and try to identify factors outside the individual that are involved in the processes of changing behaviour maintenance of such behaviour.

## Different approaches to health behaviour change

Because health behaviour is so diverse and complex, there are many ideas about how to influence it, and it is hardly realistic to find one universal way. Attempts to find interrelationships between different health behaviours have mostly not supported the

idea that people simply can be classified into those who live healthy lives and those who do not (Kronenfeld, Goodyear, Pate, Blair, Howe, Parker and Blair, 1988; Stephens, 1986).

Different types of psychologic theories try to explain behaviour change in different ways. *Psychodynamic theory* has mostly been applied in clinical approaches for individuals with mental disturbances. The means to initiate change are attempts to bring to consciousness the unconscious processes that govern unwanted behaviour and disturb mental health, in order to gain control. *Humanistic theory* focus on empowerment (which is the individual's ability to direct his or her own life), self responsibility and human growth.

In the area of general health promotion and health behaviour change, the focus has been on learning theory and cognitive theory. *Learning theory* developed basic principles for how environmental factors affect learning by respondent conditioning, operant learning and stimulus control. A multitude of approaches have been developed. *Classical conditioning* is used for changing unwanted behaviour, and was the basis for *aversion therapy*, where intake of alcohol was linked with an aversive stimulus, real (as giving vomiting inducing drugs with alcohol, Lemers and Voegtlin, 1950) or imaginary (Elkins, 1975). *Operant conditioning* focus on the relationship between a behaviour and its consequences, such as creating systems of presenting - or withdrawal- of rewards for specific types of behaviour. *Controlling stimuli* that occurs before a behaviour, is another way of using learning theory.

These are among the basic techniques in behaviour modification, and may exert strong influences over health behaviour. However, in order to work efficiently, a great deal of systematic control is often necessary. Besides, we learn in other ways, too (Bandura, 1986), for instance by watching others. Cognitive processes and a person's ability to influence his or her environment are not taken into consideration in approaches based on classic learning theory.

Within *cognitive theory*, several models have been developed to describe the relationship between behaviour and cognitive factors like perceptions, beliefs, attitudes, and norms. *Cognitive theory* is used for identifying and correct maladaptive thoughts that causes problem behaviour and is called *cognitive restructuring* (Meichenbaum, 1977). Many behaviour modification programs draw on several theories in broad spectred approach, such as *Self directed behaviour change program* which is used to teach people skills to take control over own behaviour. Both goal specification, decicion making, self monitoring,, stimulus control, self reinforcement, social support and behaviour rehearsal are usual methods in such programs.

## **Cognitive and social cognitive models**

A focus on the role of cognitions in health behaviour resulted in the development of *The Health Belief Model (HBM)* ( Maiman and Becker, 1974). The HBM was developed in order to understand a lack of compliance with preventive health care

behaviour (Maiman and Becker, 1974). Four types of beliefs were postulated to influence the likelihood of engaging in health behaviour relevant to a specific health problem. The hypothesis is that if there exists a perception of a threat to personal health, if the condition in question is perceived as severe, and there is a conviction that a specific behaviour will successfully diminish this threat, the person will be more likely to engage in that behaviour. Added to this is a cost/benefit analysis, where perceived barriers to the action is weighted towards the benefits. The model has later been extended to include some kind of cue or a trigger to be present for people to act, for instance illness of somebody close.

The Health Belief Model has been widely used as a basis for health promotion campaigns and educational programs, and has generated a lot of research on a variety of health behaviours. The research has, however yielded mixed results, and the model seems to work the best for the kind of behaviour it was developed for (Cummings, Jette, Brock and Haefner, 1979). In areas as smoking (Flay, 1985), drug use (Dorn, 1986) and exercise (Biddle and Mutrie, 1991) it does not appear to be so successful.

The criticism of the model relate to the fact that it considers complex behaviour only as a sum of parts, and the assumption that these parts are equally important. Another problem is that in many situations people have been found to demonstrate unrealistic optimism about their situation. Especially younger individuals seem to have "an illusion of invulnerability" in relation to risk behaviour such as sexual behaviour and AIDS (Clift et al, 1989) and physical risky activities, but also with other health behaviours. On the other hand, it is known that perception of threat and severity may evoke fear induced defense mechanisms (Leventhal, 1980), making people resist change.

Another basically cognitive model focus on the influence of intentions on behaviour in general. The model was first called *Theory of Reasoned Action* (Ajzen & Fishbein, 1980), and states that a person's behaviour can be predicted by intentions. Intention is a function of attitude towards the behaviour, which again is influenced by perceived consequences of the behaviour and thoughts about what others expect. The theory differs from The Health Belief Model mainly in how social norms and the influence of significant others are included as determining factors.

One problem with this model has been that of voluntary control. As the assumption was that intention would predict behaviour, it would only be applicable for behaviours under voluntary control (Stroebe & Stroebe, 1995). As most of us know, the old saying about "the spirit being willing, but the flesh weak" holds considerable truth; a lot of health behaviour, are not always under control of the will, many factors can weaken good, even strong and relatively stable intentions.

In line with this kind of critique, the model was modified and renamed *Theory of Planned Behaviour* (TPA) (Ajzen, 1991). Perceived behavioural control was included both as an indirect influence through intentions, but also under certain circumstances as a direct influence on behaviour. This improved prediction of both intentions and behaviour in empirical research (Ajzen, 1991).

The perception of control as used in TPA, has a lot in common with *self efficacy* in

*social cognitive theory* developed by Bandura (1977, 1986). Building on earlier forms of social learning theory (e. g. locus of control), this model assumes the motivational factor to be the perception of being able to do what is necessary to obtain an expected outcome. Two cognitive processes are thought to be influential over behaviour; outcome efficacy, which is the belief that an action will produce a specified effect (do you expect that a particular exercise program will make more physically fit), and self efficacy expectations which is the belief in one's capacity to perform that behaviour (do you think you can show the necessary discipline to keep it).

According to the theory, self efficacy is developed by mastery experience or performance accomplishments, by model learning or vicarious learning, by verbal persuasion from others, and from coping with or positive interpretation of physiological arousal in the situation (Bandura, 1986). Self efficacy has been documented to apply to health related behaviour (Ewart, Taylor, Reese and DeBusk, 1984), and has been found to be a reasonably good predictor of the extent to which people comply with medical regimens (O'Leary, 1992; Dzewaltowski, 1989), and to reliably affect persistence in exercise (McAuley and Jacobson, 1991; McAuley, 1992).

Having proven a relatively powerful predictor of behaviour and persistence, the self efficacy theory has influenced further development of theoretical models in this field, as well as practical behaviour modification strategies. Several other models have been developed, most of them trying in different ways to combine the most useful constructs from these basic models, and using them in different ways. Examples are: *Protection Motivation model* (Rogers and Mewborne, 1976), *Health Action model* (Tones, 1987)

## The process of change

So far we have looked at what factors are involved in health behaviour change, another matter is that change in behaviour is a process, it may occur gradually. James Prochaska and Carlo Di Clemente (1984) observed in their work as psychotherapists that people seemed to go through similar stages of behavioural change, regardless of what psychotherapeutic approach was used. They described these changes in a *transtheoretical model* with two basic elements: stages of change, and processes of change. The stages are *precontemplation*, where no change is thought about or intended, *contemplation*, where a thought about making a change is present, but people are not yet ready. In the *preparatory stage* the individual is getting convinced about making the change and prepare for it. The *action stage* is trying out the new behaviour, and the *maintenance stage* is when the behaviour is continued. The model also considers *relapse* as a stage and not necessarily a failure of the process. The model suggests that different strategies are needed to enhance the process at the different stages, for instance that whereas information is important in the precontemplation and contemplation stage, goal setting and reinforcement are more important in the action phase, and social support in the maintenance stage. The model has been studied and demonstrated to be useful in relation to several health

behaviours; most extensively with smoking cessation (Di Clemente, Prochaska, Fairhurst, Velicer, Velasquez and Rossi, 1991), but also with alcohol treatment, (Di Clemente and Hughes, 1990), weight control (O'Connell and Velicer, 1988), and exercise (Marcus and Simkin, 1993), among others. There exist other stage models (e. g. Schwarzer, 1992.), but the basic notion as we find it in the transtheoretical model, is similar.

### **Comparisons of models. Attempts on synthesis**

I have chosen to focus on some models and theories that have generated extensive research of the constructs included. The models have also been compared as to effectiveness in changing health behaviour (e. g. Dzewaltowski, 1989), and in general; it seems as if methods based on social cognitive and learning theory have proved to be the most effective. Attempts have also been made to blend important theoretical ideas into a synthesis. Baranowski (1992) evaluated and compared five theories, applied the stages of change model, and presented a syntheoretical model of beliefs as motivators in the behaviour change process. In addition to the theories already described, he also drew on *Diffusion of Innovation*, a sociological description of how new knowledge or new behaviour spread in a community. New elements are thought to diffuse into the population starting with the innovators, then early adopters followed by the early majority. Later the late majority will adopt the new, and lastly the laggards, the final 15-16% who are resistant to change.

Different components of the model are thought to be important for the different types of readiness for change (e.g. innovators versus laggards) and at different stages of change. The model so far is speculative and in need for empirical testing, as is the case with other comprehensive models (Schwarzer, 1992). This type of models are very complex, are difficult to test out empirically, but may serve as useful tools as frameworks for practical applications.

### **Different health behaviours**

As mentioned earlier, there is not a consistent relationship between different health behaviours, and it has become apparent that different health behaviours demand different theoretical approaches. Intuitively it seems reasonable that different mechanisms operate to motivate action that demands time, effort and even sweat, compared to less demanding actions as having a health check up, or for control or extinction of unwanted behaviour such as alcohol or drug abuse. As an example, let us take a brief look at exercise behaviour.

Several researchers have tried to develop exercise and fitness specific measures of general health psychological theories in order to explain exercise behaviour, especially within frameworks of locus of control theory, and self concept theory framework (for a detailed overview, see Biddle & Mutrie, 1991). The results have been varied, and it seems that social-cognitive models at best account for less than

40 % of the variance in exercise behaviour. Dealing primarily with predisposing factors for behaviour, this may not be surprising (Godin, 1994). However, in the exercise area, the cognitive models such as health beliefs and theory of planned behaviour have proven to be less powerful in explaining exercise behaviour than self efficacy theory (Biddle & Mutrie, 1991; Dishman, 1994; Schwarzer, 1993; Sørensen, 1997 b). It has been argued that the attitudes and beliefs seem to better explain sedentary behaviour than physical activity (Biddle & Mutrie, 1991). It has also been suggested that self presentational concerns, e.g. to look in a better shape, may be as important for adopting physical activity as health concerns (Leary, 1992), and self perceptions related to exercise has been demonstrated to play a role in development of exercise behaviour (Kendzierski, 1990, Sørensen, Anderssen, Hjermer, Holme & Ursin, 1997). There is also evidence that men and women start exercising for different reasons; men responding more to stimuli in the physical environment, and women responding more to social influences (Sallis, Hovell & Hofstetter, 1992).

Several behaviour change interventions based on learning theory and social learning theory have been used with success for increasing maintenance of exercise behaviour, for reviews, see Dishman, (1994) and King, (1994). But even so, for maintenance of exercise behaviour, the experience with the activity, the affective states and the physiological feedback generated by the activity are likely to be important. It has been difficult to find support for a direct relationship between the physiological and the psychological variables (Moses, 1994). However, in our research, we found that engaging in physical exercise resulted in a positive feedback loop where enhanced self perceptions and physiological changes accounted for 43 % of the variance in exercise compliance in a one-year study (Sørensen, 1997 a). Obviously, there are some overlaps in theoretical considerations of importance to different health behaviours, but there seems to be a need to develop theories that are specific for different types of health behaviours, and in exercise, it seems important to apply a biopsychological approach

### **Critique of the health behaviour models**

The most widely used models from general psychology of health behaviour thus seem to be of a somewhat limited value to explain exercise behaviour. There seems to be several methodological problems in operationalisations and measurement of some of the constructs suggested in the different theoretical models, and there is a need for further development of models related to different health behaviours, as exercise. General health psychology as a field has also generated some criticism which should be considered. Some points will very briefly be summarized:

It has been pointed out that in health psychology a basic assumption in this way of looking at health problems is that people are rational and want to live a healthy, regulated life. Further, that by following advice from experts in the field, people can learn what is good for them, and how to live their lives (Kimiecik & Lawson, 1996). Health psychology professionals have been accused for exerting too much external control (Stainton Rogers, 1991), and have too little respect for individuals' personal

health definitions.

Feministic theory point out that gender differences in cognitions and perceptions are not given enough attention (Bem, 1993). Most of the health behaviour models do not take into consideration that males and females experience the world differently and hold different values, which will have implications for health behaviour change and maintenance.

Basing interventions and education on constructs like perceived vulnerability and severity has been seen as attempts to control people by playing too much on fear, and thereby reduce freedom of life (Lupton. 1993).

A major issue in the critique has been that health psychology is focusing too much on the behavioural aspect and views health as a personal trouble, and lack of health as a deficit (Ingham, 1985) regardless of life situations and actual possibilities. Aarø (1986) concluded that health "partly depends on social class and social environment, and to focus exclusively on the lifestyle explanation would be to turn a social problem into an individual one"(p.144).

Some of these issues are important to consider, also in relation to health related exercise and they should inspire new approaches. As an example of a different trend, Williams, Deci & Ryan (1996) argue that development and support of self determination and autonomous motivation lead to more positive health status, better mental health and maintained behaviour change.

## Conclusion

General health psychological theories provide several conceptual frameworks that help our understanding of health behaviour change and maintenance. Health psychology and exercise psychology research has been dominated by learning theory and cognitive/ social - cognitive models. These models have in general been only moderately successful in predicting exercise behaviour, and there seems to be a need both to develop more exercise specific models as well as applying other types of frameworks. The need to include both physiological and environmental factors has been addressed considerable time ago. An other interesting avenue may be to investigate models like empowerment, autonomy and self determination as basis for initiation and maintenance of exercise.

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influyen la conducta saludable así como otros modelos que intentan describir el proceso del cambio y mantenimiento de conductas saludables, en relación a la conducta de ejercicio físico.