People have ways of assessing their susceptibility to particular conditions, and this is not always a rational process. It has been suggested that individuals consistently estimate their risk of getting a health problem as less than that of others which has been called unrealistic optimism. In addition, people also show risk compensation and can believe that "I have eaten well today and so, therefore, can have a cigarette" as one healthy behavior is seen to compensate for one unhealthy behavior.

iv) Beliefs about Confidence

Individuals also hold beliefs about their ability to carry out certain behaviors. Bandura (1977) has termed this ***self-efficacy*** to reflect the extent to which people feel confident that they can do whatever it is that they wish to do. A smoker, for example, may feel that she should stop smoking but has very little confidence that she will be able to do so. Likewise, an overweight man may be convinced that he should do more exercise but think that this goal is unlikely to be achieved. These two examples would be said to have low self-efficacy. In contrast, a woman who was motivated to get a health check, and felt confident that she could, would be said to have high self-efficacy. Self-efficacy is a very powerful predictor of behavior.

Models of Behavior

Researchers have pulled together different beliefs to develop models of health beliefs and their impact on health behaviors as a means to frame research and interventions. Here are some of the key models.

1.The Stages of Change Model

The Stages of Change model was developed by Prochaska and DiClemente (1982) to

describe the processes involved in eliciting and maintaining change. It is based upon the following stages:

1 ***Pre-contemplation:*** not intending to make any changes

2 ***Contemplation:*** considering a change

3 ***Preparation:*** making small changes

4 ***Action:*** actively engaging in a new behavior

5 ***Maintenance:*** sustaining the change over time

These stages, however, do not always occur in a linear fashion (simply moving from 1 to 5) but the theory describes behavior change as dynamic and not "all or nothing". For example, an individual may move to the preparation stage and then back to the contemplation stage several times before progressing to the action stage. Furthermore, even when an individual has reached the maintenance stage, they may slip back to the contemplation stage over time. The model also examines how the individual weighs the costs and benefits of a particular behavior which is referred to as decisional balance. In particular, its authors argue that individuals at different stages of change will differentially focus on either the costs of a behavior (e.g. "stopping smoking will make me anxious") or the benefits of the behavior (e.g. "stopping smoking will improve my health"). For example, a smoker at the action stage ("I have stopped smoking") and the maintenance stage ("for four months") tend to focus on the favorable and positive feature of their behavior ("I feel healthier because I have stopped smoking"), whereas smokers in the pre-contemplation stage tend to focus on the negative features of the behavior ("stopping smoking will make me anxious"). The Stages of Change Model has been applied to several health-related behaviors, such as smoking, alcohol use, exercise, and health screening behavior. It is also increasingly used as a basis to develop interventions that are tailored to the particular stage of the specific person concerned.

For example, a smoker who has been identified as being at the preparation stage would receive a different intervention from one who was at the contemplation stage. There have been many criticisms of the Stages of Change Model, but it is a simple and useful approach to describing behavior and frame ways in which to change this behavior.

2.The Health Belief Model

The Health Belief Model (HBM) (see Figure 1) was developed initially by Rosenstock (1966) and further by Becker and colleagues throughout the 1970s and 1980s. Over recent years, the Health Belief Model has been used to predict a wide variety of health-related behaviors.

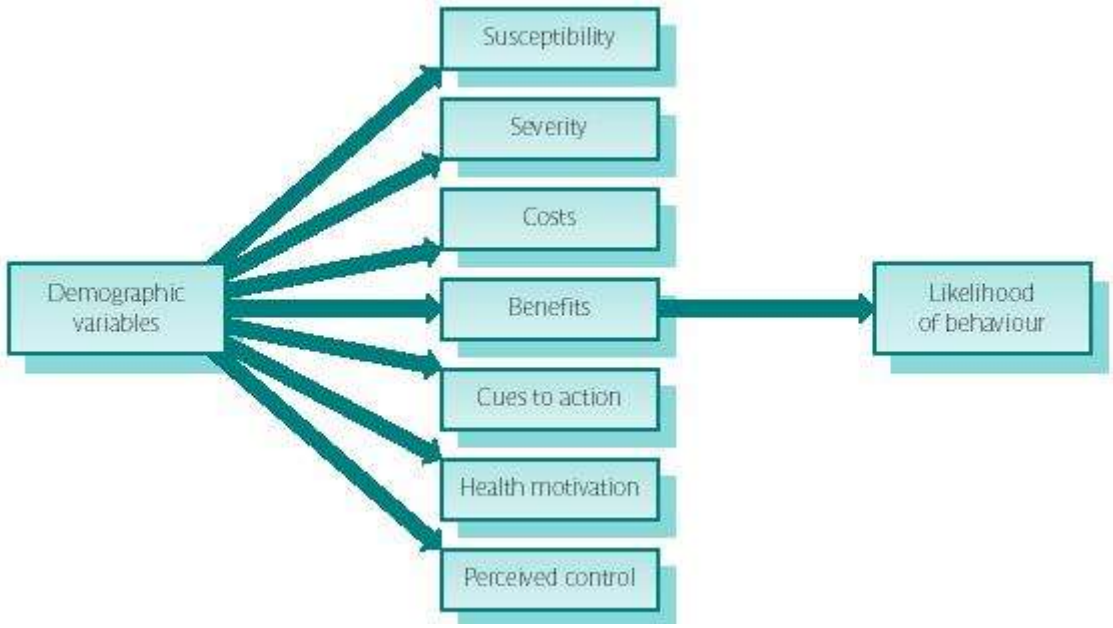

Figure 1 Basics of the Health Belief Model

The HBM predicts that behavior is a result of a set of core beliefs, which have been redefined over the years. The current core beliefs are the individual's perception of:

- susceptibility to illness (e.g. “my chances of getting lung cancer are high”)
- the severity of the illness (e.g. “lung cancer is a serious illness”)
- the costs involved in carrying out the behavior (e.g. “stopping smoking will make me irritable”)
- the benefits involved in carrying out the behavior (e.g. “stopping smoking will save me money” or “smoking is cool”)
- cues to action, which may be internal (e.g. the symptom of breathlessness), or external (e.g. information in the form of health education)
- perceived control (e.g. “I am confident that I can stop smoking”)
- health motivation (e.g. “I am concerned that smoking might damage my health”)

The HBM suggests that these core beliefs should be used to predict *the likelihood that a behavior will occur*. For example, if applied to a health-related behavior such as screening for cervical cancer, the HBM predicts regular screening for cervical cancer if an individual perceives that she is highly susceptible to cancer of the cervix, that cervical cancer is a severe health threat, that the benefits of regular screening are high, and that the costs of such action are comparatively low. This will also be true if she is subjected to cues to action that are external, such as a brochure in the doctor’s waiting room, or internal, such as a symptom perceived to be related to cervical cancer (whether correct or not), such as pain or bleeding. Further, the model would also predict that a woman would get a screening if she is confident that she can do so and if she is motivated to maintain her health.

Much research has been carried out using the HBM indicating that the different components

can predict a range of behaviors including dietary compliance, safe sex, having vaccinations, making regular dental visits, taking part in regular exercise programs and health screening behavior. There are several criticisms of the HBM, however, including its focus on the conscious processing of information (for example, is tooth-brushing really determined by weighing up the pros and cons?); its emphasis on the individual (for example, what role does the social and economic environment play?); the absence of the role for past behavior and habit; and the absence of a role for emotional factors such as fear and denial. But the HBM has been a useful approach for carrying out research and designing interventions.

3. The Protection Motivation Theory

Rogers (1975, 1985) developed the Protection Motivation Theory (PMT) (see Figure 2), which expanded the HBM to include additional factors, particularly fear as an attempt to include an emotional component into the understanding of health behaviors.

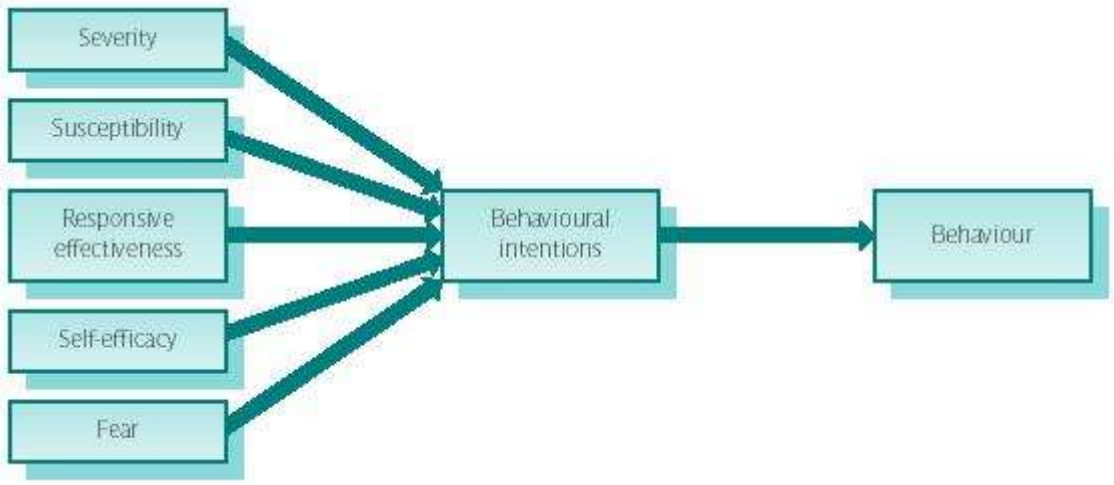

Figure 2 Basics of the Protection Motivation Theory

The PMT describes health behaviors as a product of five components:

1 Severity (e.g. “Bowel cancer is a serious illness”).

2 Susceptibility (e.g. "My chances of getting bowel cancer are high").

3 Response effectiveness (e.g. "Changing my diet would improve my health").

4 Self-efficacy (e.g. "I am confident that I can change my diet").

5. Fear (e.g. an emotional response "I am scared of getting cancer")

These components predict *behavioral intentions* (e.g. "I intend to change my behavior"), which are related to behavior. If applied to dietary change, the PMT would make the following predictions: information about the role of a high-fat diet in coronary heart disease would increase fear, increase the individual's perception of how serious coronary heart disease is (perceived severity), and increase their belief that they were likely to have a heart attack (perceived susceptibility). If the individual also felt confident that they could change their diet (self-efficacy) and that this change would have beneficial consequences (response effectiveness), they would report high intentions to change their behavior (behavioral intentions).

Much research has used the PMT to predict a range of health behaviors including exercise, breast self-examination, wearing an eye patch, binge drinking, and physical activity. The PMT has been less widely criticized than the HBM; however, many of the criticisms of the HBM also relate to the PMT. For example, the PMT assumes that individuals are conscious information processors; it does not account for habitual behaviors, nor does it include a role for social and environmental factors.

4. The Theory of Planned Behavior

The Theory of Reasoned Action (TRA) was extensively used to examine predictors of

behaviors and was central to the debate within social psychology concerning the relationship between attitudes and behavior (Fishbein and Ajzen 1975). The Theory of Planned Behavior (TPB) (see Figure 3) was developed by Ajzen and colleagues (Ajzen and Madden 1986) and represented a progression from the TRA.

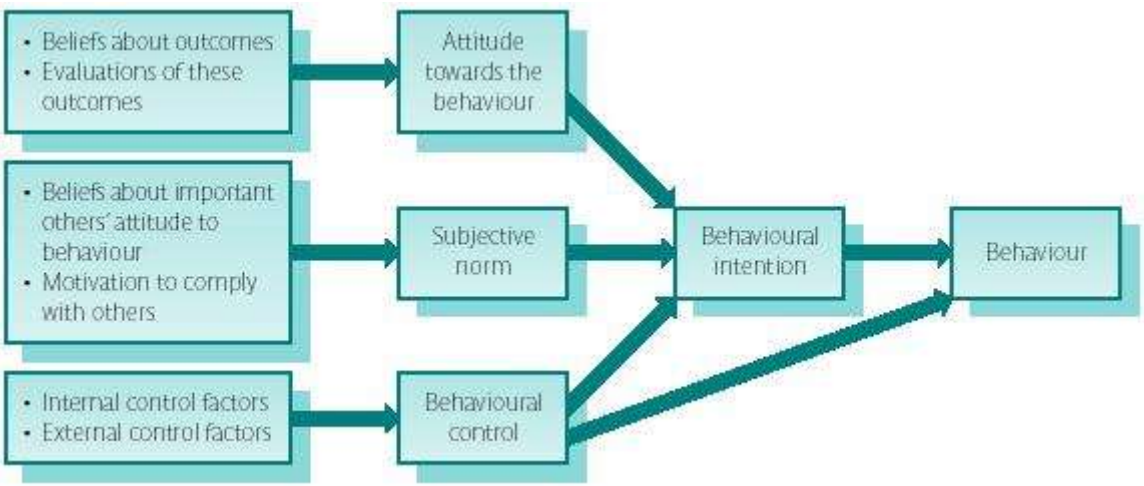

Figure 3 Basics of the Theory of Planned Behavior

The TPB emphasizes *behavioral intentions* as the outcome of a combination of several beliefs. The theory proposes that intentions should be conceptualized as "plans of action in pursuit of behavioral goals" (Ajzen and Madden 1986) and are a result of the following beliefs:

- Attitude towards a behavior, which is composed of either a positive or negative evaluation of a particular behavior and beliefs about the outcome of the behavior (e.g. "exercising is fun and will improve my health").
- Subjective norm, which is composed of the perception of social norms and pressures to perform a behavior and an evaluation of whether the individual is motivated to

comply with this pressure (e.g. “people who are important to me will approve if I lose weight and I want their approval”).

- Perceived behavioral control, which is composed of a belief that the individual can carry out a particular behavior based upon a consideration of internal control factors (e.g. skills, abilities, information) and external control factors (e.g. obstacles, opportunities), both of which relate to past behavior.

According to the TPB, these three factors predict behavioral intentions, which are then linked to behavior. The TPB also states that perceived behavioral control can have a direct effect on behavior without the mediating effect of behavioral intentions.

If applied to alcohol consumption, the TPB would make the following predictions: if an individual believed that reducing their alcohol intake would make their life more productive and be beneficial to their health (attitude to the behavior) and believed that the important people in their life wanted them to cut down (subjective norm), and in addition believed that they were capable of drinking less alcohol due to their past behavior and evaluation of internal and external control factors (high behavioral control), then this would predict high intentions to reduce alcohol intake (behavioral intentions). The model also predicts that perceived behavioral control can predict behavior without the influence of intentions. For example, if perceived behavioral control reflects actual control, a belief that the individual would not be able to exercise because they are physically incapable of exercising would be a better predictor of their exercising behavior than their high intentions to exercise.

The TPB has been used extensively to predict a wide range of behaviors including condom use in both gay and heterosexual populations, blood donation for blood transfusion and organ donation, smoking, exercise during pregnancy, walking, speeding behavior using a driving simulator, deliberate self-harm, and suicidality. In contrast to the HBM and the PMT, this model attempts to address the problem of social and environmental factors (in the form of normative beliefs). It also includes a role for past behavior within the measure of perceived behavioral control. However, the TPB has also been subjected to criticisms in terms of its constructs, the methods used to test the TPB and the extent to which it can predict behavior.

In Summary

Behavior is central to health and illness and is clearly linked to the beliefs we hold. Psychology has identified a number of beliefs to predict behavior and then pulled these together into models which can be used for research and to design behavior change interventions. Eating behavior is a key behavior. We will now look specifically at eating behavior in order to illustrate the ways in which psychological theory can help explain why we behave in the way that we do.

The Example of Eating Behavior

Eating behavior is a health behavior which is clearly linked to health and illness. For example, poor diet is associated with a range of health conditions including obesity, diabetes, coronary heart disease (CHD), cancer, joint problems, hypertension, and stroke. Eating behavior has been studied using three key theoretical approaches which can also be applied to all other health behaviors. These are as follows: