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Health Beliefs and their impact on health**

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original article

'Enjoy a delicious cake today and eat healthily tomorrow': Compensatory Health Beliefs and their impact on health

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Every day we are faced with temptations like drinking a beer after finishing work or eating a delicious cake. In such situations the immediate desire to indulge in the pleasant behaviour like eating the cake can interfere with our long-term goals (e.g., be healthy or lose weight). According to Muraven and Baumeister (2000) humans strive to achieve an ideal balance between the completion of their desires and the pursuit of their own goals. This search of the ideal balance between maximum pleasure and minimal disadvantage is called the hedonic principle. However, the interaction between our desire and our health goals can lead to a motivational conflict (Rabiau, Knäuper, & Miquelon, 2006), or so-called cognitive dissonance (Festinger, 1957), because of the incompatibility between both goals. This dissonance generates a state of pressure, whose resolution requires self-regulatory processes to deal with the aversive state of dissonance (Rabiau et al., 2006). According to the Compensatory Health Belief (CHB) Model one possible strategy to diminish this conflict is to use/employ Compensatory Health Beliefs (Knäuper, Rabiau, Cohen, & Patriciu, 2004).

CHBs are beliefs that the negative effects of an unhealthy (but pleasurable) behaviour can be compensated for or neutralised by carrying out a healthy behaviour (Rabiau et al., 2006, p. 140). To resolve the cognitive dissonance, people convince themselves that eating the cake or drinking a beer is ok because they exercise the following day, or they eat healthily and this

behaviour will compensate for the negative effects of alcohol or fatty food. Thus, CHBs seem to provide an ideal solution, since they allow us e.g., to eat unhealthily without feeling guilty about having counteracted our own goals. The activation of CHBs is an automatically motivated regulatory process to reduce cognitive dissonance, by justifying unhealthy behaviour with future planned healthy behaviour, as mentioned by Knäuper and colleagues (2004). Likewise, it seems also reasonable that the planned unhealthy behaviour in the future is cognitively neutralised by a healthy behaviour an individual already engaged in in the past. Thus, CHBs can be activated before or after the behaviour has been carried out. According to the CHB model, CHBs are activated when there is a high self-concordance of the health goals, and if the person fails to keep up the aspired goal (Knäuper et al., 2004; Kronick & Knäuper, 2010).

CHBs: good effects on dissonance, negative effects on health

According to Rabiau and colleagues (2006), CHBs can be correct, partly correct, or incorrect. The classification can be difficult, because oftentimes unhealthy behaviour causes several negative effects on health and the compensatory behaviour only compensates for some but not all adverse effects (cf., Knäuper et al., 2004). An example for a partial compensation is that the risk of developing cancer, which is elevated by smoking, can potentially be buffered but not completely neutralized by a healthy nutrition (Kuper, Adami, & Boffetta, 2002). Moreover, it is not guaranteed that people actually carry out the intended compensatory behaviour (Knäuper

et al., 2004), because too much time may have passed by between the activation of the CHBs and the planned implementation of the compensatory behaviour. Thus, the dissonant feeling and the necessity to compensate the unhealthy behaviour fades away. Consequently, CHBs interfere with successful adherence to health behaviour changes such as dieting or quitting drinking alcohol.

Overview of empirical results concerning CHBs

First evidence for the relatively new construct of CHBs comes from Knäuper et al. (2004) who developed a scale to measure CHBs in general. They found that CHBs are positively associated with health-related risk behaviours like alcohol consumption or smoking and with symptom reports. Further research also indicates that CHBs are associated with lower goal achievement (Rabiau, Knäuper, Nguyen, Sufategui, & Polychronakos, 2009). Results have shown that adolescents, who had been diagnosed with type 1 diabetes, hold compensatory beliefs concerning their glucose testing. As shown, these beliefs were associated with less regular testing of the glucose level and with poorer metabolic control. In line with this research, Nguyen, Knäuper, and Rabiau (2006) found that the more CHBs diabetic adolescents held, the less likely they were to control their glycemic level, monitor their blood-sugar, and adhere to their dieting rules. Furthermore, Monson, Knäuper, and Kronick (2008) showed that dieters spontaneously generate CHBs in response to temptation. This is in line with results from a study by Kronick and Knäuper (2010), which found that dieters had compensatory intentions on their mind when they were faced with the food temptation of a delicious cookie. In addition, the authors found support for the proposition that the existence of compensatory intentions is related to the decision to eat the high caloric cookie. It seems that compensatory intentions are one strategy to

cope with temptations when individuals allow themselves to indulge. Another study of a sample of coronary heart disease patients also revealed that nutrition style is best explained by CHBs in addition to self-efficacy (Taut & Baban, 2008). However, it is important to mention that in this study no other variables except for self-efficacy and CHBs were entered in the analysis.

CHBs in comparison to other psychological constructs

Even though the results mentioned above lead to the assumption that CHBs can be considered to be an important factor in unsuccessful self-regulation regarding health behaviour, none of the reported studies investigated CHBs in comparison to other health-psychological constructs. Therefore, and because the CHB model (Rabiau et al., 2006) mainly focuses on explaining the generation of CHBs, but not on the association of CHBs with intention formation and behavioural change, we conducted a study with adolescent smokers to investigate the CHBs within the framework of a theoretical model (Radtke, Scholz, Keller, & Hornung, in press).

Since results regarding the general CHB scale from Knäuper and colleagues (2004) indicate an unstable factor structure across different countries (Kaklamanou & Armitage, in press; Radtke, Scholz, Keller, Perren, & Hornung, 2011), we first developed a new smoking-specific CHB scale to overcome problems of the factor structure and to improve the matching on levels of specificity (Radtke, Scholz, Keller, Knäuper, & Hornung, 2011). This newly developed scale could be identified as relevant with regard to the readiness to change smoking patterns in adolescents (Radtke et al., 2011). Subsequently, we examined the added value of CHBs over and above factors of a health behaviour change model: the Health Action Process Approach (HAPA; Schwarzer, 2008). The sample consisted

of 224 adolescent smokers who filled in an online-questionnaire. All HAPA-specific variables like self-efficacy, outcome expectancies, risk awareness, intention to stop smoking, planning and smoking behaviour as well as the smoking-specific CHBs were assessed. In line with previous research mentioned above, we found that smoking-specific CHBs were significantly negatively associated with the intention to stop smoking over and above HAPA-specific predictors. However, no direct association between smoking-specific CHBs and smoking behaviour was found. Overall, CHBs provide a very promising construct to explain why individuals often fail to generate and/or to follow their intentions. Yet, as always in the case of a rather new construct, quite a number of unanswered questions remain.

Future research challenges

Overall, more studies are needed to investigate the impact of CHBs on intention or behaviour. First of all, we need more research on everyday and on longer-term effects of CHBs for health behaviour change. Focusing on the everyday perspective, the question would be in which situations and how often CHBs are used during a day and how this relates to (antecedents of) behaviour. Moreover, it should be explored whether CHBs are activated before (as a result of anticipated guilt) or after the performance of unhealthy behaviour. Another key question that deserves future attention is the investigation whether there is a difference between beliefs of compensatory health behaviour and the execution of them, because CHBs are first and foremost a cognitive strategy ('belief') and need to be differentiated from compensatory behaviour. First results of Kaklamanou, Armitage, and Jones (2012) yielded evidence for the assumption that individuals distinguish between the belief and the behaviour. This means that individuals on the one hand behave in a way that is consistent

with the CHBs, but on the other hand do not really believe in the compensational effect. Moreover, research focusing on CHBs in interventions is strongly needed. How can CHBs be overcome or how can their impact be effectively reduced?

Conclusion

As the research summarized above demonstrated, CHBs are a potential barrier of behaviour change in different health domains (e.g., dieting or smoking), because the justification of eating a delicious cake by compensating for it later undermines people's intentions and goal achievement to behave healthily. Therefore, CHBs offer the potential to enhance the effectiveness of behaviour change interventions in the future. ■

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