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**Facilitating health behaviour change and its maintenance: Interventions based on Self-Determination Theory****Richard M. Ryan\*<sup>1</sup>, Heather Patrick<sup>1</sup>, Edward L. Deci<sup>1</sup>, and Geoffrey C. Williams<sup>1</sup>**<sup>1</sup>University of Rochester, USA

Despite many recent technical breakthroughs in health care, human behaviour remains the largest source of variance in health-related outcomes (Schroeder, 2007). People's health and well-being are robustly affected by lifestyle factors such as smoking, hygiene, diet, and physical activity, all of which involve behaviours that are potentially controllable by the individual. In addition, outside of acute care settings, the effectiveness of most health care interventions is highly dependent on the patient's adherence to self-care activities such as taking medications, performing self-examinations, or refraining from specific activities or habits. A significant problem is the poor adherence to prescribed changes or recommended behaviours over time.

In the perspective of self-determination theory (SDT: Deci & Ryan, 2000; Ryan & Deci, 2000), recognition of these behavioural mediators of health outcomes suggests that we attend more carefully to the patient's experience and motivation. According to SDT, maintenance of behaviours over time requires that patients internalize values and skills for change, and experience self-determination. The theory further argues that by maximizing the patient's experience of autonomy, competence, and relatedness in health-care settings, the regulation of health-related behaviours is more likely to be internalized, and behaviour change will be better maintained (Williams, Deci, & Ryan, 1998).

As a general theory of motivation, SDT has spawned experimental and field studies of how factors such as rewards, sanctions, use of authority, provision of choice, and level of challenge impact patients' experiences, and in turn their behavioural persistence and outcomes (Deci & Ryan, 2000). Over the past 15 years a growing body of work has applied SDT in studies of health-related behavior change (Patrick, Williams, Fortier et al., 2007; Ryan & Deci, 2007; Williams et al., 1998). Such work has examined how factors in treatment environments associated with patients' autonomy, competence, and relatedness, affect both the initiation and maintenance of change. More recently a number of controlled clinical trials have tested the efficacy of SDT-framed interventions for

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issues as diverse as tobacco dependence, diet, physical activity, and dental care. Our aim in this brief paper is to explicate the SDT model of health behaviour change and provide a partial review of its empirical support and limitations.

**Self-Determination Theory**

Health researchers (e.g., Rothman, 2000) have described the process of health behaviour change as entailing the dual tasks of initiating and maintaining change. Although there are many approaches to initiating change, from external pressure and control to the positive use of incentives or rewards, the ingredients essential to maintenance are often missing.

SDT, in contrast, is particularly focused on the processes through which a person acquires the motivation for initiating new health-related behaviours and maintaining them over time. SDT argues that developing a sense of *autonomy* and *competence* are critical to the processes of *internalization and integration*, through which a person comes to self-regulate and sustain behaviours conducive to health and well being. Thus, treatment environments that afford autonomy and ►

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## original article

## Ryan, Patrick, Deci, and Williams (cont'd)

support confidence are likely to enhance adherence and health outcomes. Equally important to internalization in the SDT view is a sense of *relatedness*. People are more likely to adopt values and behaviours promoted by those to whom they feel connected and in whom they trust.

**Autonomy.** Most health-related behaviours, such as increasing physical activity, taking medications, or quitting smoking, are not intrinsically motivated or inherently enjoyable activities. Thus, if such behaviours are to be successfully enacted and maintained outside of treatment settings or controlled environments, individuals must come to value the behaviours and personally endorse their importance.

Unfortunately, many people engage in behaviour changes only because of what in SDT is labelled *controlled motivation*. One common form of controlled motivation is *external regulation*, in which a person acts only to get an external reward, avoid a punishment or to comply with social pressures. Practitioners often create external regulation by suggesting incentives or contingencies, or by trying to motivate through mere authority. Another form of controlled motivation is *introjection*, in which a patient might act to receive approval or praise, or to avoid disapproval or feelings of guilt. Introjection is often cultivated by practitioners as a way of goading patients into action by conveying contingent approval. According to SDT, both forms of controlled regulation, external and introjected regulation, are largely unrelated to long term adherence.

In contrast change can be a function of *autonomous motivation*. One form of autonomous motivation is *identified regulation*, in evidence when one personally endorses or identifies with the value or importance of a behaviour or health practice. Identification is facilitated when practitioners provide relevant information and meaningful rationales for change, and do not apply external controls and pressures that detract from a sense of agency or choice. Even more autonomous is *integrated regulation*, in which a person not only values a behaviour, but has also aligned it with other central values and lifestyle patterns. Practitioners facilitate integration by supporting patients as they explore resistances and barriers to change, and helping them identify congruent pathways to health. According to SDT both identified and integrated regulations are autonomous and are associated with enhanced maintenance and transfer of behaviour change.

**Competence.** Along with a sense of autonomy, internalization requires that a person experience the

confidence and competence to change. In SDT, support for competence is afforded when practitioners provide effectance relevant inputs and feedback. This means that the patient is afforded the skills and tools for change, and is supported when competence or control-related barriers emerge. Patients are not over challenged, but rather helped to experience mastery in terms of the health behaviour change that needs to be engaged.

In the SDT model of change, gaining a sense of competence is facilitated by autonomy. That is, once people are volitionally engaged and have a high degree of willingness to act, they are then most apt to learn and apply new strategies and competencies (Markland, Ryan, Tobin, & Rollnick, 2005). Moreover, in contradistinction to self-efficacy theory (Bandura, 1989), SDT predicts that competence alone is not sufficient to ensure adherence; it must be accompanied by volition or autonomy.

**Relatedness.** Many models of intervention and change have suggested that the practitioner-patient relationship is an important medium and vehicle of change. In health care this is especially so, as vulnerable individuals, often lacking in technical expertise, look for the inputs and guidance of professionals. In this process a sense of being respected, understood, and cared for is essential to forming the experiences of connection and trust that allow for internalization to occur. The impact of relatedness on patients' openness to information and likelihood of complying with recommendations is thus high.

### The Self-Determination Health Behaviour Model

The SDT model of health behaviour change is schematically represented in Figure 1. As depicted, the patient's experiences of autonomy, competence, and relatedness are affected by autonomy-supportive health care climates, by individual differences in personality regarding autonomy, and by the intrinsic and extrinsic nature of the patient's aspirations or strivings (Kasser & Ryan, 1996), which impact lifestyle and value priorities. In turn, when humans feel their psychological needs are being supported this has been associated with better mental health (less depressive symptoms, anxiety, and somatization), greater quality of life, and better health-related outcomes, such as greater intake of fruits and vegetables, reductions in smoking, better glycemic control for patients with diabetes, more physical activity, and improved adherence to prescribed medications. ►



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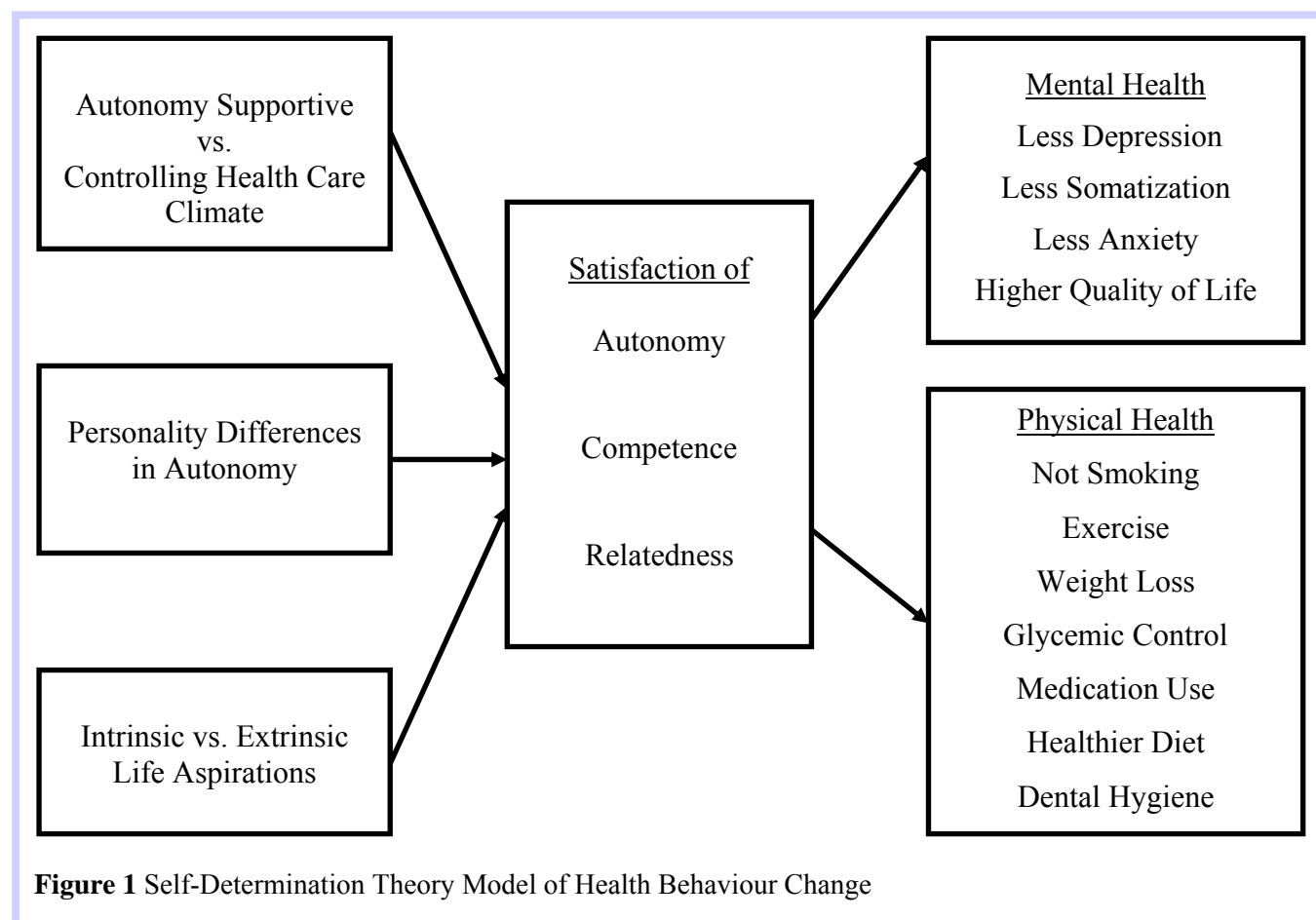
## Ryan, Patrick, Deci, and Williams (cont'd)

**Field studies and controlled clinical trials.** A most important development has been the movement from basic motivational research framed by SDT to the study of existing clinical interventions and the construction and testing of new treatment approaches based on the model. As indicated in the lower right of Figure 1, there have been a number of large field studies and randomized controlled trials of interventions based on the SDT approach to change. Field studies have shown, for example, that long term medication adherence is substantially a function of patient autonomy, which in turn is promoted by prescriber autonomy support (Williams, Rodin, Ryan, Grolnick & Deci, 1998). Similarly, maintained weight loss has been linked to treatment autonomy support, and the internalization of treatment goals (Williams, Grow, Freedman, Ryan, & Deci, 1996). In the domain of substance abuse, studies have shown linkages between autonomy support, internal motivation, and treatment outcomes (e.g., Zeldman, Ryan, & Fiscella, 2004).

The way in which goals are framed also has implications for health-care interventions and

outcomes. SDT distinguishes intrinsic and extrinsic life goals, with the former focused on inherently satisfying goals such as personal growth, generativity, physical health, and relationships, and the latter focused on acquiring wealth, having fame, and being physically attractive (Kasser & Ryan, 1996). A focus on extrinsic goals has been associated with more risky, less healthy behaviours (Williams, Cox, Hedberg, & Deci, 2000). Moreover, a clinical intervention for obese children showed that a focus on the intrinsic goal of health rather than the extrinsic goal of attractiveness as reasons for change resulted not only in greater initial weight loss, but also better maintenance over a two-year period (Vansteenkiste, Simmons, Braet, Bachman, & Deci, 2007).

There have also been some randomized controlled clinical trials testing the efficacy of SDT-based interventions. These include interventions concerning tobacco dependence (Williams et al., 2006), physical activity (Fortier, Sweet, O'Sullivan, & Williams, 2007), and dental hygiene (Münster, Halvari & Halvari, 2006). Taken together ►



## original article

## Ryan, Patrick, Deci, and Williams (cont'd)

these interventions have been shown to facilitate the internalization of autonomous self-regulation and feelings of competence, and thereby improved treatment outcomes (Patrick et al., 2007). In these studies not only did autonomy support enhance outcomes, change in autonomous self-regulation was typically shown to have its own unique effect on outcomes, a pattern of results consistent with the causal role that autonomous motivation can have in health-related behaviour change.

## Summary

Research relating self-determination theory to health behaviours supports a consistent and interesting pattern of findings. When patients have their psychological needs for autonomy, competence, and relatedness supported in the process of their health care, they experience more volitional engagement in treatment and maintain outcomes better over time. This pattern of findings appears to hold for broad lifestyle changes such as smoking cessation or dietary regulation, as well as discrete behaviours such as the adherent use of medications.

These findings call for additional research to more clearly elucidate the active components of autonomy, competence, and relatedness supports, the types of practitioner care that facilitate effective change. Health behaviour change research will move forward if such research includes assessment of theory-based mediators and outcomes that are assessed long enough after the end of treatment to reflect maintained change. Despite the complexities of modern health care, including advanced technologies and capacities for direct intervention, it remains the case that human behaviour plays a critical role in health outcomes and in the efficacy of most treatments. Given this, evidence based on SDT suggests that health care professionals can enhance their efficacy through support of patients' psychological needs for autonomy, competence, and relatedness. Doing so not only enhances important patient outcomes but also approximates the ethical ideals of promoting patient autonomy and responsibility in health care decision-making and intervention. ■

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