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# Facilitating Optimal Motivation and Psychological Well-Being Across Life's Domains



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## Abstract

Self-determination theory (SDT) differentiates motivation, with autonomous and controlled motivations constituting the key, broad distinction. Research has shown that autonomous motivation predicts persistence and adherence and is advantageous for effective performance, especially on complex or heuristic tasks that involve deep information processing or creativity. Autonomous motivation is also reliably related to psychological health. Considerable research has found interpersonal contexts that facilitate satisfaction of the basic psychological needs for competence, autonomy, and relatedness to enhance autonomous motivation, which comprises intrinsic motivation and well-internalized extrinsic motivation. SDT has been applied in varied cultures and in many life domains, and research is reviewed that has related autonomous and controlled motivation to education, parenting, work, health care, sport, and close relationships.

*Keywords:* autonomy, self-determination theory, autonomy support, intrinsic motivation

The topic of motivation concerns what moves people to act, think, and develop. The central focus of motivation research is therefore on the conditions and processes that facilitate persis-

tence, performance, healthy development, and vitality in our human endeavors. Although, clearly, motivational processes can be studied in terms of underlying mechanisms in people's brains and physiology, the vast amount of variance in human motivation is not a function of such mechanisms but is instead a function of the more proximal sociocultural conditions in which actors find themselves. These social conditions and processes influence not only what people do but also how they feel while acting and as a consequence of acting. Most theories of human motivation have therefore focused on the effects of social environments, including the rewards, incentives, and relationships inherent in them, to better understand what activates and sustains effective functioning, not only because that is where variation is most readily observed but also because it is the most practical focus for interventions.

In doing so, most theories have treated motivation as a unitary concept that varies primarily in amount (e.g., Bandura, 1996; Baumeister & Vohs, 2007). They have assumed that more motivation, however catalyzed, will yield greater achievement and more successful functioning. Self-determination theory (SDT; Deci & Ryan, 2000; Ryan & Deci, 2000), in contrast, has maintained that there are different types of motivation—specifically, autonomous and controlled motivation—and that the type of motivation is generally more important than the amount in predicting life's important outcomes. Autonomous motivation involves behaving with a full sense of volition and choice, whereas controlled motivation involves behaving with the experience of pressure and demand toward specific outcomes that comes from forces perceived to be external to the self.

SDT began with the premise that the most useful theories of motivation would be broad in scope, encompassing a wide range of phenomena; use concepts that have phenomenological or personal meaning for people; be derived using empirical methods; and have principles that can be applied across life's domains. As such, the theory has developed with these guiding criteria, and that may be the reason why in the past 2 decades it has generated an enormous amount of research elaborating many aspects of the theory and addressing issues in many applied domains, such as parenting, health care, education, work, sport, psychotherapy, and so forth.

SDT assumes that people are by nature active and self-motivated, curious and interested, vital and eager to succeed because success itself is personally satisfying and rewarding. The theory recognizes, however, that people can also be alienated and mechanized, or passive and disaffected. SDT accounts for these differences in terms of the types of motivation, which result from the interaction between people's inherent active nature and the social environments that either support or thwart that nature. More specifically, resulting from empirical methods and inductive rea-

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soning, the theory has proposed that all humans need to feel competent, autonomous, and related to others (Deci & Ryan, 2000). Social contexts that facilitate satisfaction of these three basic psychological needs will support people's inherent activity, promote more optimal motivation, and yield the most positive psychological, developmental, and behavioural outcomes (Ryan & Deci, 2000). In contrast, social environments that thwart satisfaction of these needs yield less optimal forms of motivation and have deleterious effects on a wide variety of well-being outcomes.

## SDT

In this article, we present some central components of SDT and review both basic and applied research. We begin with a discussion of the differentiation of motivation within the SDT tradition, which started with the distinction between intrinsic and extrinsic motivation (Deci & Ryan, 1985).

### *Intrinsic and Extrinsic Motivation*

Intrinsic motivation involves doing a behaviour because the activity itself is interesting and spontaneously satisfying. When intrinsically motivated, people perform activities because of the positive feelings resulting from the activities themselves. People are interested in what they are doing, and they display curiosity, explore novel stimuli, and work to master optimal challenges (Deci, 1975; White, 1959). Extrinsic motivation, in contrast, involves engaging in an activity because it leads to some separate consequence. The clearest examples of extrinsically motivated behaviours are those performed to obtain a tangible reward or to avoid a punishment.

Various theories besides SDT have used the intrinsic–extrinsic distinction, but they have typically maintained that these two types of motivation are additive, resulting in total motivation (e.g., Atkinson, 1964; Porter & Lawler, 1968). Considerable research beginning in the early 1970s focused on intrinsic motivation in humans and tested this additivity proposition by examining whether providing people with extrinsic rewards for doing an intrinsically interesting activity would affect their intrinsic motivation for the activity (e.g., Deci, 1971). The reasoning was that, if the level of intrinsic motivation had either decreased or increased by the addition of extrinsic rewards, it would mean that the two types of motivation are not additive. If the effect of the extrinsic reward had decreased intrinsic motivation, it would indicate that the two types of motivation tend to work against each other rather than being additive or synergistically positive.

By 1999, over 100 published experiments had examined this issue, and the results of a meta-analysis confirmed that, overall, extrinsic rewards decreased intrinsic motivation across a range of ages, activities, rewards, and reward contingencies (Deci, Koestner, & Ryan, 1999). In other words, when people were given extrinsic rewards such as money or awards for doing an intrinsically interesting activity, their intrinsic motivation for the activity tended to be undermined. That is, the rewards led them to lose interest in the activity. There were, however, limiting conditions to this finding. For example, rewards that are noncontingent or are not specifically dependent on doing an activity or achieving some standard tend not to undermine intrinsic motivation for the target activity because they tend not to be perceived as controlling one's

behaviour. In spite of these important limiting conditions, the meta-analysis still concluded that tangible rewards do tend to interact negatively with intrinsic motivation, so the two types of motivation are not additive, and the total motivation is unlikely to be the best predictor of the quality of people's behaviour and experience.

Many additional studies have examined the effects of other extrinsic motivators on intrinsic motivation, and several of these motivators, including threats of punishment (Deci & Cascio, 1972), deadlines (Amabile, DeJong, & Lepper, 1976), and surveillance (Plant & Ryan, 1985), were found to decrease intrinsic motivation. In contrast, the provision of choice was found to enhance intrinsic motivation (Zuckerman, Porac, Lathin, Smith, & Deci, 1978). In interpreting these findings, we have argued that when people are intrinsically motivated, they feel a sense of autonomy as their basic need for autonomy is satisfied. Then, when people are rewarded, threatened, surveilled, or evaluated, they tend to feel pressured and controlled, and that diminishes satisfaction of their autonomy need, whereas when they are offered choice, they tend to experience greater autonomy satisfaction (Deci & Ryan, 2000).

In contrast to tangible rewards, positive performance feedback has been found in some instances to enhance intrinsic motivation rather than undermine it (e.g., Deci et al., 1999). This appears to be because it directly conveys positive competence information, thus satisfying the need for competence, without being experienced as controlling. We refer to events that convey competence without being controlling as being *informational*. As well, studies have shown that negative feedback tends to undermine intrinsic motivation by thwarting people's need for competence (e.g., Vallerand & Reid, 1984), leaving them *amotivated*—that is, with little intrinsic or extrinsic motivation.

*Interpersonal climates.* Additional studies have found that the general ambience of a situation, such as the interpersonal climate of homes, classrooms, or work groups, can also affect people's intrinsic motivation. Social climates that feel pressuring and controlling undermine intrinsic motivation, whereas those that feel supportive and informational enhance intrinsic motivation (Deci, Connell, & Ryan, 1989; Deci, Schwartz, Sheinman, & Ryan, 1981; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004).

Finally, research has shown that the effects of events such as tangible rewards or positive feedback can be influenced by the nature of the social context within which they are administered. For example, although tangible rewards have been found to undermine intrinsic motivation, if the interpersonal context is informational and supportive of people's autonomy, the rewards could have a positive effect (Ryan, Mims, & Koestner, 1983). In parallel fashion, if positive feedback is administered in a controlling context, it will tend to decrease (rather than increase) intrinsic motivation (Ryan, 1982).

*Autonomy and independence.* SDT has always been concerned with understanding actions that are autonomous and volitional—that is, actions for which people feel a full sense of choice and endorsement of an activity—and intrinsic motivation represents a prototype of this experience. It is important to recognise, however, that autonomy is not the same thing as independence (Ryan & Lynch, 1989), although some psychologists have interpreted it that way (e.g., Markus, Kitayama, & Heiman, 1996). Autonomy means to act volitionally, with a sense of choice, whereas independence

means to function alone and not rely on others. People can act independently for various reasons—for example, because they think they should to be viewed as competent or mature or because they don't like being in relationships in which they depend on others. Acting independently in either of these cases would not at all constitute autonomy or volition; indeed, the independent behaviours would be controlled. In the first case, the individuals would feel pressured to be independent, and in the second they would be rejecting involvement with others, perhaps because they have been hurt and are not able to confront the pain. Conversely, people can depend or rely on others because they find the engagement and reliance comforting and satisfying, as they enjoy a sense of relational mutuality. In short, the point is that people can be either autonomous or controlled in their relative independence, and they can be either autonomous or controlled in their relative dependence (Soenens et al., 2007).

### *Differentiating Extrinsic Motivation*

Although research has shown that extrinsic motivators often undermine intrinsic motivation because they are experienced as controlling, it is also the case that people can feel autonomous while being extrinsically motivated. SDT addresses this issue using the concept of organismic integration.

Theories that use organismic rather than mechanistic assumptions about the nature of people (e.g., Piaget, 1971; Rogers, 1963; Werner, 1948; White, 1960) view development as the process through which humans internalize, elaborate, refine, and integrate inner structures or representations of themselves and their world. Although this integrative process is often viewed as a natural propensity or endowment, SDT emphasises that internalization and integration will function more or less effectively, depending on the degree to which organisms experience ambient supports for basic psychological need satisfaction. That is, people are inclined to internalize and integrate within themselves the regulation of activities that were initially prompted and/or regulated by external factors. However, for this process to operate effectively, people must experience satisfaction of the basic psychological needs. To the extent that the needs are thwarted, people will be less effective at internalizing and integrating regulations.

More specifically, SDT proposes that there are three types of internalization that differ in the degree to which the regulations become integrated with a person's sense of self. The least effective type of internalization is referred to as *introjection*. It involves people taking in an external contingency, demand, or regulation but not accepting it as their own. Instead, it remains somewhat alien to them and tends to control them much as it did when it was still external. With introjection, people tend to feel controlled, and the control is buttressed by contingent self-esteem and ego involvement, with implicit offers of pride and self-aggrandizement after success, as well as implicit threats of guilt, shame, and self-derogation after failure. In a sense, introjection represents only a partial internalization, for people take in a control without feeling a sense of ownership of it and then allow it to pressure and control them.

The second type of internalization is referred to as *identification* and involves people accepting the importance of the behaviour for themselves and thus accepting it as their own. In other words, they identify with the value of the activity and willingly accept respon-

sibility for regulating the behaviour. When people have identified with a regulation, they engage in the behaviour with a greater sense of autonomy and thus do not feel pressured or controlled to do the behaviour. Finally, *integration* is the third type of internalization, in which people have succeeded at integrating an identification with other aspects of their true or integrated self. They reciprocally assimilate a new identification with their sense of who they are. Integration represents the fullest type of internalization and is the means through which extrinsically motivated behaviours become truly autonomous or self-determined.

The three types of internalized extrinsic motivation—introjection, identification, and integration—along with external regulation, fall along a continuum in the sense that the degree of autonomy reflected in the behaviours regulated by these types of extrinsic motivation varies systematically. Behaviours regulated by introjects, although more autonomous than behaviours regulated externally, are still quite controlled and represent the least autonomous form of internalization. Behaviours regulated by identifications are more autonomous than are those regulated by introjects. People have accepted the regulations with their underlying values and thus are volitional when enacting the behaviours. Finally, behaviours regulated by integrations are the most autonomous type of extrinsic motivation. As such, integrated regulation bears similarity to intrinsic motivation, for both are accompanied by a sense of volition and choice. Still, the two types of motivation differ in that intrinsic motivation is based on interest in the behaviour itself, whereas integrated extrinsic motivation is based on the person having fully integrated the value of the behaviour. The latter is still a type of extrinsic motivation, for it remains instrumental to some other outcome, whereas with intrinsic motivation the activity itself is interesting and enjoyable. Ryan and Connell (1989) developed an approach to assessing types of regulation, focusing on external, introjected, identified/integrated, and intrinsic, and they found that types of regulation that were theoretically closer together along the relative autonomy continuum were more highly correlated with each other than were those farther apart.

### *Autonomous and Controlled Motivation*

The conception of internalization and types of regulation have shifted the primary differentiation within SDT from a focus on intrinsic versus extrinsic motivation to a focus on autonomous versus controlled motivation. External and introjected regulations are forms of controlled motivation, whereas identified/integrated and intrinsic regulation are forms of autonomous motivation. Of course, all types of autonomous and controlled motivation are types of motivation that reflect a person's intention to act, although they may result in different quality outcomes. In contrast to motivation, amotivation reflects the lack of intention to act. Amotivation results from a person not valuing a behaviour or outcome, not believing that a valued outcome is reliably linked to specific behaviours, or believing that there are behaviours instrumental to a valued outcome but not feeling competent to do those instrumental behaviours.

Figure 1 shows a graphic representation of amotivation, extrinsic motivation, and intrinsic motivation, along with the various types of regulation, as they fall along the continuum of relative autonomy or self-determination.

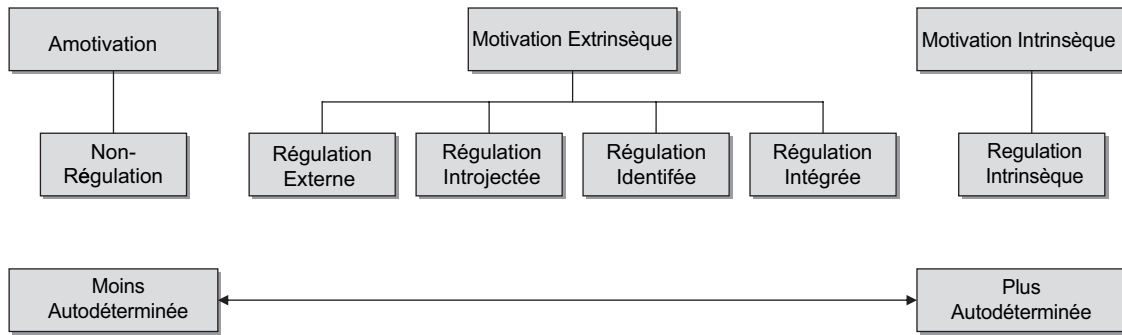


Figure 1. The types of motivation and regulation within self-determination theory, along with their placement along the continuum of relative self-determination.

### *The Consequences of Autonomous and Controlled Motivation*

Dozens of experimental and field studies have now examined the correlates and consequences of autonomous and controlled motivation. Consistently, autonomous regulation has been associated with greater persistence; more positive affect; enhanced performance, especially on heuristic activities; and greater psychological well-being. For example, autonomous motivation has been found to promote greater conceptual understanding (e.g., Grolnick & Ryan, 1987); better grades (e.g., Black & Deci, 2000); more creativity (e.g., Koestner, Ryan, Bernieri, & Holt, 1984); enhanced persistence at school and sporting activities (e.g., Pelletier, Fortier, Vallerand, & Brière, 2001; Vallerand & Bissonette, 1992); more control over prejudice (Legault, Green-Demers, Grant, & Chung, 2007); better productivity and less burnout at work (e.g., Fernet, Guay, & Senecal, 2004); healthier lifestyles and behaviours (e.g., Pelletier, Dion, Slovenic-D'Angelo, & Reid, 2004); greater involvement and better outcomes from psychotherapy (Zuroff et al., 2007); and higher levels of psychological well-being (e.g., Ryan, Rigby, & King, 1993), among other positive outcomes.

### *Facilitating Internalization and Integration*

Because the evidence is abundant that not only intrinsic motivation but also well-internalized forms of extrinsic motivation are associated with more positive human experience, performance, and health consequences, SDT researchers have devoted considerable effort to an exploration of the social conditions that facilitate internalization and the autonomous enactment of behaviours. On the basis of empirical and theoretical considerations, we proposed that conditions supportive of the basic psychological needs would facilitate internalization and integration. Specifically, feeling involved with and related to a family or group will facilitate internalization of values and behaviours endorsed in that setting. Feeling competent to enact the behaviours will also increase the chances of fully internalizing the regulation of those behaviours, and being encouraged and supported to think about the value of the behaviour to oneself may facilitate identifying with and integrating the behaviour's value and regulation.

Examination of the effects of contextual factors on internalization and integration has been conducted in numerous studies. For example, a laboratory experiment found that internalization was

increased by providing individuals with a rationale for doing an uninteresting activity, acknowledging the participants' perspectives and feelings about the activity, and supporting the experience of choice while minimising the use of pressure to do the behaviour (Deci, Eghrari, Patrick, & Leone, 1994). Furthermore, the experiment revealed that, when a high level of these supports was provided, participants tended to integrate the behavioural regulations, whereas a low level of the supports led to introjected regulation. Studies in schools have similarly revealed, that when parents were perceived as more autonomy supportive, their children displayed greater internalization of school-related behaviours (e.g., Chirkov & Ryan, 2001; Grolnick, Ryan, & Deci, 1991).

The factors that facilitate internalization of extrinsic motivation are quite similar to those that help to maintain intrinsic motivation, and they revolve around the idea of significant others—for example, parents, teachers, managers, friends—relating to the target individuals from those individuals' perspectives so as to support and encourage them to explore, initiate, endorse, and engage in behaviours that are interesting and/or important for them. Facilitating internalization may take somewhat more structure and guidance than maintaining intrinsic motivation so the values and regulations to be internalized will be salient, but it is important that such structure and guidance be presented in an autonomy-supportive way.

### *Goals and Aspirations*

The work that we have discussed to this point focuses on the regulatory processes for behaviours—that is, on whether the reasons they are engaging in the behaviours are autonomous versus controlled. Other research conducted within the SDT framework concerns the content of the goals or outcomes that people are pursuing, whether for autonomous or controlled reasons. For example, research by Kasser and Ryan (1996) showed that people's long-term goals tended to fall into one of two factor analytic categories. One category included such goals as amassing wealth, becoming famous, and projecting an attractive image. It was labelled *extrinsic goals* because they are focused on external indicators of worth. In contrast, the other category included personal growth, building relationships, and being generative for the community and was labelled *intrinsic goals* because these goals are more directly linked to satisfaction of the basic psychological

needs for autonomy, competence, and relatedness. Studies reported by Kasser and Ryan indicated that people who placed relatively strong emphasis on the extrinsic aspirations displayed low levels of psychological well-being, whereas those who placed relatively strong emphasis on the intrinsic aspirations displayed high levels of well-being. In short, the content of people's overarching goals was clearly associated with indicators of their psychological health.

Research further showed that people who emphasised extrinsic aspirations tended to be more controlled in their pursuit of the goals, whereas people who emphasised intrinsic aspirations tended to be more autonomous. However, Sheldon, Ryan, Deci, and Kasser (2004) found that the content of people's goals predicted their mental health even after controlling for the reasons or motives for which they were pursuing the goals. Thus, the two variables—*intrinsic goals* and *autonomous regulation*—contribute independent variance to well-being.

Other research on goals and aspirations has experimentally manipulated people's goals. For example, some people performing a learning task were told that it would help them make money (an extrinsic aspiration), and others were told that it would help their personal growth (an intrinsic aspiration). Results indicated that people who did the learning while believing that it would help them make money learned the material less well and subsequently performed more poorly than those who learned while believing that it would help their personal growth (Vansteenkiste, Simons, Lens, et al., 2004).

### *Autonomy Across Cultures*

One of the central assertions of SDT is that the basic psychological needs for relatedness, competence, and autonomy are universal—that is, important for people of all cultures. This stands in contrast to the cultural-relativist view held by many cross-cultural psychologists (e.g., Markus et al., 1996), which maintains that needs are learned within cultures. In particular, cultural relativists argue that autonomy is a Western ideal and is taught in Western cultures that focus on individualism but that it is not important in Eastern cultures, so it plays little role in the lives of East Asians and people from other traditionalist cultures. Instead, the cultural relativists argue, relatedness is the important need in cultures that emphasize collectivism and interdependence. The SDT view, however, suggests that cultures influence people in profound and important ways but that all humans have certain needs. The way the needs tend to get satisfied may differ by culture, but the fact of their needing to be satisfied for people to experience optimal well-being does not depend on culture.

Several studies involving Western and Eastern cultures have found that satisfaction of the autonomy need promotes psychological health in Eastern cultures just as it does in Western cultures. For example, Chirkov, Ryan, Kim, and Kaplan (2003) found that in South Korea, Russia, and Turkey, as well as in the United States, having more fully internalized cultural values and enacting them more autonomously was associated with greater psychological health. It is interesting that having one's values for collectivism or individualism match the predominant values in one's culture was not as important for psychological health as was enacting the values autonomously. Satisfaction of the autonomy need was

indeed important in each culture, which is consistent with the idea of the universality of that need.

Numerous specific studies in varied cultures are consistent with the universality of basic needs for autonomy, competence, and relatedness. For example, Ryan et al. (1999) found that, in Russia, holding strong extrinsic aspirations, which is associated with lower autonomy, was predictive of poorer psychological well-being. Sheldon, Elliot, et al. (2004) showed how autonomy predicted wellness in four distinct cultures. Ryan, La Guardia, Solky-Butzel, Chirkov, and Kim (2005) found that, across varied cultures, reliance on others was facilitated by autonomy support. This growing body of work suggests that, despite surface differences in cultural values, underlying optimal motivation and well-being in all cultures are very basic and common psychological needs.

### *Autonomy Support in Various Life Domains*

Autonomy support involves one individual (often an authority figure) relating to target individuals by taking their perspective, encouraging initiation, supporting a sense of choice, and being responsive to their thoughts, questions, and initiatives. When people's autonomy is supported, they often feel free to follow their interests and consider the relevance and importance for themselves of social values, mores, and norms. Many of the studies of autonomy support have been conducted in various field settings. We now consider a sampling of these studies crossing several life domains.

#### *Autonomy Support in Schools*

Various factors affect whether the interpersonal climate of a classroom tends to be more autonomy supportive or more controlling, but among the more important of these is the orientation of the teacher. Some teachers believe it is their job to be sure that students do things correctly, to convey to the students that they should do as they are told, and to use controls in an attempt to ensure that the students do. Other teachers, however, believe it is important for students to initiate behaviours, to learn from both their successes and failures, and to try to solve problems for themselves rather than relying on the teacher to tell them what to do. At the beginning of a school year, Deci et al. (1981) assessed the degree to which teachers in fourth through sixth grades were oriented toward controlling students versus supporting their autonomy. Two months later, they assessed students' intrinsic motivation, perceived competence, and self-esteem. They found that, in classrooms in which teachers were autonomy supportive, students were more intrinsically motivated—being curious, preferring challenges, and making independent mastery attempts. The students of autonomy-supportive teachers also felt more competent at schoolwork and had higher self-esteem. A study by Chirkov and Ryan (2001) found that teacher autonomy support in both Russia and the United States was important for high school students to internalize motivation for schoolwork, be well adjusted, and feel good about themselves.

In studies by Vansteenkiste, Simons, Soenens, and Lens (2004), the framing of both intrinsic and extrinsic goals was conducted with an autonomy-supportive versus controlling communication style. The autonomy-supportive style led to greater learning and performance outcomes than did the controlling style. This main

effect remained even after controlling for the fact that the intrinsic goal led to greater learning and performance than the extrinsic goal. Finally, the goal-framing and communication-style variables interacted so that people who were given intrinsic goal framing with an autonomy-supportive style scored unusually high on the outcome variables.

Because studies by Benware and Deci (1984), Grolnick and Ryan (1987), and Vansteenkiste, Simons, Soenens, and Lens (2004) have underscored the importance of autonomous regulation and intrinsic goals for students' learning, performance, and psychological well-being, the importance of autonomy-supportive teachers and classrooms cannot be overstated.

In light of this, the results of a study by Sheldon and Krieger (2007) are disturbing in relation to education in law school. These researchers found that, over the 3 years of law school, students showed substantial decreases in basic psychological need satisfaction and well-being, suggesting that, in general, the interpersonal climate in law schools is not very autonomy supportive. Still, students who experienced more autonomy support from their faculty members showed less decrease in these variables, and the students who experienced more autonomy support from the faculty also had higher grade point averages and were more likely to pass the bar exam.

Similarly, autonomy support has been found in multiple studies to be important in medical schools (Williams & Deci, 1998). For example, in one study, Williams, Saizow, Ross, and Deci (1997) found that medical students' ratings of the autonomy support provided by the preceptors in their various medical rotations affected the specialty that the students chose for their residencies. If a student perceived the preceptor in, for instance, surgery to be highly autonomy supportive, it increased the chances that the student would select surgery for further training.

The implications of SDT for school-related practices and policy are manifold (see Ryan & Brown, 2005). In particular, practices and policies focused on motivating students through sanctions, rewards, evaluations, and other external manipulations undermine quality engagement, whereas those that foster interest, value, and volition result in both greater persistence and better quality learning.

### *Autonomy Support in Homes*

A large number of SDT-based studies have examined the relations of parents' autonomy support with children's motivation, psychological health, learning, and school performance in the United States and other countries. These studies collectively highlight the critical role of parental supports for children's basic psychological needs in fostering optimal growth and adjustment. For example, Grolnick and Ryan (1989) performed in-home interviews with the parents of third- through sixth-grade students. Mothers and fathers were interviewed separately concerning how they related to their children about both schoolwork and chores around the house, and the two interviewers rated each parent on various dimensions including autonomy support. Children of these parents completed questionnaires in their classrooms, and their teachers provided ratings of the children's motivation, performance, and adjustment. Results of the study indicated that parents who had been rated as more autonomy supportive by the researchers were more autonomously motivated for schoolwork and perceived themselves to be more competent. Furthermore, the teach-

ers rated students of autonomy-supportive parents as being less shy and anxious, acting out less, and having fewer learning problems. The children of autonomy-supportive parents also got better grades and did better on standardized achievement tests. In another study, Chirkov and Ryan (2001) found that autonomy support was similarly important for Russian parents of high school students. When parents were more autonomy supportive, the students tended to be more autonomously motivated and better adjusted. Williams, Cox, Hedberg, and Deci, (2000) found that adolescents who perceived their parents to be autonomy supportive tended to develop relatively stronger intrinsic aspirations for personal growth, meaningful relationships, and community contributions than for the extrinsic aspirations of wealth, fame, and image. As well, parents' autonomy support was a negative predictor of these students watching TV, using alcohol and marijuana, and having sexual intercourse.

### *Autonomy Support in the Workplace*

Deci et al. (1989) conducted a field experiment in which they examined the role of autonomy support in the workplace. They found that managers of a Fortune 500 company who were more autonomy supportive had employees who were more satisfied with their jobs and with various aspects of the work setting. As well, they were more trusting of top management of the company and felt less pressured and controlled. These researchers also did a management development intervention in some branches of the organisation and did a comparison of experimental to delayed-treatment control branches. The intervention involved a change agent spending a total of about 12 days in a branch working with the branch manager and his or her management team. There were off-site professional development meetings and on-site management team meetings devoted to changing the organisational climate, and the change agent also observed meetings of each manager in the branch with his or her work group and then discussed the meetings with the manager. Data indicated that the managers who went through the intervention became more autonomy supportive and that their employees became more satisfied and trusting in the organisation. In other words, the important changes in the managers radiated to their employees.

A study by Baard, Deci, and Ryan (2004) of investment banking companies indicated that managers who were more autonomy supportive had employees who experienced greater basic psychological need satisfaction, were more engaged in their work, evidenced greater well-being, and had higher performance ratings than did employees of managers who were more controlling. Lynch, Plant, and Ryan (2005) studied employees of a psychiatric hospital and found that those who experienced more autonomy support reported greater well-being at work and more intrinsic job satisfaction. They also had less controlling orientations toward their patients.

A cross-cultural study in Bulgaria and the United States (Deci et al., 2001) showed that, in a former Eastern-Bloc country still operating primarily by central planning principles, having autonomy-supportive managers was important for the employees in experiencing need satisfaction, being engaged in their work, and displaying psychological health and well-being.

Again, this sample of relevant studies in organisations and workplaces highlights the concept that by attending to supports for workers' basic psychological needs not only can performance be

increased, but also the workers' adjustment, persistence, and creativity can be enhanced. This means that factors that support high-quality motivation also support the worker's self, which is an important win-win situation for managers.

### *Autonomy Support in the Clinic*

Many field studies have examined the relations of provider autonomy support to patients' autonomous motivation for behaving in healthier ways and, in turn, to their actual health behaviour change. For example, Williams, Grow, Freedman, Ryan, and Deci (1996) found that the more providers in a weight-loss clinic were perceived as autonomy supportive, the more their patients were autonomously motivated to lose weight and the more they attended group meetings, lost weight, and maintained the weight loss over a 2-year period. Williams, Rodin, Ryan, Grolnick, and Deci (1998) found that adult outpatients with a variety of diseases who experienced their physicians to be more autonomy supportive were more autonomously motivated for taking their medications and showed greater adherence to their prescriptions. Kennedy, Gogin, and Nollen (2004) found similar results for HIV-positive patients' adherence to their antiviral therapy.

Williams, McGregor, Zeldman, Freedman, and Deci (2004) tested a SDT process model using patients with diabetes. They found that when clinic providers were more autonomy supportive, patients became more autonomously motivated and perceived themselves to be more competent at managing their diabetes; this, in turn, led to improvement in their glycemic control, which is essential for the health of patients with diabetes.

Furthermore, several randomized clinical trials have examined the effects on patients of interventions that were designed to be autonomy supportive. For example, Williams, McGregor, Sharp, Levesque, et al. (2006) did a clinical trial of smoking cessation among relatively low-income patients who were randomly assigned either to a SDT-based treatment, involving a consultation with a prescriber and about four meetings with a health counselor over a 6-month period, or to usual community care for tobacco dependence. Results of the study indicated that those patients in the autonomy-supportive treatment condition had a significantly higher quit rate at the end of the 6-month period than did those in community care. The processes model responsible for the 6-month cessation outcome involved patients who perceived their providers as more autonomy supportive becoming more autonomous and higher in perceived competence, which in turn predicted cessation. In this clinical trial, the tobacco-dependent patients who had elevated LDL cholesterol were further randomly assigned either to an SDT counselling intervention or to community care for cholesterol improvement. Eighteen months after the study began, Williams, McGregor, Sharp, Kouides, et al. (2006) assessed patients' smoking status and LDL cholesterol levels. Results indicated that patients in the autonomy-supportive treatment condition for either tobacco dependence or elevated LDL cholesterol evidenced a significantly healthier state with regard to smoking and cholesterol than was the case for patients in community care. In short, the SDT-based intervention was successful in significantly improving the health condition of tobacco-dependent patients with regard to both smoking and elevated LDL cholesterol.

Fortier, Sweet, O'Sullivan, and Williams (2007) conducted a clinical trial of relatively sedentary patients who received either

one brief physical activity counselling session or an intensive seven-session physical activity counselling regimen, all from counselors who had been trained with the methods of autonomy support derived from SDT. Results showed that patients with the more intensive intervention were exercising more at 3 months and that the path to the enhanced physical activity was through autonomous motivation and perceived competence.

In dentistry, Münster Halvari and Halvari (2006) found that when an autonomy-supportive intervention was provided for one group of patients in a dental clinic, they engaged in more dental health behaviours and, in turn, had less plaque and gingivitis 7 months later than did the other group of patients who received conventional treatment.

Finally, Zuroff et al. (2007) recently examined the role of autonomy and autonomy support in psychotherapy for depression. Their findings suggested that autonomous motivation was an important factor that predicted improved outcomes across approaches or techniques.

### *Autonomy Support in Sport and Leisure*

The domain of exercise and sport has had a large number of studies applying SDT (see, e.g., Hagger & Chatzisarantis, 2007). Here we provide just a few examples. Pelletier et al. (2001) assessed elite Canadian swimmers' perceptions of their coaches' autonomy support. Results indicated that swimmers who perceived autonomy support from their coaches were more autonomous in their motivation for swimming; also, as predicted, autonomous forms of motivation (viz., intrinsic and identified motivation) predicted greater long-term persistence, whereas amotivation and external regulation predicted rapid dropout. Introjected regulation predicted short-term but not long-term persistence. Thus, the more autonomous the athletes were in their sport participation, the longer they remained involved with the sport. Hagger, Chatzisarantis, Culverhouse, and Biddle (2003) reported that physical education teachers' autonomy supportiveness in their classes predicted their students' autonomous motivation for leisure-time physical activity, which in turn predicted their actual physical activity outside the school context. Fortier and Gaumond (2007) examined the influence of parents on adolescents' motivation and physical activity and found that parents who were more autonomy supportive for physical activity had children who were more active and more autonomous in performing the activities. Thus, studies have shown that autonomy support from coaches, teachers, and parents all affect teenagers' autonomous motivation for physical activity and sport.

Vansteenkiste, Simons, Soenens, and Lens (2004) found that framing physical activities with intrinsic goals (e.g., being healthier and more fit) rather than extrinsic goals (e.g., being more attractive) and presenting the goal framing in an autonomy-supportive manner led high school students to be more autonomous in their motivation for physical activity and to engage in more of the physical activity up to 4 months later.

### *Autonomy Support in Friendships and Romantic Relationships*

For each domain in which we have discussed autonomy support, we focused on relationships that differed in terms of authority or

expertise—for example, parents and children, managers, and subordinates. Close friendships and romantic relationships are quite different from the other domains because, structurally, there is greater mutuality in these relationships. That is, such relationships represents a domain in which mutuality of autonomy support is crucial, with each partner providing autonomy support to the other, as well as receiving it from the other.

A study by Deci, La Guardia, Moller, Scheiner, and Ryan (2006) indicated that when an individual perceives greater autonomy support from his or her friend, the individual also gives more autonomy support to the friend. Furthermore, the individual experiences greater need satisfaction in the relationship and experiences the relationship to be of higher quality, as indexed by better dyadic adjustment, greater security of attachment, and more emotional reliance on the friend. Receiving autonomy support also predicted a higher level of the recipient's psychological well-being. Using structural equation modelling, we found that the amount of autonomy support that the individual gave to his or her friend predicted the individual's need satisfaction, quality of the relationship, and well-being after controlling of the amount of autonomy support the individual received from the friend. The results thus indicated that both receiving autonomy support from a friend and giving autonomy support to the friend contribute to need satisfaction, relationship quality, and psychological well-being. Similar findings are emerging as well for romantic relationships (e.g., Blais, Sabourin, Boucher, & Vallerand, 1990; Patrick, Knee, Canevello, & Lonsary, 2007). Indeed, need supports appear to be critical for human attachments of all types (La Guardia, Ryan, Couchman, & Deci, 2000)

### Conclusion

SDT differentiates autonomous motivation, which comprises intrinsic motivation and well-internalized extrinsic motivation, from controlled motivation, which comprises external and introjected regulation. Autonomous motivation has been found to have a variety of advantages in terms of effective performance, especially on heuristic tasks, psychological well-being, and healthy development. Furthermore, autonomous motivation has been found to be more in evidence when people experience satisfaction of their basic psychological needs for competence, relatedness, and autonomy. These elements of SDT have been examined in many field studies across several life domains. We reviewed studies in the domains of education, parenting, work, health care, sport and exercise, and close friendships, in each case finding that autonomy support from significant others had a positive effect on the motivation, performance, and well-being of the individuals who receive that autonomy support. SDT research in various other domains—including virtual worlds, preserving the environment, politics, religion, psychopathology, and psychotherapy—indicates that the experiences of autonomy, as well as of competence and relatedness, are important for effective performance and psychological health and well-being.

### References

- Amabile, T. M., DeJong, W., & Lepper, M. (1976). Effects of externally imposed deadlines on subsequent intrinsic motivation. *Journal of Personality and Social Psychology*, *34*, 92–98.
- Atkinson, J. W. (1964). *An introduction to motivation*. Princeton, NJ: Van Nostrand.
- Baard, P. P., Deci, E. L., Ryan, R. M. (2004). Intrinsic need satisfaction: A motivational basis of performance and well-being in two work settings. *Journal of Applied Social Psychology*, *34*, 2045–2068.
- Bandura, A. (1996). *Self-efficacy: The exercise of control*. New York: Freeman.
- Baumeister, R. F., & Vohs, K. D. (2007). Self-regulation, ego depletion, and motivation. *Social and Personality Psychology Compass*, *1*, 1–14.
- Benware, C., & Deci, E. L. (1984). Quality of learning with an active versus passive motivational set. *American Educational Research Journal*, *21*, 755–765.
- Black, A. E., & Deci, E. L. (2000). The effects of student self-regulation and instructor autonomy support on learning in a college-level natural science course: A self-determination theory perspective. *Science Education*, *84*, 740–756.
- Blais, M. R., Sabourin, S., Boucher, C., & Vallerand, R. (1990). Toward a motivational model of couple happiness. *Journal of Personality and Social Psychology*, *59*, 1021–1031.
- Chirkov, V. I., & Ryan, R. M. (2001). Parent and teacher autonomy-support in Russian and U.S. adolescents: Common effects on well-being and academic motivation. *Journal of Cross Cultural Psychology*, *32*, 618–635.
- Chirkov, V., Ryan, R. M., Kim, Y., & Kaplan, U. (2003). Differentiating autonomy from individualism and independence: A self-determination theory perspective on internalization of cultural orientations and well-being. *Journal of Personality and Social Psychology*, *84*, 97–110.
- Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, *18*, 105–115.
- Deci, E. L. (1975). *Intrinsic motivation*. New York: Plenum Press.
- Deci, E. L., & Cascio, W. F. (1972, April). *Changes in intrinsic motivation as a function of negative feedback and threats*. Paper presented at the 43rd annual meeting of the Eastern Psychological Association, Boston.
- Deci, E. L., Connell, J. P., & Ryan, R. M. (1989). Self-determination in a work organization. *Journal of Applied Psychology*, *74*, 580–590.
- Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality*, *62*, 119–142.
- Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, *125*, 627–668.
- Deci, E. L., La Guardia, J. G., Moller, A. C., Scheiner, M. J., & Ryan, R. M. (2006). On the benefits of giving as well as receiving autonomy support: Mutuality in close friendships. *Personality and Social Psychology Bulletin*, *32*, 313–327.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.
- Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*, 227–268.
- Deci, E. L., Ryan, R. M., Gagné, M., Leone, D. R., Usunov, J., & Kornazheva, B. P. (2001). Need satisfaction, motivation, and well-being in the work organizations of a former Eastern Bloc country. *Personality and Social Psychology Bulletin*, *27*, 930–942.
- Deci, E. L., Schwartz, A. J., Sheinman, L., & Ryan, R. M. (1981). An instrument to assess adults' orientations toward control versus autonomy with children: Reflections on intrinsic motivation and perceived competence. *Journal of Educational Psychology*, *73*, 642–650.
- Fernet, C., Guay, F., & Senecal, C. (2004). Adjusting to job demands: The role of work self-determination and job control in predicting burnout. *Journal of Vocational Behavior*, *65*, 39–56.
- Fortier, M. S., & Gaumont, S. (2007). *Testing a self-determination process model of physical activity persistence in adolescents*. Manuscript submitted for publication.
- Fortier, M. S., Sweet, S. N., O'Sullivan, T. L., & Williams, G. C. (2007). A self-determination process model of physical activity adoption in the



- context of a randomized controlled trial. *Psychology of Sport and Exercise*, 8, 741–757.
- Grolnick, W. S., & Ryan, R. M. (1987). Autonomy in children's learning: An experimental and individual difference investigation. *Journal of Personality and Social Psychology*, 52, 890–898.
- Grolnick, W. S., & Ryan, R. M. (1989). Parent styles associated with children's self-regulation and competence in school. *Journal of Educational Psychology*, 81, 143–154.
- Grolnick, W. S., Ryan, R. M., & Deci, E. L. (1991). The inner resources for school achievement: Motivational mediators of children's perceptions of their parents. *Journal of Educational Psychology*, 83, 508–517.
- Hagger, M. S., & Chatzisarantis, N. L. D. (Eds.) (2007). *Intrinsic motivation and self-determination in exercise and sport*. Leeds, United Kingdom: Human Kinetics Europe.
- Hagger, M. S., Chatzisarantis, N. L. D., Culverhouse, T., & Biddle, S. J. H. (2003). The process by which perceived autonomy support in physical education promotes leisure-time physical activity intentions and behavior: A trans-contextual model. *Journal of Educational Psychology*, 95, 784–795.
- Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, 22, 80–87.
- Kennedy, S., Gogin, K., & Nollen, N. (2004). Adherence to HIV medications: Utility of the theory of self-determination. *Cognitive Therapy and Research*, 28, 611–628.
- Koestner, R., Ryan, R. M., Bernieri, F., & Holt, K. (1984). Setting limits on children's behavior: The differential effects of controlling versus informational styles on intrinsic motivation and creativity. *Journal of Personality*, 52, 233–248.
- La Guardia, J. G., Ryan, R. M., Couchman, C. E., & Deci, E. L. (2000). Within-person variation in security of attachment: A self-determination theory perspective on attachment, need fulfillment, and well-being. *Journal of Personality and Social Psychology*, 79, 367–384.
- Legault, L., Green-Demers, I., Grant, P., & Chung, J. (2007). On the self-regulation of implicit and explicit prejudice: A self-determination theory perspective. *Personality and Social Psychology Bulletin*, 33, 732–749.
- Lynch, M. F. Jr., Plant, R. W., & Ryan, R. M. (2005). Psychological needs and threat to safety: Implications for staff and patients in a psychiatric hospital for youth. *Professional Psychology: Research and Practice*, 36, 415–425.
- Markus, H. R., Kitayama, S., & Heiman, R. J. (1996). Culture and basic psychological principles. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 857–913). New York: Guilford Press.
- Münster Halvari, A. E., & Halvari, H. (2006). Motivational predictors of change in oral health: An experimental test of self-determination theory. *Motivation and Emotion*, 30, 295–306.
- Patrick, H., Knee, C. R., Canevello, A., & Lonsbary, C. (2007). The role of need fulfillment in relationship functioning and well-being: A self-determination theory perspective. *Journal of Personality and Social Psychology*, 92, 434–457.
- Pelletier, L. G., Dion, S. C., Slovenic-D'Angelo, M., & Reid, R. (2004). Why do you regulate what you eat? Relations between forms of regulation, eating behaviors, sustained dietary behavior change, and psychological adjustment. *Motivation and Emotion*, 28, 245–277.
- Pelletier, L. G., Fortier, M. S., Vallerand, R. J., & Brière, N. M. (2001). Associations among perceived autonomy support, forms of self-regulation, and persistence: A prospective study. *Motivation and Emotion*, 25, 279–306.
- Piaget, J. (1971). *Biology and knowledge*. Chicago: University of Chicago Press.
- Plant, R., & Ryan, R. M. (1985). Intrinsic motivation and the effects of self-consciousness, self-awareness, and ego-involvement: An investigation of internally controlling styles. *Journal of Personality*, 53, 435–449.
- Porter, L. W., & Lawler, E. E. (1968). *Managerial attitudes and performance*. Homewood, IL: Irwin-Dorsey.
- Rogers, C. (1963). The actualizing tendency in relation to "motives" and to consciousness. In M. R. Jones (Ed.), *Nebraska symposium on motivation* (11, 1–24). Lincoln, NE: University of Nebraska Press.
- Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology*, 43, 450–461.
- Ryan, R. M., & Brown, K. W. (2005). Legislating competence: The motivational impact of high stakes testing as an educational reform. In C. Dweck & A. E. Elliot (Eds.), *Handbook of competence* (pp. 354–374). New York: Guilford Press.
- Ryan, R. M., Chirkov, V. I., Little, T. D., Sheldon, K. M., Timoshina, E., & Deci, E. L. (1999). The American dream in Russia: Extrinsic aspirations and well-being in two cultures. *Personality and Social Psychology Bulletin*, 25, 1509–1524.
- Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, 57, 749–761.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55, 68–78.
- Ryan, R. M., La Guardia, J. G., Solky-Butzel, J., Chirkov, V., & Kim, Y. (2005). On the interpersonal regulation of emotions: Emotional reliance across gender, relationships, and culture. *Personal Relationships*, 12, 146–163.
- Ryan, R. M., & Lynch, J. (1989). Emotional autonomy versus detachment: Revisiting the vicissitudes of adolescence and young adulthood. *Child Development*, 60, 340–356.
- Ryan, R. M., Mims, V., & Koestner, R. (1983). Relation of reward contingency and interpersonal context to intrinsic motivation: A review and test using cognitive evaluation theory. *Journal of Personality and Social Psychology*, 45, 736–750.
- Ryan, R. M., Rigby, S., & King, K. (1993). Two types of religious internalization and their relations to religious orientations and mental health. *Journal of Personality and Social Psychology*, 65, 586–596.
- Sheldon, K. M., Elliot, A. J., Ryan, R. M., Chirkov, V., Kim, Y., Wu, C., et al. (2004). Self-concordance and subjective well-being in four cultures. *Journal of Cross-Cultural Psychology*, 35, 209–223.
- Sheldon, K. M., & Krieger, L. S. (2007). Understanding the negative effects of legal education on law students: A longitudinal test of self-determination theory. *Personality and Social Psychology Bulletin*, 33, 883–897.
- Sheldon, K. M., Ryan, R. M., Deci, E. L., & Kasser, T. (2004). The independent effects of goal contents and motives on well-being: It's both what you pursue and why you pursue it. *Personality and Social Psychology Bulletin*, 30, 475–486.
- Soenens, B., Vansteenkiste, M., Lens, W., Luyckx, K., Beyers, W., Goossens, L., & Ryan, R. M. (2007). Conceptualizing parental autonomy support: Adolescent perceptions of promoting independence versus promoting volitional functioning. *Developmental Psychology*, 43, 633–646.
- Vallerand, R. J., & Bissonnette, R. (1992). Intrinsic, extrinsic, and amotivational styles as predictors of behavior: A prospective study. *Journal of Personality*, 60, 599–620.
- Vallerand, R. J., & Reid, G. (1984). On the causal effects of perceived competence on intrinsic motivation: A test of cognitive evaluation theory. *Journal of Sport Psychology*, 6, 94–102.
- Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. M., & Deci, E. L. (2004). Motivating learning, performance, and persistence: The synergistic effects of intrinsic goal contents and autonomy-supportive contexts. *Journal of Personality and Social Psychology*, 87, 246–260.
- Vansteenkiste, M., Simons, J., Soenens, B., & Lens, W. (2004). How to become a persevering exerciser? Providing a clear, future intrinsic goal in an autonomy supportive way. *Journal of Sport & Exercise Psychology*, 26, 232–249.

- Werner, H. (1948). *Comparative psychology of mental development*. New York: International Universities Press.
- White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, *66*, 297–333.
- White, R. W. (1960). Competence and the psychosexual stages of development. In M. R. Jones (Ed.), *Nebraska symposium on motivation* (Vol. 8, pp. 97–141). Lincoln, NE: University of Nebraska Press.
- Williams, G. C., Cox, E. M., Hedberg, V., & Deci, E. L. (2000). Extrinsic life goals and health risk behaviors in adolescents. *Journal of Applied Social Psychology*, *30*, 1756–1771.
- Williams, G. C., & Deci, E. L. (1998). The importance of supporting autonomy in medical education. *Annals of Internal Medicine*, *129*, 303–308.
- Williams, G. C., Grow, V. M., Freedman, Z., Ryan, R. M., & Deci, E. L. (1996). Motivational predictors of weight loss and weight-loss maintenance. *Journal of Personality and Social Psychology*, *70*, 115–126.
- Williams, G. C., McGregor, H. A., Sharp, D., Kouides, R. W., Levesque, C., Ryan, R. M., & Deci, E. L. (2006). A self-determination multiple risk intervention trial to improve smokers' health. *Journal of General Internal Medicine*, *21*, 1288–1294.
- Williams, G. C., McGregor, H. A., Sharp, D., Levesque, C., Kouides, R. W., Ryan, R. M., & Deci, E. L. (2006). Testing a self-determination theory intervention for motivating tobacco cessation: Supporting autonomy and competence in a clinical trial. *Health Psychology*, *25*, 91–101.
- Williams, G. C., McGregor, H. A., Zeldman, A., Freedman, Z. R., & Deci, E. L. (2004). Testing a self-determination theory process model for promoting glycemic control through diabetes self-management. *Health Psychology*, *23*, 58–66.
- Williams, G. C., Rodin, G. C., Ryan, R. M., Grolnick, W. S., & Deci, E. L. (1998). Autonomous regulation and long-term medication adherence in adult outpatients. *Health Psychology*, *17*, 269–276.
- Williams, G. C., Saizow, R., Ross, L., & Deci, E. L. (1997). Motivation underlying career choice for internal medicine and surgery. *Social Science and Medicine*, *45*, 1705–1713.
- Zuckerman, M., Porac, J., Lathin, D., Smith, R., & Deci, E. L. (1978). On the importance of self-determination for intrinsically motivated behavior. *Personality and Social Psychology Bulletin*, *4*, 443–446.
- Zuroff, D. C., Koestner, R., Moskowitz, D. S., McBride, C., Bagby, M., & Marshall, M. (2007). Autonomous motivation for therapy: A new non-specific predictor of outcome in brief treatments of depression. *Psychotherapy Research*, *17*, 137–148.

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