# **Self-Determination Theory**

Lisa Legault Clarkson University, Potsdam, NY, USA

#### **Definition**

Self-determination theory (SDT) is a broad theory of human personality and motivation concerned with how the individual interacts with and depends on the social environment. SDT defines intrinsic and several types of extrinsic motivation and outlines how these motivations influence situational responses in different domains, as well as social and cognitive development and personality. SDT is centered on the basic psychological needs of autonomy, competence, and relatedness and their necessary role in self-determined motivation, well-being, and growth. Finally, SDT describes the critical impact of the social and cultural context in either facilitating or thwarting people's basic psychological needs, perceived sense of self-direction, performance, and well-being.

### Introduction

Self-determination theory (SDT; Ryan and Deci 2000) is a metatheory of human motivation and personality development. It is thought of as a metatheory in the sense that it is made up of several "mini-theories" which fuse together to

offer a comprehensive understanding of human motivation and functioning. SDT is based on the fundamental humanistic assumption that individuals naturally and actively orient themselves toward growth and self-organization. In other words, people strive to expand and understand themselves by integrating new experiences; by cultivating their needs, desires, and interests; and by connecting with others and the outside world. However, SDT also asserts that this natural growth tendency should not be assumed and that people can become controlled, fragmented, and alienated if their basic psychological needs for autonomy, competence, and relatedness are undermined by a deficient social environment. In other words, SDT rests on the notion that the individual is involved continuously in a dynamic interaction with the social world – at once striving for need satisfaction and also responding to the conditions of the environment that either support or thwart needs. As a consequence of this personenvironment interplay, people become either engaged, curious, connected, and whole, or demotivated, ineffective, and detached.

The basic components of SDT – namely, its six mini-theories – combine to provide an account of human behavior across life domains, including work (Fernet 2013), relationships (La Guardia and Patrick 2008), education (Reeve and Lee 2014), religion (Soenens et al. 2012), health (Russell and Bray 2010), sports (Pelletier et al. 2001), and even stereotyping and prejudice (Legault et al. 2007). At the heart of each mini-

theory is the idea of basic psychological needs; all individuals strive for and need autonomy (the need to feel free and self-directed), competence (the need to feel effective), and relatedness (the need to connect closely with others) in order to flourish and grow. The first mini-theory, cognitive evaluation theory, centers on the factors that shape intrinsic motivation by affecting perceived autonomy and competence. The second mini-theory is organismic integration theory, and it concerns extrinsic motivation and the manner in which it may be internalized. Causality orientations theory describes personality dispositions – that is, are individuals generally autonomous, controlled, or impersonal? The fourth mini-theory, basic psychological need theory, discusses the role of basic psychological needs in health and wellbeing and, importantly, outlines the manner in which social environments can neglect, thwart, or satisfy people's basic psychological needs. Goal content theory is concerned with how intrinsic and extrinsic goals influence health and wellness. Finally, relationship motivation theory is focused on the need to develop and maintain close relationships and describes how optimal relationships are those that help people satisfy their basic psychological needs for autonomy, competence, and relatedness.

## **Cognitive Evaluation Theory (CET)**

CET seeks to describe how both internal and external events affect people's intrinsic motivation. Intrinsic motivation refers to engagement in activities out of enjoyment and interest rather than for the consequence or incentive attached to the behavior. Intrinsic motivation is noninstrumental in nature; when intrinsically motivated, people are not concerned with what outcome will be received or avoided by engaging in the action. Rather, they perform the behavior because it is inherently satisfying in and of itself. In contrast, extrinsic motivation is fundamentally instrumental. People are extrinsically motivated when they are concerned with performing an action because of the consequence associated with it; behavior is contingent

upon receiving or avoiding an outcome that is separable from the behavior in question.

According to CET, intrinsic motivation can be enhanced or undermined, depending on the degree to which external events (e.g., rewards, punishers), interpersonal contexts (e.g., criticism or praise from a relationship partner), and internal proclivities (e.g., one's own trait-level tendency to feel task-engaged) affect the individual's selfperceptions of autonomy and competence. Autonomy is the innate need to feel self-direction and self-endorsement in action, as opposed to feeling controlled, coerced, or constrained, whereas competence is the need to feel effective and masterful – as though one's actions are useful in achieving desired outcomes. Competence underlies the seeking out of optimal challenge and the development of capacities. When external, social/interpersonal, and internal conditions facilitate satisfaction of the individual's needs for autonomy and competence, then intrinsic motivation increases. Conversely, when autonomy is neglected or thwarted by the use of controlling bribes, demands, pressuring (e.g., language) or when perceived competence is undermined (e.g., through negative uninformative feedback), then intrinsic motivation declines. Early work in the spirit of CET showed that, by undercutting perceived autonomy, extrinsic motivators such as money worked to impede intrinsic motivation (e.g., Deci 1971). Follow-up research demonstrated that other external events perceived to be controlling, such as deadlines (Amabile et al. 1976) and surveillance (Plant and Ryan 1985) also diminish intrinsic motivation. Similarly, interpersonal contexts can influence intrinsic motivation, depending on whether they are perceived to be informational or controlling. For instance, although positive feedback is generally perceived as informational (i.e., supporting competence), it can be perceived as controlling (i.e., undermining of autonomy) if it is administered in a pressuring way (Ryan 1982).

Finally, internal events – that is, people's own perceptions, feelings, and cognitions – can also make behavior feel controlling or informational. For example, people can come to feel obsessive or ego-involved in an activity and the self-esteem

boost associated with it. When feelings of self-worth or identity are attached to performance in a way that it becomes necessary to perform the behavior in order to feel worthy or valuable, then the behavior will feel quite controlling (Mageau et al. 2009; Plant and Ryan 1985).

In sum, CET asserts that the context – including external forces (e.g., deadlines), interpersonal climates (e.g., praise, instruction), and internal events (e.g., being ego-involved) – affects intrinsic motivation as a function of the degree to which they are informational vs. controlling.

## **Organismic Integration Theory (OIT)**

Whereas CET addresses the manner in which internal and environmental forces influence intrinsic motivation, OIT addresses the process by which individuals acquire the motivation to carry out behaviors that are *not* intrinsically interesting or enjoyable. Such activities are unlikely to be executed unless there is some extrinsic reason for doing them. Extrinsic motivation refers to a broad category of motivations aimed at outcomes that are extrinsic to the behavior itself. Unlike other motivation theories and research, OIT proposes a highly differentiated view of extrinsic motivation, suggesting that it takes multiple forms, including external regulation, introjection, identification, and integration. These subtypes of extrinsic motivation are seen as falling along a continuum of internalization (see Fig. 1). Thus, whereas some extrinsic motivators are completely external and nonself-determined, others can be highly internal and self-determined (i.e., autonomous).

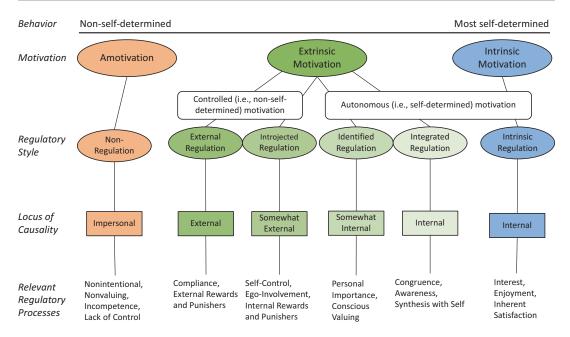
To the extent the environment satisfies people's needs for autonomy, competence, and relatedness, OIT postulates that people will tend to integrate their experiences by internalizing, reflecting on, and endorsing the values and behaviors that are salient in their surroundings. This process of internalization is therefore spontaneous and adaptive, allowing people to sanction and cohere with their social environment. The more a behavior or regulation is internalized, the more it becomes integrated with the self and serves as a foundation for

self-determined motivation. OIT suggests that regulation of behavior can become increasingly internalized to the extent that the individual feels autonomous and competent in effecting it. Relatedness plays an important role in internalization. That is, individuals will tend to initially internalize behaviors that are valued by close others. For example, if a child learns that her father, whom she admires, strongly values and cares about brushing his teeth, then she may be apt to internalize the same behavior. Ultimately, however, full internalization requires the experience of autonomy in the activity (i.e., toothbrushing must come to emanate from the self if it is truly to be endorsed and sustained). To integrate the regulation of a behavior, people must understand its personal significance and coordinate it with their needs, values, and other behaviors.

The degree to which any given behavior is internalized is critically important to successful performance and persistence of that behavior. For instance, autonomously motivated students study harder, pay more attention in class, and get better grades (Vansteenkiste et al. 2004). In the health regulation domain, autonomous motivation leads to superior self-regulation in weight loss and weight loss maintenance (Teixeira et al. 2010), as well as in smoking cessation (Williams et al. 2009). Autonomous forms of motivation also play an important role in long-term persistence in sports (Pelletier et al. 2001) and the self-control of prejudiced responses (Legault et al. 2007).

## **Causality Orientation Theory (COT)**

Whereas CET and OIT are generally focused on how the social context influences the individual's intrinsic and extrinsic motivation by affecting autonomy, competence, and relatedness, COT is more concerned with the inner resources of the individual. *Causality orientations* are thought to develop over time and form the basis of motivation at the broad level of personality. According to COT, a developmental and social history of autonomy-congruent experiences is likely to shape an *autonomous causality orientation* (Deci and Ryan 1985) or a trait of *autonomous* 



**Self-Determination Theory, Fig. 1** The internalization continuum: types of motivation according to self-determination theory

functioning (Weinstein et al. 2012), wherein the individual generally tends to regulate behavior as a function of personal interests and values, that is, based on intrinsic motivation and autonomous forms of extrinsic motivation. In contrast, those with a controlled orientation have a dispositional tendency to look toward controls and prompts in the environment to regulate behavior and are primarily concerned with how to behave in a way that conforms to expectations, demands, and other external consequences. The impersonal orientation describes those who feel a general sense of helplessness and detachment and who lack intentionality in action.

The autonomy orientation is associated positively with self-esteem and self-actualization (Deci and Ryan 1985), as well as greater daily well-being, satisfaction of basic psychological needs, autonomous engagement in daily activities, and positive daily social interactions (Weinstein et al. 2012). In contrast, having a controlled orientation is associated with self-consciousness and proneness to feeling outwardly evaluated and pressured (Deci and Ryan 1985), as well as greater interpersonal defensiveness

(Hodgins et al. 2006). The impersonal orientation has been shown to be associated with self-derogation, depression, and anxiety (Deci and Ryan 1985), as well as self-handicapping, poor performance (Hodgins et al. 2006), and a fragmented identity (Soenens et al. 2005).

## **Basic Psychological Need Theory (BPNT)**

Although the basic psychological needs of autonomy, competence, and relatedness play a focal role in SDT in general, as well as in each of its mini-theories, BPNT goes beyond these basic assumptions to specify more precisely how basic psychological needs are essential for health and well-being (Ryan and Deci 2000). BPNT also describes how contexts that support the satisfaction of basic psychological needs contribute to positive life outcomes and how contexts that thwart these needs will exact tolling costs to functioning and wellness. Moreover, BPNT argues that the needs of autonomy, competence, and relatedness are not just essential for health but are also innate and universal – that is, they exist

across individuals and cultures (e.g., Chen et al. 2015).

Autonomy (the need to experience selfdirection and personal endorsement in action), competence (the need to feel effective in interactions with the environment), and relatedness (the need to feel meaningfully connected to others) are organismic needs. Organisms are inherently bound to and dependent upon their environment for survival. That is, the well-being of any organism depends on its environment because the environment provides it with nutrients required to thrive and develop. Just as organisms possess the physiological needs of thirst, hunger, and sleep – which must be met by environments that provide water, food, and shelter if the organism is to survive; so too do organisms have psychological needs, which are required to adapt and function in psychologically healthy ways. Research on basic psychological needs has found a robust connection between psychological need satisfaction and indices of eudaimonic well-being, that is, the degree to which a person experiences meaning, self-realization, and optimal functioning (not simply hedonic happiness, i.e., the experience of pleasure and avoidance of pain). For instance, psychological need satisfaction has been linked to openness (Hodgins et al. 2006), developmental growth and maturity (Ryan and Deci 2000), energy, vitality, positive affect, and the relative daily absence of psychological and physical symptomatology (Reis et al. 2000). In contrast, when psychological needs are unmet, individuals experience greater apathy, irresponsibility, psychopathology, arrogance, and insecurity (Ryan and Deci 2000).

The environment therefore has a profound impact on the extent to which the basic needs for autonomy, competence, and relatedness are satisfied. For instance, when external events, interpersonal relationships, and social contexts/cultures nurture and target a person's need for autonomy, then those contextual forces are said to be *autonomy supportive*. Autonomy-supportive environments and relationships nurture the individual's inner motivational resources and intrinsic preferences by providing choice and decision-making flexibility. They also provide meaningful and

useful information to help individuals internalize the motivation for their behavior. Competence satisfaction is derived from contexts and relationships that provide the individual with optimal challenge (as opposed to being overwhelming or boring), as well as structure and feedback that allow skills and abilities to develop. Satisfaction of the need for relatedness occurs when relationships are nurturing and reciprocal and, importantly, when they involve acceptance of the authentic self. Research on BPNT, and SDT in general, shows that environments that are supportive of autonomy, competence, and relatedness help to facilitate the individual's perceived sense of autonomy, competence, and relatedness, which then promotes deeper daily engagement and overall psychological health (Ryan and Deci 2000).

## **Goal Content Theory (GCT)**

GCT relates goal contents, also referred to as aspirations or values, to well-being. GCT integrates self-determination theory with values research to suggest that basic psychological needs also drive or underlie value systems in specific ways (Kasser and Ryan 1996). That is, intrinsic values/aspirations emerge from the basic psychological needs of autonomy, competence, and relatedness and, in turn, the pursuit and attainment of intrinsic values works to satisfy these needs. Intrinsic aspirations include close relationships, personal growth, and community contributions. In contrast, extrinsic aspirations are geared toward obtaining external validation and proof of self-worth and instead focus on the pursuit of goals such as financial success, popularity/fame, and image/appearance. Extrinsic aspirations/ values tend to emerge from need substitutes; when basic psychological needs are neglected over time, it is theorized that socially salient need substitutes can provide a placating alternative, and although the pursuit and attainment of extrinsic goals can be quite motivating, they do not provide direct nourishment of psychological needs (Sheldon and Kasser 2008).

According to GCT, it is important to consider the role of intrinsic and extrinsic values in motivation because such values shape, guide, and organize specific behaviors and experiences. Values function to coordinate preferences, decisions, and actions that are relevant to those values/ aspirations. For instance, a person who places high value on financial success will likely buy products and select acquaintances, friends, and romantic partners that help to meet, affirm, or express the value of wealth. A person who strongly values having close relationships, in contrast, will be motivated to nurture and explore intimate and lasting connections with others perhaps by choosing and spending significant amounts of time on a selective number of meaningful relationships. Because intrinsic values/ aspirations are more conducive to need fulfillment than are extrinsic values/aspirations, it may not be surprising that they are more likely to be associated with well-being. For instance, it has been found that individuals who pursue intrinsic goals experience greater personal fulfillment, more productivity, less anxiety, less narcissism, less depression, and fewer physical symptoms compared to those who pursue financial success (Kasser and Ryan 1996).

# **Relationship Motivation Theory (RMT)**

Although the first five mini-theories of SDT are centrally concerned with the role of the social context in supporting the individual's need satisfaction, intrinsic motivation, and well-being, most of their focus is on nonreciprocal, one-way relationships, that is, on the manner in which important significant others (e.g., parents, teachers, coaches, managers) tend to support or undermine the individual's psychological needs. RMT fills a gap by describing the dynamics between partners in close relationships. While RMT notes that the basic psychological need for relatedness drives the initial desire to seek out and maintain close and meaningful relationships, satisfaction of the need for relatedness alone is not sufficient; ultimately, optimal close relationships are ones in which each partner supports the autonomy, competence, and relatedness needs of the other.

According to SDT broadly - and RMT in particular – all human beings possess the fundamental need to feel cared for; people aim to cultivate relationships with those who value them and who are sensitive to their needs and wants. People also want to feel authentic in relationships and to know that their relationship partner understands and values their core self. While RMT rests on this need for relatedness, the first major tenet of RMT suggests that optimal satisfaction of relatedness requires also that autonomy and competence be fulfilled in the context of the relationship. For instance, it has been found that each of the three basic psychological needs contributes uniquely to important relationship outcomes, including relationship quality, security of attachment, effective conflict management, and overall personal wellbeing (Deci and Ryan 2014; Patrick et al. 2007; La Guardia and Patrick 2008). Overall, the more need satisfaction people experience in relationships, the more satisfied they will be with that relationship. When individuals feel as though their partner values their true self and holds them in unconditional positive regard, then relationships are more likely to flourish.

A second major proposition within RMT refers to the notion that the more people are autonomously motivated to be in relationships, the more they will experience the relationship to be fulfilling. Thus, when people enter and persist at relationships for personal, autonomous reasons (e.g., because they feel that the relationship is important and meaningful) rather than controlled reasons (e.g., because they feel like they should be in the relationship), they show greater relationship satisfaction, better daily relationship functioning, and greater overall well-being (Deci and Ryan 2014). Interestingly, the important role of autonomous motivation extends to relationships with social groups; when individuals feel autonomously motivated to be part of a group (e.g., being Black, being German, being Catholic, being part of a team or organization), they experience more positive group identity (Amiot and Sansfaçon 2011).

A final key component to RMT is that people desire mutuality in close relationships. Therefore, not only do people benefit from receiving need support from their partners, but they also benefit by giving it (Deci et al. 2006). To feel truly related to another person, not only do people want to feel genuinely accepted and cared for, but they also want their partners to feel the same way, that is, they want others to want to form close connections with them, and they want to be able to offer their partners unconditional support and regard in return. RMT, in sum, suggests that optimal close relationships between partners are complex and require more than warmth and attachment.

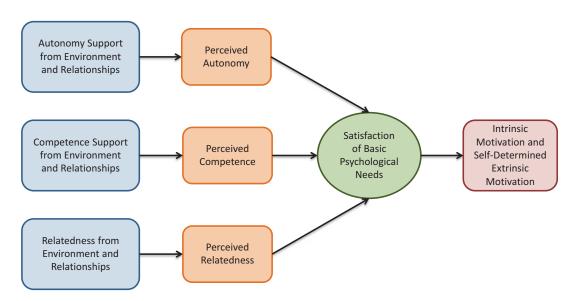
# **Summary: Putting It All Together**

Self-determination theory offers a broad framework for understanding human motivation and personality by defining the psychological nutrients required for optimal motivation, engagement, and well-being. SDT underscores the idea that people's relationships and social contexts must involve and support their fundamental human needs for autonomy, competence, and relatedness. Figure 2 helps to summarize the role of contexts and events in satisfying these basic psychological needs and the subsequent effect on intrinsic and autonomous forms of extrinsic motivation. When people are exposed to and involved in

opportunities that allow for personal initiative and self-direction, as well as optimal challenge and positive social interactions, autonomous motivation thrives, and they are likely to feel interested and engaged.

### Conclusion

Self-determination theory has been supported by more than four decades of research. The success of the theory can be attributed to its degree of comprehensiveness and testability. That is, SDT outlines very clear, detailed, dynamic, and verifiable propositions that apply to needs and motivations across life spheres, including classrooms, organizations, families, teams, clinics, and cultures. SDT is therefore both broad and specific, as it provides detailed accounts of how social and cultural forces impact personality development and global motivational orientation, as well as behavioral responses within particular domains and tasks. Recently, SDT has begun to receive attention at the level of the brain as well, showing that autonomous/intrinsic motivation and controlled/extrinsic motivation map onto distinct neurophysiological structures and functions (e.g., Legault and Inzlicht 2013; Marsden et al. 2014).



Self-Determination Theory, Fig. 2 The role of need satisfaction in motivation according to self-determination theory

Arguably, the future of SDT will rest in its applicability to the practice of motivating self and others; by applying the basics of SDT, parents, teachers, coaches, managers, romantic partners, and peers can help individuals enhance their creativity, meaning, and enjoyment.

#### **Cross-References**

- ► The Need for Autonomy
- The Need for Competence, Intrinsic and Extrinsic Motivation

### References

- Amabile, T. M., DeJong, W., & Lepper, M. R. (1976). Effects of externally imposed deadlines on subsequent intrinsic motivation. *Journal of Personality and Social Psychology*, 34(1), 92.
- Amiot, C. E., & Sansfaçon, S. (2011). Motivations to identify with social groups: A look at their positive and negative consequences. *Group Dynamics: Theory, Research, and Practice,* 15(2), 105.
- Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., et al. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion*, 39(2), 216–236.
- Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, 18, 105–115.
- Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality*, 19, 109–134.
- Deci, E. L., & Ryan, R. M. (2014). Autonomy and need satisfaction in close relationships: Relationships motivation theory. In *Human motivation and interpersonal* relationships (pp. 53–73). The Netherlands: Springer.
- 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(3), 313–327.
- Fernet, C. (2013). The role of work motivation in psychological health. *Canadian Psychology*, 54, 72–74.
- Hodgins, H. S., Yacko, H. A., & Gottlieb, E. (2006). Autonomy and nondefensiveness. *Motivation and Emotion*, 30(4), 283–293.
- Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, 22, 280–287.

- La Guardia, J. G., & Patrick, H. (2008). Self-determination theory as a fundamental theory of close relationships. *Canadian Psychology*, 49(3), 201.
- Legault, L., & Inzlicht, M. (2013). Self-determination, self-regulation and the brain: Autonomy improves performance by enhancing neuroaffective responsiveness to self-regulation failure. *Journal of Personality and Social Psychology*, 105, 123–128.
- 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.
- Mageau, G. A., Vallerand, R. J., Charest, J., Salvy, S. J., Lacaille, N., Bouffard, T., & Koestner, R. (2009). On the development of harmonious and obsessive passion: The role of autonomy support, activity specialization, and identification with the activity. *Journal of Personality*, 77(3), 601–646.
- Marsden, K. E., Ma, W. J., Deci, E. L., Ryan, R. M., & Chiu, P. H. (2014). Diminished neural responses predict enhanced intrinsic motivation and sensitivity to external incentive. *Cognitive, Affective, & Behavioral Neuroscience*, 15, 276–286.
- 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(3), 434.
- 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.
- Plant, R. W., & 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(3), 435–449.
- Reeve, J., & Lee, W. (2014). Students' classroom engagement produces longitudinal changes in classroom motivation. *Journal of Educational Psychology*, 106, 527–540.
- Reis, H. T., Sheldon, K. M., Gable, S. L., Roscoe, J., & Ryan, R. M. (2000). Daily well-being: The role of autonomy, competence, and relatedness. *Personality* and Social Psychology Bulletin, 26(4), 419–435.
- Russell, K. L., & Bray, S. R. (2010). Promoting self-determined motivation for exercise in cardiac rehabilitation: The role of autonomy support. *Rehabilitation Psychology*, 55, 74–80.
- Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology*, 43(3), 450–461.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68.

- Sheldon, K. M., & Kasser, T. (2008). Psychological threat and extrinsic goal striving. *Motivation and Emotion*, 32, 37–45.
- Soenens, B., Berzonsky, M. D., Vansteenkiste, M., Beyers, W., & Goossens, L. (2005). Identity styles and causality orientations: In search of the motivational underpinnings of the identity exploration process. *European Journal of Personality*, 19(5), 427–442.
- Soenens, B., Neyrinck, B., Vansteenkiste, M., Dezutter, J., Hutsebaut, D., & Duriez, B. (2012). How do perceptions of god as autonomy-supportive or controlling relate to individuals' social-cognitive processing of religious contents? The role of motives for religious behavior. The International Journal for the Psychology of Religion, 22, 1–21.
- Teixeira, P. J., Silva, M. N., Coutinho, S. R., Palmeira, A. L., Mata, J., Vieira, P. N., et al. (2010).

- Mediators of weight loss and weight loss maintenance in middle-aged women. *Obesity*, 18, 725–735.
- Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. M., & Deci, E. L. (2004). Motivating learning, performance, and persistence: The synergistic role of intrinsic goals and autonomy-support. *Journal of Personality and Social Psychology*, 87, 246–260.
- Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2012). The index of autonomous functioning: Development of a scale of human autonomy. *Journal of Research in Personality*, 46(4), 397–413.
- Williams, G. C., Niemiec, C. P., Patrick, H., Ryan, R. M., & Deci, E. L. (2009). The importance of supporting autonomy and perceived competence in facilitating long- term tobacco abstinence. *Annals of Behavioral Medicine*, 37, 315–324.