

## On Psychological Growth and Vulnerability: Basic Psychological Need Satisfaction and Need Frustration as a Unifying Principle

Maarten Vansteenkiste  
University of Gent

Richard M. Ryan  
University of Rochester

Humans have a potential for growth, integration, and well-being, while also being vulnerable to defensiveness, aggression, and ill-being. Self-determination theory (R. M. Ryan & E. L. Deci, 2000, Self-determination theory and the facilitation of intrinsic motivation, social development and well-being, *American Psychologist*, Vol. 55, pp. 68–78) argues that satisfaction of the basic psychological needs for autonomy, competence, and relatedness both fosters immediate well-being and strengthens inner resources contributing to subsequent resilience, whereas need frustration evokes ill-being and increased vulnerabilities for defensiveness and psychopathology. We briefly review recent research indicating how contextual need support and the experience of need satisfaction promote well-being and different growth manifestations (e.g., intrinsic motivation, internalization), as well as a rapidly growing body of work relating need thwarting and need frustration to ill-being, pursuit of need substitutes, and various forms of maladaptive functioning. Finally, we discuss research on differences in autonomous self-regulation and mindfulness, which serve as factors of resilience.

*Keywords:* self-determination theory, psychological need satisfaction and frustration, growth, autonomy, psychopathology

Individuals can be vital, open, curious, and caring. Yet, they can also be depleted, self-centered, irresponsible, and even aggressive toward people important to them. Indeed, we all have *potentials* for growth and flourishing, while also possessing *vulnerabilities* for defensiveness and even pathological functioning. An intriguing question then is which mechanisms elicit either the “best” or the “beast” in each of us.

Scholars in the field of clinical psychology have primarily focused attention on the development of pathological outcomes such as impulsivity or depression (see Cicchetti, 2006), but those working from the positive psychology

movement (Sheldon & King, 2001) have focused on what contributes to people’s growth and humanity (e.g., gratitude, empathy, forgiveness). In the current research, grounded in *self-determination theory* (SDT; Deci & Ryan, 2000; Ryan & Deci, 2000b), we review evidence that both people’s healthy tendencies toward growth and integrity and their vulnerabilities to ill-being and psychopathology can to a significant degree be explained by a single underlying principle. Stated simply, basic psychological need satisfaction and frustration can substantially account for both the “dark” and “bright” side of people’s functioning (Ryan & Deci, 2000a).

Whereas the satisfaction of the psychological needs for autonomy, competence, and relatedness contributes to proactivity, integration, and well-being, the frustration of these same psychological needs, especially from significant caregivers, leaves one prone to passivity, fragmentation, and ill-being. SDT maintains that, although human beings have the natural tendency to move toward growth under need-supportive circumstances, they are also at risk for defensive functioning when exposed to con-

---

This article was published Online First June 17, 2013.

Maarten Vansteenkiste, Department of Developmental, Personality and Social Psychology, University of Gent, Gent, Belgium; Richard M. Ryan, Department of Clinical and Social Sciences in Psychology, University of Rochester.

Correspondence concerning this article should be addressed to Maarten Vansteenkiste, Department of Developmental, Personality and Social Psychology, University of Gent, H. Dunantlaan 2, 9000 Gent, Belgium. E-mail: [Maarten.Vansteenkiste@ugent.be](mailto:Maarten.Vansteenkiste@ugent.be)

trolling, critical, or rejecting social contexts, that is, environments that thwart these psychological needs. Thus, need satisfaction and need frustration are considered to be crucial mechanisms in both optimal and nonoptimal functioning, helping to bridge the gap between pathology-oriented and strength-oriented frameworks and research.

Notably, there are important individual differences in capacities for coping with need-frustrating events. People can overcome adverse contexts, using their capacities for mindfulness (Brown & Ryan, 2003) and autonomous functioning (Deci & Ryan, 1985), which serve as factors of resilience in the sense described by Bonanno (2004). Yet, it is interesting that these inner resources appear themselves to be to a significant degree outcomes of need supports in earlier development, suggesting that the foundations of resilience lie heavily in responsive, need-supportive caregiving (Deci & Ryan, 2000; Masten & Tellegen, 2012).

The aim of this contribution is twofold. First, we provide a cursory review of the rapidly growing body of empirical work on the relations between need satisfaction and need frustration and a variety of positive (e.g., vitality, empathy) and negative outcomes (e.g., binge eating, aggression, self-criticism). Second, we elaborate on how people can cope (or fail to cope) with need-frustrating events, thereby distinguishing between resilience-building and amplification factors over development.

### **The Crux of Self-Determination Theory: Need Satisfaction and Need Frustration**

Although many theories suggest that environments impact development, SDT specifies both the mechanisms that are involved in integration and psychological growth and the elements of social environments that facilitate or undermine growth processes. SDT's view on vulnerability and growth derives from several assumptions key to its *organismic-dialectical* metatheory (Deci & Vansteenkiste, 2004).

First, rather than being naturally passive or reactive entities whose functioning is determined by contextual features, people are considered *proactive* organisms that have the inclination to shape and optimize their own life conditions. Second, people's proactivity is steered toward increasing levels of synthesis

and self-organization, an assumption that constitutes the organismic foundation of SDT (Ryan & Deci, 2000b). Specifically, the term *organismic* is associated with the Latin verb *organizare*, which means "to arrange in a coherent form." That is, people have the tendency to develop toward more coherent and unified functioning, a tendency that can be observed at both the intrapersonal and interpersonal levels. At the intrapersonal level, people ongoingly refine their interests, preferences, and personal values, while simultaneously bringing them in harmony with one another. The experiential aspect of this unified form of regulation is the sense of autonomy or volition. This integrative tendency can also be observed at the interpersonal level, as people, when healthy, strive to enhance their integration into the social matrix, in part through the processes of internalization (Ryan, 1995).

Third, this movement toward increasing intra- and interpersonal integrity does not take place automatically. Instead, SDT argues that this inherent nature requires specific nutrients in the form of the satisfaction of basic psychological needs for autonomy, competence, and relatedness. In brief, *competence* refers to the experience of a sense of effectiveness in interacting with one's environment (White, 1959); *relatedness* satisfaction concerns the experience of love and care by significant others (Baumeister & Leary, 1995; Deci & Ryan, 1985); finally, *autonomy*, perhaps the most debated and studied need in SDT, refers to the experience of volition and the self-endorsement of one's activity (Ryan & Deci, 2006). Just as plants need water and sunshine to grow and flower, the satisfaction of the basic psychological needs is deemed essential to psychological thriving (Ryan, 1995).

Not only can low satisfaction of any of these needs hamper growth, but *need frustration* can be especially harmful and even pathogenic (e.g., Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011). Need frustration is experienced when basic psychological needs are thwarted within social contexts. To illustrate, one may feel low relatedness to colleagues in one's workplace and thus have less vitality and excitement for work. But one can also be actively rejected or excluded by coworkers, in which case one may suffer from depression or severe symptoms of stress. Thus, a distinction

needs to be made between the lack of fulfillment of the needs and the experience of need frustration, the relation between both being asymmetrical. That is, whereas low need satisfaction does not necessarily involve need frustration, need frustration by definition involves low need satisfaction. The difference between both is a critical issue as unfulfilled needs may not relate as robustly to malfunctioning as frustrated needs may. To continue our plant metaphor, if plants do not get sunshine and water (i.e., low need satisfaction), they will fail to grow and will die over time; yet, if salted water is thrown on plants (i.e., presence of need frustration), they will wither more quickly. Thus, whereas low need satisfaction likely yields costs over time, the deteriorating process will be accelerated when needs are actively frustrated.

Parallel to the distinction in experience of need satisfaction and need frustration, SDT distinguishes social environments (e.g., caregivers, teachers, etc.) as alternatively *need supportive*, *need depriving*, or *need thwarting*. That is, socializing agents can be actively fostering of, indifferent to, or antagonistic toward the individual's satisfaction of needs. Low need support represents a more "passive" and "indirect" socialization style, and need thwarting involves a more "active" and "direct" way of obstructing the psychological needs.

For instance, a mother may not be very attentive to her children; yet, this form of parent-

ing clearly differs from parenting practices such as maltreatment (Cicchetti, 2006), use of coercive physical force (Talwar & Lee, 2011), or intrusive shaming and guilt induction (Soenens & Vansteenkiste, 2010). Because in these latter cases the children's needs are actively undermined, these parenting practices are more likely to be a risk factor for malfunctioning.

The SDT model on need satisfaction and need frustration is graphically displayed in Figure 1. As depicted therein, the primary paths run from contextual need support → need satisfaction → growth and wellness, and from contextual need thwarting → need frustration → malfunctioning and ill-being. Yet, cross-paths (albeit less strong) are also noted. Although need-supportive environments are primarily conceived as contributing to growth through need satisfaction, they can also play a buffering role against the emergence of malfunctioning through helping to build inner resources that contribute to subsequent coping. Similarly, although a need-thwarting environment would primarily elicit malfunctioning through the experience of need frustration, individuals chronically exposed to thwarting environments are expected to develop fewer resources for growth.

Recognizing that the active obstruction of the psychological needs elicits malfunctioning, SDT underscores—as a fourth metatheoretical assumption—the fact that human beings are vulnerable to ill-being and psychopathology. In-

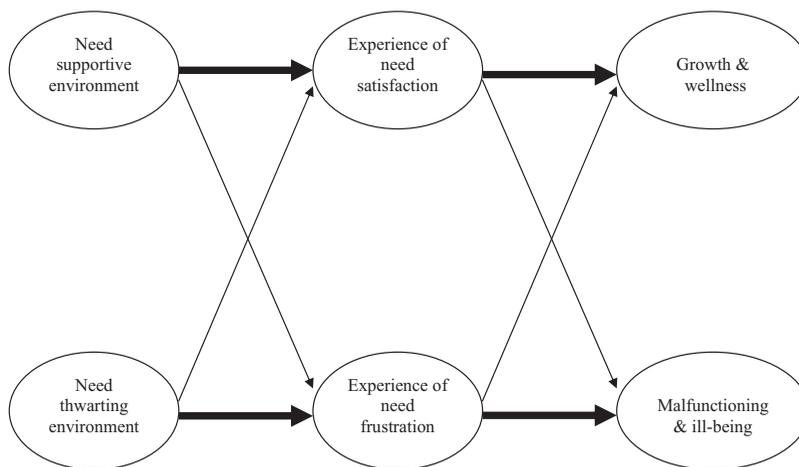


Figure 1. Graphic overview of the self-determination theory view on the role of need satisfaction and need frustration.

deed, both a growth-oriented and a more defensive pathway characterize human functioning (Ryan & Deci, 2000a) and socialization experiences and genetic factors in conjunction have an impact on which pathway is predominant (Johnson, 2012).

### Fostering Human Growth: The Role of Need Satisfaction and Need Support

Historically, SDT has been concerned primarily with a variety of growth manifestations that unfold as a function of the experience of need satisfaction, including the processes of intrinsic motivation and internalization, all factors conducive to eudaimonic wellness (Ryan, Huta, & Deci, 2008). Because of this strong focus on understanding what supports growth and wellness, SDT has been welcomed by various scholars as a framework in the field of positive psychology (Sheldon & Ryan, 2011). Indeed, it was within research on the dynamics of these growth functions that SDT's three needs model first emerged.

#### Intrinsic Motivation

When healthy, people are curious and engage in explorative behavior, which are both indicators of intrinsic motivation. When intrinsically motivated, people engage in behaviors that are inherently interesting and appealing to them. Intrinsic motivation is considered the hallmark of volitional functioning because these behaviors are associated with a sense of spontaneity and volition (Ryan & Deci, 2000a). For this reason, satisfaction of the need for autonomy is said to be integral to the development and sustenance of intrinsically motivated activities.

In addition to autonomy, competence satisfaction is also critical for the intrinsic enjoyment of an activity, especially if the activity is undertaken volitionally. Notably, autonomy and competence need satisfaction not only foster the process of intrinsic motivation, but may also follow from it. For instance, when curiosity is guiding discoveries and learning, people are more likely to experience a sense of astonishment and sincere surprise, which forms the impetus for the quick absorption of new material and skills, thereby contributing to building their competence. Similarly, when people follow their interests, they are "being them-

selves," contributing to a sense of autonomy, authenticity, and nondefensiveness, which in turn contributes to well-being (Kernis & Goldman, 2006). Herein, we suggest a positive cascading effect (Masten & Cicchetti, 2010) of need satisfactions.

In line with these claims, dozens of studies have indicated that need-supportive environments, such as those that provide meaningful choice or deliver effectance-relevant feedback, facilitate intrinsically motivated behavior through the satisfaction of the needs for autonomy and competence. Conversely, controlling reward contingencies and critical evaluations, among other factors, can diminish intrinsic motivation. Furthermore, engagement in intrinsically motivated behaviors has been shown to yield manifold advantages, including greater vitality, better conceptual learning, and greater creativity (see Deci & Ryan, 2008; Vansteenkiste, Niemiec, & Soenens, 2010).

#### Internalization and Integration

A second growth manifestation studied within SDT concerns the process of assimilating and truly accepting responsibility for behaviors that are not intrinsically motivated, a process referred to as *internalization and integration*. This process is of utmost importance for effective socialization, as those who manage to more fully accept social norms, values, and guidelines will likely enact them with more investment and efficacy (Ryan & Connell, 1989). For instance, teenagers may not find it enjoyable to comply with school guidelines, but it is nevertheless important that they come to own and willingly respect them.

More specifically with regards to any norm or regulation, the process of internalization may be more or less successful, such that different subtypes are distinguished. First, when *externally regulated*, people engage in behavior to avoid other-controlled punishments or obtain external rewards. For instance, if a youngster in treatment follows the norms in a clinical residence (e.g., not smoking in his room) to avoid being sanctioned, he displays external regulation. A somewhat more internalized form of regulation is *introjection*, in which the individual is motivated to act to avoid feelings of anxiety, guilt, or shame, or to gain self- or other approval. If the same youngster follows the norms to show that

he is a “good boy,” he displays introjected regulation. A still more autonomous form of regulation is *identification*, when individuals personally embrace the value of an activity or norm. Although the activity is not necessarily interesting or enjoyable in itself, the individual understands the value of the behavior. If the individual has further synthesized the behavior or norm with other existing personal values and commitments, this contributes to a sense of inner harmony indicative of *integrated regulation*. At this point, the person is wholeheartedly endorsing and “owning” his actions. For instance, the youngster may value the rule of not smoking because he thinks it is important to take care of his physical health (identified regulation) or because he believes not smoking contradicts his broader aims of becoming an athlete (integrated regulation).

These different types of regulation have been studied in a broad variety of life domains, including education, psychotherapy, health care, exercise, emotion regulation, and varied cultural practices, among others; in each, they have been shown to form a reliable continuum of relative autonomy. In addition, more internalized or autonomous motives have consistently been found to relate to higher well-being (e.g., Chirkov, Ryan, Kim, & Kaplan, 2003), better performance (e.g., Assor, Vansteenkiste, & Kaplan, 2009), greater persistence (e.g., Standage, Sebire, & Loney, 2008), and enhanced health behavior change (e.g., Pelletier, Dion, Slovic-D’Angelo, & Reid, 2004), among other positive outcomes.

Furthermore, satisfaction of basic psychological needs has been established as an antecedent of greater internalization (e.g., Markland & Tobin, 2010). That is, when individuals experience supports for autonomy, relatedness, and competence, they are prone to fuller internalization and thus greater autonomy in acting. Yet, need satisfaction not only serves as the necessary fuel for the internalization of behavior, but also greater internalization in turn contributes to elevated need satisfaction.

### Psychological Well-Being and Health

Apart from contributing to the growth processes of intrinsic motivation and internalization, dozens of studies have indicated that the satisfaction of the basic psychological needs is

related to indicators of wellness. Such findings have been reported (a) at the interindividual level, with those reporting more psychological need satisfaction feeling better about themselves (e.g., higher self-esteem) and their lives in general (e.g., life satisfaction; Deci et al., 2001); and (b) at the intrapersonal level, with diary studies demonstrating that fluctuations in daily well-being covary with the daily oscillation in the satisfaction of one’s basic psychological needs (e.g., Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Ryan, Bernstein, & Brown, 2010). Such findings have also been reported in a variety of domains, including work (Van den Broeck, Vansteenkiste, De Witte, Soenens, & Lens, 2010), education (e.g., Vlachopoulos, Kartzzi, & Kontou, 2011), and sports (e.g., Ng, Lonsdale, & Hodge, 2011), among others.

Three trends characterize the recent literature on this topic. First, the benefits associated with need satisfaction are increasingly being linked with *objective* outcomes. For instance, Ahmad, Vansteenkiste, and Soenens (2013) found that child-reported need satisfaction was associated with teacher-rated school adjustment. Higher levels of need satisfaction among dancers have been found to relate to less elevated peaks in cortisol secretion during a dancing performance (Quested et al., 2011). Reeve and Tseng (2011) showed that working in a controlling setting, even on an enjoyable activity, produced a significant and clinically meaningful cortisol release not evident in neutral or autonomy-supportive conditions. These are just examples of the kinds of objective outcomes, from performance to physiology, linked to need satisfaction.

Second, the types of positive outcomes associated with need satisfaction have been steadily widened. For example, need satisfaction has been found to predict a smoother *identity development* (Luyckx, Vansteenkiste, Goossens, & Duriez, 2009). Furthermore, interactions in which helpers displayed an autonomous motivation for helping predicted greater feelings of *gratitude* (Weinstein, DeHaan, & Ryan, 2010). In the domains of work (e.g., Van der Elst, Van den Broeck, De Witte, & De Cuyper, 2012) and education (e.g., Reeve & Tseng, 2011), the association between need satisfaction and enhanced *engagement* has been well documented. Furthermore, need-supportive parenting has been related to increases in *empathic* function-

ing in adolescents (e.g., Miklikowska, Duriez, & Soenens, 2011), and need satisfaction has even been found to predict enhanced *brain functioning*. Illustratively, Di Domenico, Fournier, Ayaz, and Ruocco (2012) found that need satisfaction predicted elevated medial prefrontal cortex activity during high-conflict situations, suggesting that need satisfaction may promote enhanced use of self-knowledge in the resolution of decisions. This, of course, would contribute to more mindful choices.

Third, an increasing number of studies have provided evidence for the universality claim of SDT, namely, that all persons would benefit from basic need satisfactions regardless of race or cultural values. In contrast, some cross-cultural researchers (e.g., Markus & Kitayama, 2003) have questioned the universal importance especially of autonomy, suggesting that in collectivistic societies autonomy would not yield benefits. Part of this debate is rooted in the fact that, different from SDT, some cross-cultural researchers equate autonomy with acting independently and not relying on or caring for others. Yet, in SDT, autonomy concerns the experience of volition and willingness, rather than independence or separateness, and is contrasted with heteronomy, which refers to acting out of external pressures or controls, rather than dependence or connection. Importantly, both individualistic and collectivistic modes of functioning can occur volitionally or can come with feelings of pressure. In line with this, empirical studies sampling non-Western groups (e.g., Chen, Vansteenkiste, Beyers, Soenens, & Van Petegem, 2013) have shown that autonomy can be distinguished from independent decision making and, moreover, that there are better relational and personal well-being outcomes for those emphasizing autonomy, but not those emphasizing independence (Van Petegem, Beyers, Vansteenkiste, & Soenens, 2012).

Furthermore, various studies conducted in culturally diverse nations such Korea, China, Russia, and Jordan, among others, have shown that need satisfaction predicts well-being in non-Western individuals, and several multinational studies have reported similar evidence (e.g., Chirkov, Ryan, & Willness, 2005; Taylor & Lonsdale, 2010). Perhaps the strongest recent evidence was provided by Chen et al. (2013), who demonstrated unique associations between the three need satisfactions and well-being, and

these were invariant across the four studied countries (i.e., Peru, Belgium, United States, and China). Moreover, Chen et al. also showed that the need satisfaction–well-being association was not moderated by the degree to which participants desired getting a particular need met or by their cultural backdrops, consistent with SDT’s universality claim.

### Costs of Psychological Need Frustration and Need Thwarting

From the SDT perspective, when basic psychological needs are obstructed, two likely consequences follow. First, people pay an immediate cost, as indexed by greater ill-being. Second, when needs are chronically thwarted, people develop a number of coping strategies to accommodate the experience of need frustration, including the development of *need substitutes* and engagement in *compensatory behaviors* (Deci & Ryan, 2000; Ryan, Deci, Grolnick, & La Guardia, 2006; see Figure 2). These responses in many cases sustain a situation of need frustration and often precipitate a negative cycle of increasing vulnerabilities for nonoptimal functioning.

### Ill-Being

**Need frustration.** In line with the basic tenets of SDT, cross-sectional studies have shown that need satisfaction relates to less emotional exhaustion in employed adults (e.g., Van der Elst et al., 2012), less anger and anxiety among teachers (e.g., Klassen, Perry, & Frenzel, 2012), and fewer teacher-rated problem behaviors among adolescents (Ahmad et al., 2013), to cite a few examples. Furthermore, diary studies have indicated that the ups and downs in daily satisfaction of psychological needs relate to the fluctuation in daily physical symptoms and negative affect among students (e.g., Reis et al., 2000) and working adults (Ryan et al., 2010). Importantly, need satisfaction has been found to predict changes in ill-being in clinical populations suffering mood disorders. For instance, Dwyer, Hornsey, Smith, Oei, and Dingle (2011) identified autonomy need satisfaction during cognitive–behavioral therapy as a key mechanism for prompting a reduction in anxiety and depressive cognitions and symptoms.

Whereas most studies in the SDT literature tap into the satisfaction of basic needs, recent

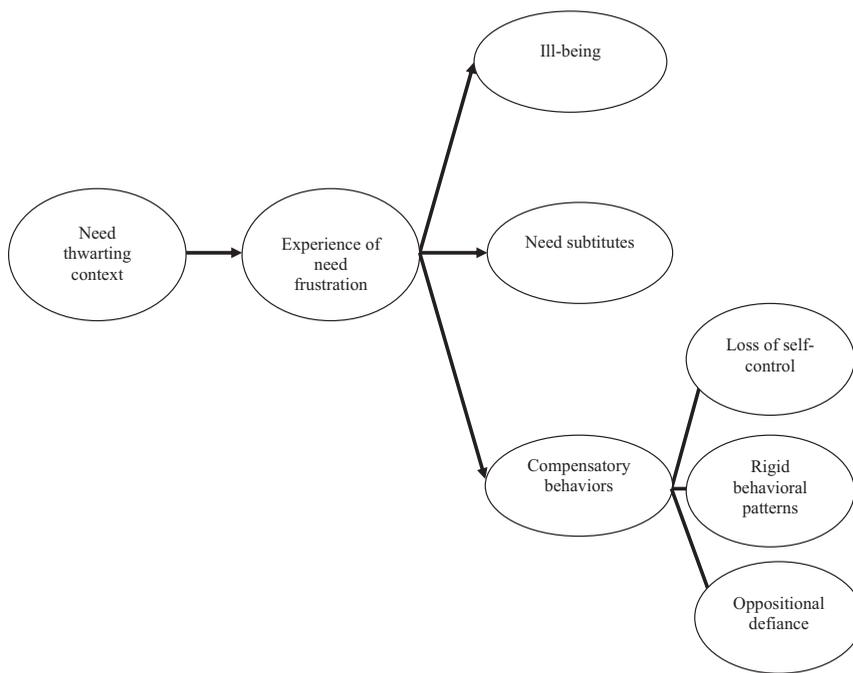


Figure 2. Graphic overview of the consequences related to the experience of need frustration.

research has also included assessments of need frustration, which related in particular to negative outcomes. To illustrate, after controlling for need satisfaction, which predicted well-being outcomes, need frustration was found to relate uniquely to ill-being among both athletes (Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011) and sport coaches (Stebbins, Taylor, Spray, & Ntoumanis, 2012). Furthermore, these findings were corroborated in another study, this time using an objective marker of psychobiological functioning (Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011). Specifically, need frustration (but not need satisfaction) was related to elevations in S-IgA, an immunological protein associated with the anticipation of acute stressors. Thus, recent research is showing that basic psychological need satisfactions enhance and need frustrations debilitate wellness and full functioning.

**Need-thwarting environments.** Apart from studies focusing on the outcomes of need frustration, an increasing number of studies have examined the connections between need-

thwarting environments and varied ill-being indicators. In an illustrative study, Joussemet and her colleagues (2008) linked trajectories of aggressive behavior with autonomy thwarting across the elementary school years. After controlling for a number of risk factors for being aggressive—among them being male, having reactive temperament, or having parents who separated or divorced—Joussemet et al. found that maternal controlling parenting was a robust predictor of the odds of following an aggressive trajectory.

Overt controlling strategies such as physical punishment, being need thwarting, would expectably disrupt internalization. In an intriguing natural experiment, Talwar and Lee (2011) assessed honesty in children. They showed that children attending preschools in which punitive discipline practices were used daily were not only more prone to lie during a toy-guessing game, but also were more likely to persist in dishonestly concealing knowledge.

Finally, children of parents who rely on pressuring or intrusive strategies such as guilt-induction, shaming, and love withdrawal have

been found to report more depressive symptoms (e.g., Soenens, Luyckx, et al., 2008) and more eating problems (e.g., Soenens, Vansteenkiste, et al., 2008). Again, these studies are just examples of research relating varied negative outcomes to a history of need thwarting. They complement the many experimental studies demonstrating that need-thwarting contexts yield more compromised psychological functioning.

### Maladaptive Mechanisms to Cope With Need Frustration

**Need substitutes.** Within SDT, *need substitutes* are defined as goals that people engage in to compensate for experienced need frustration (Deci & Ryan, 2000; Ryan, Sheldon, Kasser, & Deci, 1996). For example, people can attach high importance to *extrinsic goals* (Kasser & Ryan, 1996) such as the pursuit of popularity, attractiveness, and materialism/wealth, which are contrasted with *intrinsic goals*, such as personal growth, contributing to one's community, and building intimacy and strong bonds with others. Extrinsic goals are very salient in a consumer culture, in which fame, materialistic strivings, and the "perfect body" are portrayed as signs of success (Dittmar, 2008; Kasser, 2002).

It is maintained within SDT that the persistent experience of need frustration engenders feelings of insecurity, which makes individuals search for external indicators of worth, such as the pursuit of extrinsic goals (Deci & Ryan, 2000; Ryan et al., 1996). In line with this, previous studies have found that children raised in families that lack need support and nurturance are more likely to value and pursue extrinsic goals (e.g., Thøgersen-Ntoumani, Ntoumanis, & Nikitaras, 2010).

Importantly, although extrinsic goals may be appealing, these goals may provide only a sense of fleeting satisfaction. In line with this, work-related extrinsic, relative to intrinsic, goal pursuit relates to more short-lived satisfaction, as assessed with an item such as "The good feelings I experience after realizing a particular work goal are quickly followed by feelings of emptiness and disappointment" (Vansteenkiste et al., 2007). Yet, over the longer run, extrinsic goals interfere with genuine need satisfaction

(e.g., Sebire, Standage, & Vansteenkiste, 2009) and well-being (e.g., Kasser & Ryan, 1996).

Stronger investment in extrinsic goals has been related to a number of intrapersonal outcomes, including anxiety (e.g., Sebire et al., 2009), physical symptoms (e.g., Niemiec, Ryan, & Deci, 2009), and drug use (e.g., Williams, Cox, Hedberg, & Deci, 2000). Regarding interpersonal outcomes, extrinsically oriented individuals score higher on Machiavellism (McHoskey, 1999), are more likely to compete rather than cooperate for scarce resources (Sheldon & McGregor, 2000), and exhibit more aggressive and discriminatory attitudes toward minorities (Duriez, Vansteenkiste, Soenens, & De Witte, 2007). All in all, such findings suggest that as individuals turn to extrinsic goals to compensate for need frustration, there are personal, social, and societal costs (Vansteenkiste, Soenens, & Duriez, 2008).

Three additional sets of findings deserve mention. First, the negative effects of extrinsic goal pursuits have been observed among all individuals, even those residing in subcultures that emphasize the pursuit of extrinsic goals, such as business organizations. Thus, a fit or "match" in personal goal content and contextually promoted goals does not offset their negative effects (e.g., Kasser & Ahuvia, 2002). Second, evidence shows that even successful attainment of extrinsic goals does not produce the hoped-for well-being benefits. Specifically, attainment of extrinsic goals was associated with more ill-being, whereas the attainment of intrinsic goals related to more well-being, both among early career adults (Niemiec et al., 2009) and senior adults (Van Hiel & Vansteenkiste, 2009). Third, a particularly troublesome trend observed by Twenge et al. (2010) across generational cohorts is that the pursuit of extrinsic life goals is on the rise, a trend that accounts for observed increases in various psychopathology indices across generations.

**Compensatory behaviors.** A second response to need thwarting involves *compensatory behaviors*. Three different classes of compensatory behaviors can be distinguished (Deci & Ryan, 2000; Ryan et al., 2006): (a) releasing self-control, (b) rigid behavioral patterns, and (c) oppositional defiant behavior.

**Releasing self-control.** A first class of behaviors involves a release or even active revolt against the execution of *self-control*. To illus-

trate, need frustration has been associated with greater alcohol abuse (Knee & Neighbors, 2002), smoking (Williams, Niemiec, Patrick, Ryan, & Deci, 2009), binge eating (Schüler & Kuster, 2011), and self-injurious behaviors (Vansteenkiste, Claes, Soenens, & Verstuyf, *in press*). Apart from these cross-sectional studies, a recent diary study (Verstuyf, Vansteenkiste, Soenens, Boone, & Mouratidis, *in press*) showed that day-to-day experiences of need frustration related to daily binge eating. Although vulnerabilities are typically conceived of as features that vary between persons, the results of this diary study suggest that vulnerabilities rise and fall at the within-person level. Regardless of interpersonal differences, on days that psychological needs were obstructed, female adolescents were more vulnerable for binge eating. Emotional eaters (those with a tendency to eat when emotionally aroused; O'Connor & O'Connor, 2004) were especially likely to report more binge-eating symptoms on days that basic psychological needs were frustrated (Verstuyf et al., *in press*).

Among the reasons need frustration relates to lessened self-control from the SDT perspective is because need frustration erodes available energy (Moller, Deci, & Ryan, 2006). More autonomous forms of regulation are less likely to use up energetic resources as they do not require one part of the person controlling the rest (Deci & Ryan, 1985). Thus, a teenager who willingly regulates his aggressive behavior would use less effort and energy compared with one who feels forced by guilt to bring his aggressive behavior under control. In contrast, when self-control is pressured, two negative consequences follow. First, pressured self-control would be associated with a higher probability of breakdown in self-control, or *akrasia* (Ryan et al., 2006). For example, severely obese individuals participating in an intensive diet program for controlled versus autonomous reasons showed less weight loss, were more likely to quit early, and showed poorer maintenance (Williams, Grow, Freedman, Ryan, & Deci, 1996). Second, pressured forms of self-control leave less energy available to engage in other acts of self-control (e.g., Moller et al., 2006) and may even prompt a *compensation* phenomenon. That is, because need frustration elicits negative affect, compensatory behaviors may be attempts to self-comfort (Haedt-Matt & Keel, 2011). To illus-

trate, when a smoker inhibits the impulse to smoke because her doctor expects her to, she may be more prone to snack. SDT predicts that such a trade-off would be less likely if one fully endorses the act of self-control. In such cases, the self-control would not be experienced as a burden that needs to be compensated for by revolting against another act of self-control.

**Rigid behavioral patterns.** A second compensatory response to need thwarting is the development of rigid behavior patterns. In this case, people compulsively stick to certain behavioral patterns because they provide a sense of structure, predictability, and security. Such behaviors function as a “script.” Whereas failing to live up to self-imposed scripts elicits guilt and self-criticism, succeeding in doing so brings relief and short-lived satisfaction. Unfortunately, the inflexibility that characterizes this mode of functioning may direct attention away from the deeper causes of the experienced need thwarting.

An example of rigid behavioral patterns involves setting self-critical standards. Exposed to repeated need thwarting, one may adopt perfectionistic standards in an attempt to prove one’s worth. These high standards are pursued in a rigid fashion and are typically accompanied by black-and-white thinking (Shafran & Mansell, 2001). Even small failures to achieve these high standards can give rise to intense feelings of guilt and inferiority, whereas successes are short-lived and often attributed to external and unstable causes (e.g., Blatt, 1995). In short, in a self-perpetuating chain, self-critical forms of perfectionism may elicit increasing need frustration.

Past longitudinal research has shown that children growing up in controlling families are more likely to adopt self-critical perfectionistic attitudes, which, in turn, relate to elevated depressive symptoms (Soenens, Luyckx, et al., 2008; see also Shahar & Henrich, *this issue*). Along similar lines, self-critical perfectionism played a mediating role between controlling parenting and eating pathology in a mixed sample of control group and eating-disordered patients (Soenens, Vansteenkiste, et al., 2008). Furthermore, Assor, Roth, and Deci (2004) showed that one type of controlling parenting, namely the use of *conditional regard*, promoted internal compulsion to engage in the parent-requested behaviors, which lowered wellness.

Often intermingled with such rigid forms of functioning is the development of *contingent self-esteem* (Deci & Ryan, 1995). When self-esteem is contingent, people feel their worth needs to be earned. Living up to specific standards gives rise to feelings of increased worth, and failing to do so leads to a loss of self-esteem, shame, and inferiority. Such fragile self-esteem has been found even when parents use *positive conditional regard*, providing more attention and affection than usual when the child meets parental expectations (Roth, Assor, Niemiec, Ryan, & Deci, 2009). Specifically, positive conditional regard predicted self-aggrandizement following success and shame following failure, each relating uniquely to an overinvestment in schoolwork at the expense of other valued activities (Assor & Tal, 2012).

In addition to relating to internalizing problems (e.g., anxiety, depressive symptoms), rigid behavioral patterns may also relate to moral functioning. For instance, soccer players rigidly focused on beating opponents were found to be more prone for aggressive play and obtained more penalties (Vansteenkiste, Mouratidis, & Lens, 2010). Furthermore, controlled motivation for sports has been related to both diminished sportpersonship and greater use of performance-enhancing drugs (Donahue et al., 2006). These findings suggest that people displaying rigid behavioral patterns may go to great lengths to achieve their ambitions, even at the cost of their health or ethics.

**Oppositional defiance.** Whereas rigid behavioral patterns may represent an important pathway to internalizing problems, oppositional defiance represents a key mechanism in the etiology of externalizing problems. Oppositional defiance involves a blunt resistance to engage in the socially requested activity and reflects a controlled type of regulation (Deci & Ryan, 1985; Van Petegem, Vansteenkiste, & Beyers, 2012). Specifically, oppositional defiance represents a reaction to control and is often associated with detachment from caregivers and resistance to their guidance (Ryan & Lynch, 1989).

Oppositional defiance and externally pressured forms of compliance can be considered two sides of the same coin, as when being exposed to a need-thwarting environment, people vacillate between giving in for controlling reasons or defying the authority figures. In line

with this, parental prohibition of moral misdeeds perceived to be controlling was found to predict increased oppositional defiance (Vansteenkiste, Soenens, Van Petegem, & Duriez, *in press*). Other studies have established the explanatory role of need frustration in the relation between controlling parenting and oppositional defiance and associated problem behaviors (Van Petegem, Beyers, Vansteenkiste, & Soenens, 2011). Thus, although past studies have convincingly shown that controlling parenting predicts more aggression (e.g., Joussemet et al., 2008), we suggest that need frustration in conjunction with oppositional defiance is one dynamic pathway through which this occurs. In fact, oppositional defiance and the release of self-control can work in tandem to produce problem behavior in adolescents from need-thwarting homes.

### Autonomy and Awareness as Resilience Factors

Although need-thwarting environments relate to ill-being and the development of maladaptive coping patterns, according to SDT, there are resilience factors that can protect against these negative consequences. Among these resilience factors is the capacity to autonomously regulate behavior, even under threat or pressure. This capacity, in turn, is supported by awareness or mindfulness. We discuss briefly each of these inner resources.

### Autonomy as a Factor in Resilience

According to SDT, the exposure to a need-supportive rather than a need-thwarting history allows for the development of greater capacities for autonomy (Deci & Ryan, 1985). When autonomous, people regulate their behavior based on their interests, authentic preferences, and integrated values. Such a mode of regulation engenders more need satisfaction and entails less defensiveness, that is, biased perception and responding, as well as more openness, both to others and to internal and external events (Hodgins & Knee, 2002). This readiness to openly experience and choicefully process events thus represents a critical resource against the harmful effects of stressful or threatening events. In contrast, when control motivated, individuals base actions on external or internal

demands, often reacting to such pressures by processing information in a biased, self-serving way and relating to others in a more defensive, strategic, and intolerant manner. In that respect, controlled orientation represents a risk factor for defensiveness and psychopathology more generally.

**Openness and defensiveness.** Open and defensive functioning can manifest in various ways. Some indicators of openness at the interpersonal level are people's honesty, disclosure, and trust in social relations. [Hodgins, Koestner, and Duncan \(1996\)](#) found in a diary study across 10 to 14 days that an autonomous orientation predicted more disclosure, trust, and honesty, whereas a controlled orientation predicted lower honesty. [Soenens, Berzonsky, Vans-teenkiste, Beyers, and Goossens \(2005\)](#) found that controlled orientation was associated with adolescents reacting more defensively to identity-discrepant information, whereas an autonomy orientation was associated with more open and flexible exploration of identity-relevant alternatives.

Interestingly, although neither the autonomy nor controlled orientation dominates our functioning, both orientations can be activated by social contexts, even outside awareness. Indeed, the mere priming of a controlled orientation has been sufficient to elicit defensive responding, as indexed by the use of hostile humor ([Weinstein, Hodgins, & Ostvik-White, 2011](#)), the avoidance of negative experiences ([Hodgins, Yacko, & Gottlieb, 2006](#)), and the suppression of emotionally distressing information ([Weinstein & Hodgins, 2009](#)) or negative past events ([Weinstein, Deci, & Ryan, 2011](#)).

Another indicator of openness and defensiveness concerns the alignment or *congruence* between implicit and explicit attitudes and motives. For instance, [Thrash and Elliot \(2002\)](#) found that those who were higher in trait autonomy had lower discrepancies between implicit (projective) and explicit (self-report) assessments of achievement motivation. Along similar lines, [Hodgins, Brown, and Carver \(2007\)](#) found that control-primed individuals evidenced greater discrepancies between explicit and implicit self-esteem. Finally, [Weinstein et al. \(2012\)](#) found that offspring of controlling parents showed a larger discrepancy between their explicitly reported and implicitly assessed sexual attractions to same-sex others, which, in

turn, related to greater hostility toward gay targets, indicative of *reactance formation*. In other words, autonomy thwarting can foster incongruence and the defensive behaviors it spawns.

**Coping with stress.** A second body of work has shown that autonomy and control, whether self-reported or primed, relate to different ways of coping with stress. For instance, [Hodgins et al. \(2006\)](#) showed that control-primed, relative to autonomy-primed, participants listed more self-handicapping excuses to protect a drop in their self-worth prior to engaging in an achievement task. In addition, autonomy-primed, relative to control-primed, individuals were found to react differently during a stressful interview ([Hodgins et al., 2010](#)), with autonomy-primed individuals showing a reduced threat response on verbal (e.g., response latency), paralinguistic, smiling behavior (e.g., fake smiling), and vocal and physiological responses relative to control-primed participants. This lower threshold for threat among autonomy-primed individuals in turn explained their better performance on a subsequent task. Furthermore, [Hodgins, Liebeskind, and Schwartz \(1996\)](#) showed that autonomy-oriented individuals provided fewer lies and more mitigating themes (e.g., concessions and excuses) after offending someone than those with a controlled orientation. [Knee and Zuckerman \(1996\)](#) showed that control-oriented relative to autonomy-oriented individuals displayed greater self-serving bias, as manifested in their tendency to adopt a self-aggrandizing attitude after success and to deny responsibility for failure.

More recently, [Mask and Blanchard \(2011\)](#) examined whether individuals differing in their general levels of autonomy would react differently to a video depicting the "thin ideal." After watching the video, women low in general autonomy reported stronger pressure to be thin, more dissatisfaction with their bodies, and an increased concern with the quantity of food they ate. Women high in autonomy became more concerned with the quality of the food they ate. Thus, individuals with varying levels of autonomy handled the same pressure differently, with those low in autonomy internalizing the thin-ideal message in a more evaluative, self-controlling way.

## Mindfulness and Awareness

Adding one more dimension to SDT has been work on the relations between awareness and autonomy (Schultz & Ryan, *in press*). From its earliest formulations (e.g., Deci & Ryan, 1980), SDT has posited that autonomous regulation depends on an authentic awareness of what is occurring in the moment. Accordingly, beginning with studies by Brown and Ryan (2003), research has shown that *mindfulness*, defined as open and receptive awareness, is associated with both trait and state autonomy. Indeed, considerable research has linked mindfulness with enhanced autonomy and self-regulation, with their attendant benefits (Brown, Ryan, & Creswell, 2007). When mindful, people report acting not only with more autonomy, but also manifest lower defensiveness. For instance, Niemiec et al. (2010) demonstrated how those high in mindfulness were both more open to processing mortality threat and less defensive in facing it. SDT suggests that the very developmental factors that thwart basic needs are also conducive to a vigilant, preoccupied, and often negative affect-prone mindset inimical to the open and receptive mindfulness (Ryan, 2005). This is exemplified in persons with borderline personality disorder, for whom problems of self-regulation are chronic and who nearly invariably report histories of severe need thwarting and maltreatment (Ryan et al., 2006). It is thus the case that current treatments for borderline personality disorder frequently attempt to promote, through direct training, greater mindfulness to support self-regulatory processes.

## Conclusion

An increasing number of studies have shown that a history of need thwarting and associated experiences of need frustration relates to a broad variety of outcomes, including ill-being (e.g., depressive symptoms), breakdowns in self-control (e.g., bulimic symptoms), forms of constricted functioning (e.g., self-critical perfectionism), externalizing problems (e.g., aggression), and greater defensive (e.g., repressive) and immoral functioning (e.g., lying). This range of outcomes speaks to the fact that the concepts of need satisfaction and need frustration provide scholars and clinicians alike with a rich foundation to explore the etiology of vari-

ous forms of nonoptimal functioning and psychopathology, as well as pathways to their amelioration (Ryan, Lynch, Vansteenkiste, & Deci, 2011).

What is remarkable is that these same basic needs, the frustration of which portends pathology, are harbingers of wellness and eudaimonia when satisfied (Ryan et al., 2008). The satisfaction of basic needs, facilitated by need-supportive social contexts, both fosters a sense of wellness and leads to the building of inner resources that underlie subsequent resilience. In short, basic psychological needs provide a major bridge connecting both positive and pathology-focused psychologies.

## References

- Ahmad, I., Vansteenkiste, M., & Soenens, B. (2013). The relations of Arab Jordanian adolescents' perceived maternal parenting to teacher-rated adjustment and problems: The intervening role of perceived need satisfaction. *Developmental Psychology, 49*, 177–183. doi:10.1037/a0027837
- Assor, A., Roth, G., & Deci, E. L. (2004). The emotional costs of parents' conditional regard: A self-determination theory analysis. *Journal of Personality, 72*, 47–88. doi:10.1111/j.0022-3506.2004.00256.x
- Assor, A., & Tal, K. (2012). When parents' affection depends on child's achievement: Parental conditional positive regard, self-aggrandizement, shame and coping in adolescents. *Journal of Adolescence, 35*, 249–260. doi:10.1016/j.adolescence.2011.10.004
- Assor, A., Vansteenkiste, M., & Kaplan, A. (2009). Identified versus introjected approach and introjected avoidance motivations in school and in sports: The limited benefits of self-worth strivings. *Journal of Educational Psychology, 101*, 482–497. doi:10.1037/a0014236
- Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., Bosch, J. A., & Thøgersen-Ntoumani, C. (2011). Self-determination theory and diminished functioning: The role of interpersonal control and psychological need thwarting. *Personality and Social Psychology Bulletin, 37*, 1459–1473. doi:10.1177/0146167211413125
- Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., & Thøgersen-Ntoumani, C. (2011). Psychological need thwarting in the sport context: Assessing the darker sides of athletic experience. *Journal of Sport & Exercise Psychology, 33*, 75–102.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological*

- Bulletin*, 117, 497–529. doi:10.1037/0033-2909.117.3.497
- Blatt, S. J. (1995). The destructiveness of perfectionism: Implications for the treatment of depression. *American Psychologist*, 50, 1003–1020. doi:10.1037/0003-066X.50.12.1003
- Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist*, 59, 20–28. doi:10.1037/0003-066X.59.1.20
- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84, 822–848. doi:10.1037/0022-3514.84.4.822
- Brown, K. W., Ryan, R. M., & Creswell, J. D. (2007). Mindfulness: Theoretical foundations and evidence for its salutary effects. *Psychological Inquiry*, 18, 211–237. doi:10.1080/10478400701598298
- Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Deeder, J., & Verstuyf, J. (2013). *Psychological need satisfaction and desire for need satisfaction across four cultures*. Manuscript submitted for publication.
- Chen, B., Vansteenkiste, M., Beyers, W., Soenens, B., & Van Petegem, S. (2013). Autonomy in family decision-making among Chinese adolescents: Disentangling the dual meaning of autonomy. *Journal of Cross-Cultural Psychology*. Advance Online Publication. doi:10.1177/0022022113480038
- 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. doi:10.1037/0022-3514.84.1.97
- Chirkov, V. I., Ryan, R. M., & Willness, C. (2005). Cultural context and psychological needs in Canada and Brazil: Testing a self-determination approach to the internalization of cultural practices, identity, and well-being. *Journal of Cross-Cultural Psychology*, 36, 423–443. doi:10.1177/0022022105275960
- Cicchetti, D. (2006). Development and psychopathology. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology: Theory and method* (Vol. 1, 2nd ed., pp. 1–23). New York, NY: Wiley.
- Deci, E. L., & Ryan, R. M. (1980). Self-determination theory: When mind mediates behavior. *Journal of Mind and Behavior*, 1, 33–43.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York, NY: Plenum Press.
- Deci, E. L., & Ryan, R. M. (1995). Human autonomy: The basis for true self-esteem. In M. H. Kernis (Ed.), *Efficacy, agency, and self-esteem* (pp. 31–49). New York, NY: 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. doi:10.1207/S15327965PLI1104\_01
- Deci, E. L., & Ryan, R. M. (2008). Facilitating optimal motivation and psychological well-being across life’s domains. *Canadian Psychology*, 49, 14–23. doi:10.1037/0708-5591.49.1.14
- Deci, E. L., Ryan, R. M., Gagne, 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: A cross-cultural study of self-determination. *Personality and Social Psychology Bulletin*, 27, 930–942. doi:10.1177/0146167201278002
- Deci, E. L., & Vansteenkiste, M. (2004). Self-determination theory and basic need satisfaction: Understanding human development in positive psychology. *Ricerche di Psicologia*, 27, 23–40.
- Di Domenico, S. I., Fournier, M. A., Ayaz, H., & Ruocco, A. C. (2012). In search of integrative processes: Basic psychological need satisfaction predicts medial prefrontal activation during decisional conflict. *Journal of Experimental Psychology: General*. Advance online publication. doi:10.1037/a0030257
- Dittmar, H. (2008). *Consumer culture, identity and well-being: The search for the “good life” and the “body perfect.”* New York, NY: Psychology Press.
- Donahue, E. G., Miquelon, P., Vaiois, P., Goulet, C., Buist, A., & Vallerand, R. J. (2006). A motivational model of performance-enhancing substance use in elite athletes. *Journal of Sport & Exercise Psychology*, 28, 511–520.
- Duriez, B., Vansteenkiste, M., Soenens, B., & De Witte, H. (2007). The social costs of extrinsic relative to intrinsic goal pursuits: Their relation with social dominance and racial and ethnic prejudice. *Journal of Personality*, 75, 757–782. doi:10.1111/j.1467-6494.2007.00456.x
- Dwyer, L. A., Hornsey, M. J., Smith, L. G. E., Oei, T. P. S., & Dingle, G. A. (2011). Participant autonomy in cognitive behavioral group therapy: An integration of self-determination and cognitive behavioral theories. *Journal of Social and Clinical Psychology*, 30, 24–46. doi:10.1521/jscp.2011.30.1.24
- Haedt-Matt, A. A., & Keel, P. K. (2011). Hunger and binge eating: A meta-analysis of studies using ecological momentary assessment. *International Journal of Eating Disorders*, 44, 573–578. doi:10.1002/eat.20868
- Hodgins, H. S., Brown, A. B., & Carver, B. (2007). Autonomy and control motivation and self-esteem.

- Self and Identity*, 6, 189–208. doi:10.1080/15298860601118769
- Hodgins, H. S., & Knee, C. R. (2002). The integrating self and conscious experience. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 87–100). Rochester, NY: The University of Rochester Press.
- Hodgins, H. S., Koestner, R., & Duncan, N. (1996). On the compatibility of autonomy and relatedness. *Personality and Social Psychology Bulletin*, 22, 227–237. doi:10.1177/0146167296223001
- Hodgins, H. S., Liebeskind, E., & Schwartz, W. (1996). Getting out of hot water: Facework in social predicaments. *Journal of Personality and Social Psychology*, 71, 300–314. doi:10.1037/0022-3514.71.2.300
- Hodgins, H. S., Weibust, K. S., Weinstein, N., Shiffman, S., Miller, A., Coombs, G., & Adair, K. C. (2010). The cost of self-protection: Threat response and performance as a function of autonomous and controlled motivations. *Personality and Social Psychology Bulletin*, 36, 1101–1114. doi:10.1177/0146167210375618
- Hodgins, H. S., Yacko, H. A., & Gottlieb, E. (2006). Autonomy and nondefensiveness. *Motivation and Emotion*, 30, 283–293. doi:10.1007/s11031-006-9036-7
- Johnson, W. (2012). Developmental genetics and psychopathology: Some new feathers for a fine old hat. *Development and Psychopathology*, 24, 1165–1177. doi:10.1017/S0954579412000624
- Joussemet, M., Vitaro, F., Barker, E. D., Coté, S., Nagin, D., Zoccolillo, M., & Tremblay, R. E. (2008). Controlling parenting and physical aggression during elementary school. *Child Development*, 79, 411–425. doi:10.1111/j.1467-8624.2007.01133.x
- Kasser, T. (2002). *The high price of materialism*. Cambridge, MA: MIT Press.
- Kasser, T., & Ahuvia, A. (2002). Materialistic values and well-being in business students. *European Journal of Social Psychology*, 32, 137–146. doi:10.1002/ejsp.85
- 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. doi:10.1177/0146167296223006
- Kernis, M. H., & Goldman, B. M. (2006). A multi-component conceptualization of authenticity: Theory and research. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 38, pp. 283–357). San Diego, CA: Elsevier. doi:10.1016/S0065-2601(06)38006-9
- Klassen, R. M., Perry, N. E., & Frenzel, A. C. (2012). Teachers' relatedness with students: An underemphasized component of teachers' basic psychological needs. *Journal of Educational Psychology*, 104, 150–165. doi:10.1037/a0026253
- Knee, C. R., & Neighbors, C. (2002). Self-determination, perception of peer pressure, and drinking among college students. *Journal of Applied Social Psychology*, 32, 522–543. doi:10.1111/j.1559-1816.2002.tb00228.x
- Knee, C. R., & Zuckerman, M. (1996). Causality orientations and the disappearance of the self-serving bias. *Journal of Research in Personality*, 30, 76–87. doi:10.1006/jrpe.1996.0005
- Luyckx, K., Vansteenkiste, M., Goossens, L., & Duriez, B. (2009). Basic need satisfaction and identity formation: Bridging self-determination theory and process-oriented identity research. *Journal of Counseling Psychology*, 56, 276–288. doi:10.1037/a0015349
- Markland, D., & Tobin, V. J. (2010). Need support and behavioural regulations for exercise among exercise referral scheme clients: The mediating role of psychological need satisfaction. *Psychology of Sport and Exercise*, 11, 91–99. doi:10.1016/j.psychsport.2009.07.001
- Markus, H. R., & Kitayama, S. K. (2003). Models of agency: Sociocultural diversity in the construction of action. In V. Murphy-Berman & J. J. Berman (Eds.), *Nebraska Symposium on Motivation: Cross-cultural differences in perspectives on self* (Vol. 49, pp. 18–74). Lincoln, NE: University of Nebraska Press.
- Mask, L., & Blanchard, C. M. (2011). The protective role of general self-determination against “thin ideal” media exposure on women's body image and eating-related concerns. *Journal of Health Psychology*, 16, 489–499. doi:10.1177/1359105310385367
- Masten, A. S., & Cicchetti, D. (Eds.). (2010). Developmental cascades [Special issue, Pt. 1]. *Development and Psychopathology*, 22, 491–495. doi:10.1017/S0954579410000222
- Masten, A. S., & Tellegen, A. (2012). Resilience in developmental psychopathology: Contributions of the Project Competence Longitudinal Study. *Development and Psychopathology*, 24, 345–362. doi:10.1017/S095457941200003X
- McHoskey, J. W. (1999). Machiavellianism, intrinsic versus extrinsic goals, and social interest: A self-determination theory analysis. *Motivation and Emotion*, 23, 267–283. doi:10.1023/A:1021338809469
- Miklikowska, M., Duriez, B., & Soenens, B. (2011). Family roots of empathy-related characteristics: The role of perceived maternal and paternal need support in adolescence. *Developmental Psychology*, 47, 1342–1352. doi:10.1037/a0024726
- Moller, A. C., Deci, E. L., & Ryan, R. M. (2006). Choice and ego-depletion: The moderating role of autonomy. *Personality and Social Psychology Bulletin*

- letin*, 32, 1024–1036. doi:10.1177/0146167206288008
- Ng, J. Y. Y., Lonsdale, C., & Hodge, K. (2011). The Basic Needs Satisfaction in Sport Scale (BNSSS): Instrument development and initial validity evidence. *Psychology of Sport and Exercise*, 12, 257–264. doi:10.1016/j.psychsport.2010.10.006
- Niemiec, C. P., Brown, K. W., Kashdan, T. B., Cozzolino, P. J., Breen, W. E., Levesque-Bristol, C., & Ryan, R. M. (2010). Being present in the face of existential threat: The role of trait mindfulness in reducing defensive responses to mortality salience. *Journal of Personality and Social Psychology*, 99, 344–365. doi:10.1037/a0019388
- Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The path taken: Consequences of attaining intrinsic and extrinsic aspirations in post-college life. *Journal of Research in Personality*, 73, 291–306. doi:10.1016/j.jrp.2008.09.001
- O'Connor, D. B., & O'Connor, R. C. (2004). Perceived changes in food intake in response to stress: The role of conscientiousness. *Stress and Health*, 20, 279–291. doi:10.1002/smi.1028
- Pelletier, L. G., Dion, S. C., Slovinec-D'Angelo, M., & Reid, R. (2004). Why do you regulate what you eat? Relationships between forms of regulation, eating behaviors, sustained dietary behavior change, and psychological adjustment. *Motivation and Emotion*, 28, 245–277. doi:10.1023/B:MOEM.0000040154.40922.14
- Quested, E., Bosch, J. A., Burns, V. E., Cumming, J., Ntoumanis, N., & Duda, J. L. (2011). Basic psychological need satisfaction, stress-related appraisals, and dancers' cortisol and anxiety responses. *Journal of Sport & Exercise Psychology*, 33, 828–846.
- Reeve, J., & Tseng, C.-M. (2011). Cortisol reactivity to a teacher's motivating style: The biology of being controlled versus supporting autonomy. *Motivation and Emotion*, 35, 63–74. doi:10.1007/s11031-011-9204-2
- 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, 419–435. doi:10.1177/0146167200266002
- Roth, G., Assor, A., Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The emotional and academic consequences of parental conditional regard: Comparing conditional positive regard, conditional negative regard, and autonomy support as parenting practices. *Developmental Psychology*, 45, 1119–1142. doi:10.1037/a0015272
- Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality*, 63, 397–427. doi:10.1111/j.1467-6494.1995.tb00501.x
- Ryan, R. M. (2005). The developmental line of autonomy in the etiology, dynamics, and treatment of borderline personality disorders. *Development and Psychopathology*, 17, 987–1006. doi:10.1017/S0954579405050467
- Ryan, R. M., Bernstein, J. H., & Brown, K. W. (2010). Weekends, work, and well-being: Psychological need satisfactions and day of the week effects on mood, vitality, and physical symptoms. *Journal of Social and Clinical Psychology*, 29, 95–122. doi:10.1521/jscp.2010.29.1.95
- 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. doi:10.1037/0022-3514.57.5.749
- Ryan, R. M., & Deci, E. L. (2000a). The darker and brighter sides of human existence: Basic psychological needs as a unifying concept. *Psychological Inquiry*, 11, 319–338. doi:10.1207/S15327965PLI1104\_03
- Ryan, R. M., & Deci, E. L. (2000b). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55, 68–78. doi:10.1037/0003-066X.55.1.68
- Ryan, R. M., & Deci, E. L. (2006). Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will? *Journal of Personality*, 74, 1557–1585. doi:10.1111/j.1467-6494.2006.00420.x
- Ryan, R. M., Deci, E. L., Grolnick, W. S., & La Guardia, J. G. (2006). The significance of autonomy and autonomy support in psychological development and psychopathology. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology: Theory and methods* (Vol. 1, 2nd ed., pp. 795–849). New York, NY: Wiley.
- Ryan, R. M., Huta, V., & Deci, E. L. (2008). Living well: A self-determination theory perspective on eudaimonia. *Journal of Happiness Studies*, 9, 139–170. doi:10.1007/s10902-006-9023-4
- Ryan, R. M., & Lynch, J. H. (1989). Emotional autonomy versus detachment: Revisiting the vicissitudes of adolescence and young adulthood. *Child Development*, 60, 340–356. doi:10.2307/1130981
- Ryan, R. M., Lynch, M. L., Vansteenkiste, M., & Deci, E. L. (2011). Motivation and autonomy in counseling, psychotherapy and behavior change: A look at theory and practice. *The Counseling Psychologist*, 39, 193–260. doi:10.1177/0011000009359313
- Ryan, R. M., Sheldon, K. M., Kasser, T., & Deci, E. L. (1996). All goals were not created equal: An organismic perspective on the nature of goals and their regulation. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking motivation and cognition to behavior* (pp. 7–26). New York, NY: Guilford Press.

- Schüler, J., & Kuster, M. (2011). Binge eating as a consequence of unfulfilled basic needs: The moderating role of implicit achievement motivation. *Motivation and Emotion, 35*, 89–97. doi:10.1007/s11031-010-9200-y
- Schultz, P. P., & Ryan, R. M. (in press). The “why,” “what,” and “how” of healthy self-regulation: Mindfulness and well-being from a self-determination theory perspective. In B. Ostafin (Ed.), *Handbook of mindfulness and self-regulation*. New York, NY: Springer.
- Sebire, S. J., Standage, M., & Vansteenkiste, M. (2009). Examining intrinsic versus extrinsic exercise goals: Cognitive, affective, and behavioral outcomes. *Journal of Sport & Exercise Psychology, 31*, 189–210.
- Shafran, R., & Mansell, W. (2001). Perfectionism and psychopathology: A review of research and treatment. *Clinical Psychology Review, 21*, 879–906. doi:10.1016/S0272-7358(00)00072-6
- Shahar, G., & Henrich, C. C. (2013). Axis of Criticism Model (ACRIM): An integrative conceptualization of person–context exchanges in vulnerability to adolescent psychopathology. *Journal of Psychotherapy Integration*. Advance online publication. doi:10.1037/a0031418
- Sheldon, K. M., & King, L. (2001). Why positive psychology is necessary. *American Psychologist, 56*, 216–217. doi:10.1037/0003-066X.56.3.216
- Sheldon, K. M., & McGregor, H. A. (2000). Extrinsic value orientation and the “tragedy of the commons”. *Journal of Personality, 68*, 383–411. doi:10.1111/1467-6494.00101
- Sheldon, K., & Ryan, R. M. (2011). Positive psychology and self-determination theory: A natural interface. In V. I. Chirkov, R. M. Ryan, & K. M. Sheldon (Eds.), *Human autonomy in cross-cultural context: Perspectives on the psychology of agency, freedom, and well-being* (pp. 33–44). New York, NY: Springer. doi:10.1007/978-90-481-9667-8\_2
- 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*, 427–442. doi:10.1002/per.551
- Soenens, B., Luyckx, K., Vansteenkiste, M., Luyten, P., Duriez, B., & Goossens, L. (2008). Maladaptive perfectionism as an intervening variable between psychological control and adolescent depressive symptoms: A three-wave longitudinal study. *Journal of Family Psychology, 22*, 465–474. doi:10.1037/0893-3200.22.3.465
- Soenens, B., & Vansteenkiste, M. (2010). A theoretical upgrade of the concept of parental psychological control: Proposing new insights on the basis of self-determination theory. *Developmental Review, 30*, 74–99. doi:10.1016/j.dr.2009.11.001
- Soenens, B., Vansteenkiste, M., Vandereycken, W., Luyten, P., Sierens, E., & Goossens, L. (2008). Perceived parental psychological control and eating-disordered symptoms: Maladaptive perfectionism as a possible intervening variable. *Journal of Nervous and Mental Disease, 196*, 144–152. doi:10.1097/NMD.0b013e318162aabb
- Standage, M., Sebire, S. J., & Loney, T. (2008). Does exercise motivation predict engagement in objectively assessed bouts of moderate-intensity exercise behavior? A self-determination theory perspective. *Journal of Sport & Exercise Psychology, 30*, 337–352.
- Stebbins, J., Taylor, I. M., Spray, C. M., & Ntoumanis, N. (2012). Antecedents of perceived coach interpersonal behaviors: The coaching environment and coach psychological well- and ill-being. *Journal of Sport & Exercise Psychology, 34*, 481–502.
- Talwar, V., & Lee, K. (2011). A punitive environment fosters children’s dishonesty: A natural experiment. *Child Development, 82*, 1751–1758. doi:10.1111/j.1467-8624.2011.01663.x
- Taylor, I. M., & Lonsdale, C. (2010). Cultural differences in the relationships among autonomy support, psychological need satisfaction, subjective vitality, and effort in British and Chinese physical education. *Journal of Sport & Exercise Psychology, 32*, 655–673.
- Thøgersen-Ntoumani, C., Ntoumanis, N., & Nitaras, N. (2010). Unhealthy weight control behaviours in adolescent girls: A process model based on self-determination theory. *Psychology & Health, 25*, 535–550. doi:10.1080/08870440902783628
- Thrash, T. M., & Elliot, A. J. (2002). Implicit and self-attributed achievement motives: Concordance and predictive validity. *Journal of Personality, 70*, 729–756. doi:10.1111/1467-6494.05022
- Twenge, J. M., Gentile, B., DeWall, C. N., Ma, D., Lacefield, K., & Schurtz, D. R. (2010). Birth cohort increases in psychopathology among young Americans, 1938–2007: A cross-temporal meta-analysis of the MMPI. *Clinical Psychology Review, 30*, 145–154. doi:10.1016/j.cpr.2009.10.005
- Van den Broeck, A., Vansteenkiste, M., De Witte, H., Soenens, B., & Lens, W. (2010). Capturing autonomy, competence, and relatedness at work: Construction and initial validation of the Work-Related Basic Need Satisfaction scale. *Journal of Occupational and Organizational Psychology, 83*, 981–1002. doi:10.1348/096317909X481382
- Van der Elst, T., Van den Broeck, A., De Witte, H., & De Cuyper, N. (2012). The mediating role of psychological need frustration in the relationship between job insecurity and work-related well-being. *Work & Stress, 26*, 252–271. doi:10.1080/02678373.2012.703900

- Van Hiel, A., & Vansteenkiste, M. (2009). Ambitions fulfilled? The effects of intrinsic and extrinsic goal attainment on older adults' ego-integrity and death attitudes. *The International Journal of Aging and Human Development*, *68*, 27–51. doi:10.2190/AG.68.1.b
- Van Petegem, S., Beyers, W., Vansteenkiste, M., & Soenens, B. (2011, August). *Psychological reactance as an explaining mechanism for adolescent rebellion: Associations with autonomy, parenting, and psychosocial functioning*. Paper presented at the 15th European Conference on Developmental Psychology, Bergen, Norway.
- Van Petegem, S., Beyers, W., Vansteenkiste, M., & Soenens, B. (2012). On the association between adolescent autonomy and psychosocial functioning: Examining decisional independence from a self-determination theory perspective. *Developmental Psychology*, *48*, 76–88. doi:10.1037/a0025307
- Van Petegem, S., Vansteenkiste, M., & Beyers, W. (2012). The jingle-jangle fallacy in adolescent autonomy in the family: In search of an underlying structure. *Journal of Youth and Adolescence*. Advance online publication. doi:10.1007/s10964-012-9847-7
- Vansteenkiste, M., Claes, L., Soenens, B., & Verstuyf, J. (in press). Motivational dynamics among eating-disordered patients with and without non-suicidal self-injury: A self-determination theory approach. *European Eating Disorder Review*.
- Vansteenkiste, M., Mouratidis, A., & Lens, W. (2010). Detaching reasons from aims: Fair play and well-being in soccer as a function of pursuing performance-approach goals for autonomous or controlling reasons. *Journal of Sport & Exercise Psychology*, *32*, 217–242.
- Vansteenkiste, M., Neyrinck, B., Niemiec, C. P., Soenens, B., De Witte, H., & Van den Broeck, A. (2007). On the relations among work value orientations, psychological need satisfaction, and job outcomes: A self-determination theory approach. *Journal of Occupational and Organizational Psychology*, *80*, 251–277. doi:10.1348/096317906X111024
- Vansteenkiste, M., Niemiec, C., & Soenens, B. (2010). The development of the five mini-theories of self-determination theory: A historical overview, emerging trends and future directions. In T. Urdan & S. Karabenick (Eds.), *Advances in motivation and achievement: Vol. 16. The decade ahead* (pp. 105–166). Yorkshire, UK: Emerald Publishing.
- Vansteenkiste, M., Soenens, B., & Duriez, B. (2008). Presenting a positive alternative to materialistic strivings and the thin-ideal: Understanding the effects of extrinsic relative to intrinsic goal pursuits. In S. J. Lopez (Ed.), *Positive psychology: Exploring the best in people* (Vol. 4, pp. 57–86). Westport, CT: Greenwood Press.
- Vansteenkiste, M., Soenens, B., Van Petegem, S., & Duriez, B. (in press). Longitudinal associations between adolescent perceived degree and style of prohibition and adolescent internalisation and defiance. *Developmental Psychology*.
- Verstuyf, J., Vansteenkiste, M., Soenens, B., Boone, L., & Mouratidis, A. (in press). Daily ups-and-downs in women's binge eating symptoms: The role of psychological needs, emotional eating and general self-control strength. *Journal of Social and Clinical Psychology*.
- Vlachopoulos, S. P., Katartzis, E. S., & Kontou, M. G. (2011). The Basic Psychological Needs in Physical Education Scale. *Journal of Teaching in Physical Education*, *30*, 263–280.
- Weinstein, N., Deci, E. L., & Ryan, R. M. (2011). Motivational determinants of integrating positive and negative past identities. *Journal of Personality and Social Psychology*, *100*, 527–544. doi:10.1037/a0022150
- Weinstein, N., DeHaan, C. R., & Ryan, R. M. (2010). Attributing autonomous versus introjected motivation to helpers and the recipient experience: Effects on gratitude, attitudes, and well-being. *Motivation and Emotion*, *34*, 418–431. doi:10.1007/s11031-010-9183-8
- Weinstein, N., & Hodgins, H. S. (2009). The moderating role of autonomy and control on the benefits of written emotion expression. *Personality and Social Psychology Bulletin*, *35*, 351–364. doi:10.1177/0146167208328165
- Weinstein, N., Hodgins, H. S., & Ostvik-White, E. (2011). Humor as aggression: Effects of motivation on hostility expressed in humor appreciation. *Journal of Personality and Social Psychology*, *100*, 1043–1055. doi:10.1037/a0022495
- Weinstein, N., Ryan, W. S., DeHaan, C. R., Przybylski, A. K., Legate, N., & Ryan, R. M. (2012). Parental autonomy support and discrepancies between implicit and explicit sexual identities: Dynamics of self-acceptance and defense. *Journal of Personality and Social Psychology*, *102*, 815–832. doi:10.1037/a0026854
- White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, *66*, 297–333. doi:10.1037/h0040934
- 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. doi:10.1111/j.1559-1816.2000.tb02466.x
- Williams, G. C., Grow, V. M., Freedman, Z. R., Ryan, R. M., & Deci, E. L. (1996). Motivational predictors of weight loss and weight-loss maintenance. *Journal of Personality and Social Psychology*

ogy, 70, 115–126. doi:10.1037/0022-3514.70.1.115

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. doi:10.1007/s12160-009-9090-y

Received November 2, 2012

Revision received December 5, 2012

Accepted December 24, 2012 ■

### Call for Papers: Psychotherapy Integration in Behavioral Medicine, Part II

*Journal of Psychotherapy Integration (JPI)* announces a call for papers for Part II of the special section on Psychotherapy Integration in Behavioral Medicine. Part I of this special issue was published in March 2013 as a special section: <http://psycnet.apa.org/journals/int/23/1/>

The focus of Part I was on medical conditions such as chronic fatigue syndrome, end state renal disease, anorexia nervosa, substance use, and chronic illness broadly defined. For Part II, we are interested in manuscripts presenting integrative therapeutic models in medical areas such as cardiology, cancer, HIV/AIDS, obstetrics & gynecology, and pediatric medicine.

Manuscripts may be either conceptual or empirical, or both. Both quantitative and qualitative methodologies are of interest to the Journal. For questions and consultations, please email the Editor, Golan Shahar, Ph.D., at [golan.shahar@gmail.com](mailto:golan.shahar@gmail.com).

The deadline for all submissions is 1 November 2013. Manuscript should be submitted electronically through the journal's submission portal under Instructions to Authors at [www.apa.org/pubs/journals/int](http://www.apa.org/pubs/journals/int).

Please note in your cover letter that you are submitting for consideration to be published in Part II of the special issue on Psychotherapy Integration in Behavioral Medicine.

We look forward to your submissions!