RUNNING HEAD: Need Frustration and Vulnerability

On Psychological Growth and Vulnerability:

Basic Psychological Need Satisfaction and Need Frustration as a Unifying Principle

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Abstract

Humans have a potential for growth, integration, and well-being, while also being vulnerable to defensiveness, aggression, and ill-being. Self-Determination Theory (Ryan & Deci, 2000b) 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.

Key Terms: 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 towards 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?

While 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), 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 piece, 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 pro-activity, integration, and well-being, the frustration of these same psychological needs, especially from significant caregivers, leaves one prone for passivity, fragmentation, and ill-being. SDT maintains that, although human beings have the natural tendency to move towards growth under need supportive circumstances, they are also at risk for defensive functioning when exposed to controlling, critical or rejecting social contexts; that is, environments that are thwarting of these psychological needs. Thus, need satisfaction and need frustration are considered to be crucial mechanisms in both optimal and non-optimal functioning,

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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 Bonnano (2004). Yet interestingly, these inner resources appear themselves to be to a significant degree outcomes of need supports in earlier development, suggesting 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* meta-theory (Deci & Vansteenkiste, 2004).

First, rather than being naturally passive or reactive entities whose functioning is determined by contextual features, people are considered *pro-active* organisms that have the inclination to shape and optimize their own life conditions. Second, people's pro-activity is steered towards

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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 towards more coherent and unified functioning, a tendency that can be observed at both the intrapersonal and interpersonal level. 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 towards increasing intra- and inter-personal 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 to 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; *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 co-workers, 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. While low need support represents a more "passive" and "indirect" socialization style, 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 parenting clearly differs from parenting practices like maltreatment (Cicchetti, 2006), use of coercive physical force (Talwar & Lee, 2011), or intrusive shaming and guilt-induction (Soenens & Vansteenkiste, 2010). Because in these later 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 environment 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 meta-theoretical assumption - the fact that human beings are *vulnerable* to ill-being and psychopathology. Indeed, both a growth-oriented and a more defensive pathway characterize human functioning (Ryan & Deci, 2000a) and socialization experiences as well as genetic factors will 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, the 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 their competence building. Similarly, when people follow their interests, they are "being themselves", contributing to a sense of autonomy, authenticity, and non-defensiveness which in turn contribute 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, like 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, critical evaluations, among other

factors can diminish intrinsic motivation. Further, 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 within SDT 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. Though 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 for 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, exercising, emotion regulation, and varied cultural practices among others, and in each they have been shown to form a reliable continuum of relative autonomy. Additionally, 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, Slovinec-D'Angelo, & Reid, 2004), among other positive outcomes.

Further, 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 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 inter-individual 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 co-vary 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, Katartzi, & 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 (in press) 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 (2011a) showed that working in a controlling setting, even on an enjoyable activity, produced a significant and clinically meaningful cortisol release not evidecnt 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). Further, 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., Vander Elst, Van den Broeck,

De Witte, & De Cuyper, 2012) and education (e.g., Reeve & Tseng, 2011b) the association between need satisfaction and enhanced *engagement* has been well documented. Further, need supportive parenting related to increases in *empathic* functioning in adolescents (e.g., Miklikowska, Soenens, & Duriez, 2011) and need satisfaction has even been found to predict enhanced *brain functioning*. Illustratively, Di Dominico and colleagues (2012) found that need satisfaction predicted elevated MPFC activity during high-conflict situations, suggesting that need satisfaction may promote enhanced utilization 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 collectivisitic 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, 2012) 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).

Further, various studies conducted in culturally diverse nations like Korea, China, Russia, Jordan among others have shown that need satisfaction predicts well-being in non-western individuals, and several multi-nation 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. (2012) who demonstrated that unique associations between the three need satisfactions and well-being, and these were invariant across the four studied countries (i.e., Peru, Belgium, US, 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 a 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 et al., 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 non-optimal 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., Vander Elst et al., 2012), less anger and anxiety among teachers (e.g., Klassen, Perry, & Frenzel, 2012) and less teacher-rated problem behaviors among adolescents (Ahmad et al., in press) to cite a few

examples. Further, diary studies have indicated that the ups and downs in daily satisfaction of the psychological needs related 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 research has also included assessments of need 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 (Stebbings, Taylor, Spray, & Ntoumanis, 2012). Further, 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 basic psychological need satisfactions enhancing, and need frustrations debilitating, 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 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 for lying during a toy-guessing game, but 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 the intrinsic goals, such as the personal growth, contributing to one's community, and building intimacy and strong bonds with others. Extrinsic goals are very salient in a consumer culture, where fame, materialistic strivings, and the 'perfect body' are portrayed as signs of success (Kasser, 2002; Dittmar, 2008).

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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., Thogersen-Ntoumani, Ntoumanis, & Nikitaras, 2010).

Importantly, although extrinsic goals may be appealing these goals may only provide a sense of fleeting satisfaction. In line with this, work-related extrinsic, relative to intrinsic, goal pursuit related to more short-lived satisfaction, as assessed with an item like "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, Standage, & Vansteenkiste, 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); they are more likely to compete rather than cooperate for scarce resources (Sheldon & McGregor, 2000); and they exhibit more aggressive and discriminatory attitudes towards 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 being mentioned. First, the negative effects of extrinsic goal pursuits have been observed among all individuals, even those residing in a 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 has been 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 illustrate, 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'Conner & O'Conner, 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 to 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 illustrate, when a smoker inhibits the impulse to smoke because her doctor expects her to she may be more prone for snacking. 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-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 ED patients (Soenens, Vansteenkiste, et al., 2008). Further, 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, and 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, while 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 school work 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). Further, 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 at great lengths to achieve their ambitions, even at the cost of their health or ethics.

Oppositional Defiance. While 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, in press). 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, Wuyts, & Duriez, 2012). 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 both 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 Ducan (1996) found in a diary study across 10 to 14 days that an autonomous orientation predicts these more disclosure trust and honesty, whereas a controlled orientation predicted lower honesty. Soenens, Berzonsky, Vansteenkiste, 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 either the autonomy or 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, W. Ryan, et al. (2012) found that offspring of controlling parents show 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, relative to autonomy, primed participants list more self-handicapping excuses to protect a drop in their self-worth *prior* to engaging in an achievement task. Additionally, autonomy, relative to control, primed individuals have been found to react differently *during* a stressful interview (Hodgins, et al., 2010), with autonomy primed individuals showed 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. Further, 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 upon 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 is linking 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 the 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 (BPD), for whom problems of self-regulation are chronic and who nearly invariantly report histories of severe need thwarting and maltreatment (Ryan et al, 2006). It is thus the case that current treatments for BPD frequently attempt to promote, through direct training, greater mindfulness to support self-regulatory processes.

Conclusion

An increasing number of studies show 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 various forms of non-optimal 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 when satisfied harbingers of wellness and eudiamonia (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.

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Figure 1

Graphic Overview of the Self-Determination Theory View on the Role of Need Satisfaction and
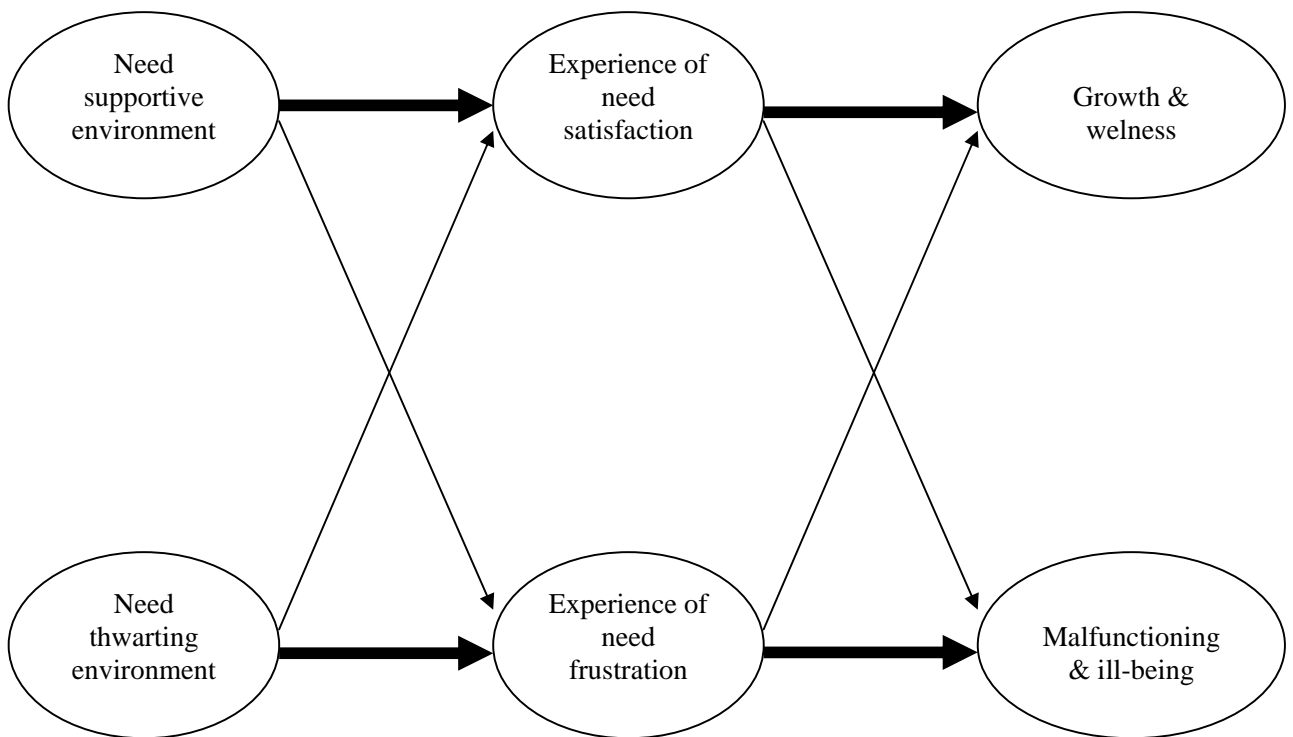
Need Frustration

Figure 2

Graphic Overview of the Consequences related to the Experience of Need Frustration