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Reflections on Self-Determination Theory as an Organizing Framework for Personality Psychology: Interfaces, Integrations, Issues, and Unfinished Business

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Abstract

This special issue brings together seven contributions which, in spite of the diversity of the topics and theories being covered, all make use of *Self-Determination Theory* (SDT) as their guiding, complementary, or contrasting framework. In this commentary we first reflect on how SDT has developed organically and conservatively from "within," based on emerging patterns of evidence, as well through ongoing challenges from other models and frameworks. We then discuss each of the various contributions to this special issue, addressing themes that include SDT's breadth of methods, and its relevance to topics such as narcissism, wisdom, individual differences, big-five traits, and the neuropsychology of motivation, among others. Across these discussions we highlight fruitful avenues for research and cross-fertilization across the fields of personality, development, motivation, and neuroscience. At the same time, we counter some claims made about SDT, and forward certain cautions regarding the integration of SDT and other personality frameworks and models. We conclude by revisiting the value of broad theory for coordinating complex research findings across levels of analysis, and perhaps more importantly, for pointing us to the right questions.

We want to begin by expressing our appreciation for the question that spurred this special issue for the *Journal of Personality*. It is an honor to have *self-determination theory* (SDT; Ryan & Deci, 2017; Vansteenkiste & Soenens, 2015) considered as a central paradigm for research within the field of personality. As teachers in the fields of personality and human development, we have long admired how solid theoretical frameworks can help shape scientific inquiries and generate real world

interventions and change. Creating such a theoretical scaffold for scientific work and evidence-based practice within SDT has been both aspirational, and by its nature, a never-finished task. In the first part of this commentary, we highlight the importance of theory in psychology and we discuss a number of features that characterize the development of SDT. These considerations help contextualize our serial discussion of the various contributions to this special issue, which follows.

<h2 style="text-align:center">SDT as an Evolving Theoretical Framework</h2>

Importance of Theories

In the age of the so-called "grand theories" of personality, when empirical psychology was still in its infancy, Hall and Lindzey (1957) specified that a true grand theory needs to address multiple aspects of the personality puzzle. It must explain situational behavior; psychological development; individual differences; and be able to predict and control outcomes. It has to show where leverage can be applied to cause and sustain behavior change. And we would add, it must be informed by what we know of biology, evolution, and comparative behavior sciences. SDT today strives to meet all these criteria through the work of a global network of scholars and practitioners.

Contemporary personality psychology is characterized by a passion for empiricism and a proliferation of models. These models bring various phenomena and facts into focus, and are often exciting as news bites, especially when anomalous. But the field is also very diverse, even chaotic in the sense that, although models provide local and often ad hoc understandings, they are rarely coordinated within broader principles and postulates from which specific empirical relations can be deduced and predicted. A broad theory conceptually connects phenomena formerly seen as disparate within a parsimonious framework, and provides a logical and coherent structure for expanding hypotheses and applications.

SDT has been focused on formulating such broad principles, testing their generalizability across contexts, and making clear predictions concerning how contexts affect subsequent action and experience. SDT's six mini-theories each present a strong core of formal propositions that are well grounded empirically, providing a firm footing for further basic research and practical decision making in applied contexts. SDT is first of all *descriptive*, providing a phenomenologically-accessible and yet operationally-grounded typology of both intrinsic and extrinsic motivations. It is *predictive*, as its motivational typologies and measures have generally shown strong external validity. Researchers can make reliable predictions about a variety of cognitive, affective, and behavioral outcomes, as shown in numerous meta-analyses (e.g., Cerasoli, Nicklin, & Ford, 2014; Van den Broeck, Ferris, Chang, & Rosen, 2016; Vasquez, Patall, Fong, Corrigan, & Pine, 2016). The theory is *explanatory*, depicting environmental and social supports and thwarts that affect motivation and the development of capacities for self-regulation. People familiar with the theory also often find in its discourse a way of understanding their own and others' motivational dynamics. Finally, SDT provides tools for *intervention* in domains such as learning, work, sport, health behavior, psychotherapy, technology use, and many more areas of living. A substantial body of research, including experiments as well as controlled trials, attests to SDT's potential for fostering sustained behavior change and wellness (e.g., Aelterman, Vansteenkiste, Van den Berghe, De Meyer, & Haerens, 2014; Cheon & Reeve, 2013; Escriva-Boulley, Tessier, Ntoumanis, & Sarrazin, 2018).

SDT's Organic Development

SDT has only slowly grown into its position as a broad theory (see Vansteenkiste, Niemiec & Soenens, 2010). SDT first emerged within the field of motivation when the focus of most behavioral paradigms was on the functional question of how to control behavior from the outside, rather than attempting to understand natural or organismic sources of growth. It was also a time when many of the alternative humanistic and psychodynamic traditions were relatively weak in their empirical foundations and methodologies. Unlike behaviorism, SDT would begin by focusing on intrinsic

motives and propensities that emerge from *within* the person, and how the environment, rather than causing or programming these motivations, either supports or thwarts these natural propensities (Deci & Ryan, 1980a). Within SDT the organization of behavior has always been deeply conceptualized in terms of people's natural and spontaneous integrative tendencies to engage, assimilate, and connect. Simultaneously, SDT also concerns the factors in physical (e.g., Chen, Van Assche et al., 2015; Weinstein & Stone, 2018) and social (e.g., Mageau, Sherman, Grusec, Koestner, & Bureau, 2017) environments that facilitate or inhibit these tendencies. In addressing these issues, SDT has in an abiding way embraced empirical approaches, and the goal of fitting its methods and findings into the larger framework of the life sciences (Ryan & Deci, 2017).

It was thus interesting to note Koole et al.'s suggestion in this issue that SDT's roots lie primarily in humanistic psychology. Although SDT has certainly appreciated and drawn from humanistic theories (see Ryan & Deci, 2017) our early work grew much more directly from other sources, especially Heider (1958) and de Charms (1968) regarding "naïve psychology" and "personal causation," and the psychodynamic work of White (1963) and Loevinger (1976). De Charms refined Heider's phenomenally-based idea of personal causation, recognizing both controlled and autonomous or volitional forms of intentional actions. Equally important was the idea of the self as primarily an assimilative or synthetic function, a concept essential to the ego-psychologies of White and Loevinger. These theories had direct relevance for intrinsic motivation, as well as SDT's central organismic assumption of an integrative propensity that is both natural and yet contingent on supportive conditions.

In this regard, SDT is based on a philosophical and naturalistic view that autonomy, a state in which behavior is self-organized and volitional, is more than merely a psychological or subjective phenomenon. Autonomy also denotes a form of organismic functioning that gets reflected in physiological, neurological, and phenomenological patterns alike. When operative, autonomy reflects *full functioning*, as the individual is fully engaged in activities, with awareness, congruence, and vitality, attributes that are manifest across multiple experiential, physiological, and neurological systems. The contribution by Reeve and Lee to this special issue exemplifies this spirit of consilience,

as they review a program of research on the neurologic underpinnings of autonomous motivations and need satisfactions.

When SDT was beginning, we (Deci and Ryan) were naïve to many of the challenges that would lie ahead, but we already suspected that a starting focus on intrinsic motivation could be part of a "Copernican turn" in personality research, moving the field away from a preoccupation with external regulators of behavior, to an interest in human nature itself. Intrinsic motivation, being a prototype of autonomous motivation, was thus an entry point for a broader view of the active, integrative nature of self-organization (see Ryan, Ryan, Di Domenico, & Deci, 2019). At the same time, we recognized that a true theory cannot, and indeed should not, be "hatched" in any completed form, but rather must be carefully developed. We knew it would necessitate a slow and sometimes grinding iteration between theory, empirical findings, and intervention work using diverse methodological and data-analytical approaches. Thus, a conscious decision was made to build SDT mini-theory by mini-theory, toward wider and wider spheres of understanding, prediction, and control.

A fundamental rule within SDT's development has been to avoid "errors of commission" when it comes to additions to the theory's formal propositions (see Ryan & Deci, 2017; Vansteenkiste & Soenens, 2015) even as the basic science of SDT continues to push in new directions. Although "errors of omission" (i.e., not formally addressing certain topics or phenomena) may be seen as a shortcoming by some, including some authors in this issue, it reflects a hesitance to assert new theoretical claims without solid evidence and clear theory. SDT's formal theory thus changes conservatively and, therefore, slowly.

SDT's six current mini-theories, reviewed by Sheldon and Prentice in the introductory contribution to this issue, also relate to each other and overlap in ways characteristic of how they grew and continue to grow: *organically*. They each represent an extension from an existing body of knowledge already within the SDT framework. Thus early work on intrinsic motivation in experimental and field settings, which was formalized as *Cognitive Evaluation theory* (CET; Deci &

Ryan, 1980a), provided an inroad to the broader issue of autonomy, and its relative salience in different forms of motivation. This led to SDT's taxonomy of extrinsic motivation, and the recognition of internalization as a continuum of relative autonomy, formalized in *Organismic Integration Theory* (OIT; Ryan & Connell, 1989). Findings on the attributes of people in amotivated, controlled and autonomous states led to specification of *Causality Orientations Theory* (COT; Deci & Ryan, 1985a). More generally, research on facilitating environments for both intrinsic motivation and internalization were in an ingoing way highlighting the role of basic need satisfactions in wellness, leading to *Basic Psychological Needs Theory* (BPNT; Ryan, 1995). Later findings concerning intrinsic and extrinsic aspirations and life goals (Kasser & Ryan, 1993, 1996) resonated with eudaimonic predictions about sources of deep need satisfaction and wellness, leading to the propositions of *Goal Content Theory* (GCT; Vansteenkiste, Niemiec, & Soenens, 2010). Finally, the rich body of empirical research on relatedness within SDT revealed the intertwined roles of all three basic satisfactions in high quality close relationships, resulting in the addition of *Relationship Motivation Theory* (RMT; Ryan & Deci, 2017). In short, self-determination *theorizing* has grown from overlapping and yet ever extending networks of findings, all emerging from a coherent framework for studying human volition and wellness.

SDT's growth has steeply accelerated over the past two decades beyond just theory, with increasing depth and reach in both basic research and in practical applications. In many ways, this reach stems from establishing an inclusive and global community of inquiry. SDT is continuously being tested across diverse cultures, multiple domains and settings, and with multiple methods, ever building on a solid foundation of empirical findings that strongly limit what can be expected and hypothesized. Anomalous findings are more detectable within a framework that is heavily constrained by a set of philosophic tenets, theoretical principles, and empirical cornerstones. Thus, unreliable ideas are more quickly ferreted out.

Although SDT has mostly *grown from within*, it has also articulated points of convergence and divergence with other personality-relevant frameworks including *Terror Management Theory* (Ryan & Deci, 2004), *Motivational Interviewing* (Markland, Ryan, Tobin, & Rollnick, 2005;

Vansteenkiste & Sheldon, 2006), *Operant Behaviorism* (Deci, Koestner & Ryan, 1999), *Achievement Goal Theory* (Vansteenkiste, Lens, Elliot, Soenens, & Mouratidis, 2014) and the *Theory of Planned Behavior* (Hagger & Chatzisarantis, 2009) to name only a few. These past dialogues have spurred the investigation of compatible and conflicting hypotheses, leading to refinements in theory. Paradigms do clash, even as we see in this issue, but ultimately data accompanied by coherent theory can sustain and grow from such conflicts. Where there is a little fire, there can also sometimes be illumination.

Broader Reflections on this Special Issue

In this special issue we find both new and varied takes on SDT. Some contributions relate SDT to other personality frameworks (e.g., whole trait theory; personality systems interaction theory) whereas others offer a more thematic discussion of a "hot" topic in personality research (e.g., narcissism; wisdom) through the SDT-lens. Some confirm the relevance of SDT to new fields of study in personality; others raise critical issues, even suggesting inadequacies of various sorts. We appreciate *every* contribution, whether more receptive to, or more critical of, SDT as a framework for research, and we therefore undertake our commentary with a nod of respect to the authors and articles herein. Having contact with these ideas affords an opportunity to sharpen thinking and clarify nuances in theory. Our general approach will be to comment on each contribution, highlight integrative ideas, responding to challenges, indicating overlap and dissimilarity in terminological and conceptual issues and, in some cases, addressing what we see as misrepresentations of SDT.

We had also fully anticipated that some articles would likely not be easy for us to address. The very nature of this special issue invites critique and differentiation between frameworks. As Kuhn (1970) long ago pointed out, most scientists working within competing frameworks do not easily accommodate to alternative approaches—rather, they often actively resist them. Moreover, the reinforcement structure of our field today supports trying to differentiate one's contributions from what has come before, rather than building on existing scaffolds. This in part explains why the

contemporary field of personality has few grand theories, as well as why our field seems so often to be lacking in cumulative progress.

Yet a second source of trepidation for us is our awareness that SDT is at this point a widely applied, complex, and ever-growing theory. Like the proverbial story of the blind men and the elephant, it can be expected that some authors might have their hand on only a leg or a tail of the theory. Indeed, as we shall review, some comments herein focus only on SDT's constructs of basic need satisfaction and frustration, and neglect its views on integrative processes in individual development, groups, and cultures. Others focus on SDT's "positive psychology," yet neglect its studies of coping, existential struggle, and psychopathology. Still others focus on SDT's self-report methods, to the neglect of its wide employment of experimental, observational, implicit, interview, and neuropsychological methods, as well as its strong investment in controlled intervention studies to show utility. Accordingly, in some cases we take opportunity to highlight what we see as overlooked facets of SDT.

And finally, although we do not expect empathy, the question organizing this special issue hands us another challenge: it is difficult to defend the position that one's theory is comprehensive without appearing either hegemonous or defensive. We apologize in advance where this might be conveyed. In what follows, we comment on each article, highlighting avenues of cross-fertilization with SDT and raising points of divergence and clarification.

On the Interface between SDT and Personality Systems Interaction Theory

We begin with the piece by Koole et al. in part because SDT has had a rich history of connecting with scholars in *Personality Systems Interaction Theory* (PSI) (e.g., Ryan, Kuhl, & Deci, 1997), and more generally, the longer tradition of volitional psychologies from Germany (e.g. Heckhausen, 1991; Krapp & Ryan, 2002). Recently, Ryan (2018), in a volume honoring PSI founder Julius Kuhl, suggested that SDT and PSI are "sibling theories," both being organismic in their meta-theoretical assumptions, and overlapping in their interests in autonomy and control in human

behavior. PSI offers an elaborate set of hypotheses concerning individual differences characterized by different styles of mobilization and reactivity under conditions of threat versus support. SDT has long been interested in the effects of threats and supports on motivation, especially autonomous regulation.

Koole et al. highlight the evidence base of PSI which has shown how its personality dimensions of *action orientation* and *state orientation*, typically measured with self-report, predict differences in engagement, coping, and wellness, especially under challenging conditions. They also provide their own review of SDT, much of with which we can concur. However, they discuss three points of divergence, each of which is worth considering in turn.

Do SDT and PSI represent First versus Third Person Approaches? Koole et al. characterize SDT as a "first person" approach, with a strong focus on individuals' subjective experience, which they then contrast with their "third person" approach of PSI, which they characterize as "objective". In our view, there is confusion in any thinking that aligns "objective" methods with "third person" approaches, or that proposes a dichotomy between a "first person" and a "third person" perspective, as if both would be incompatible. Indeed, SDT research shows that objective methods can be extensively applied within a theory that nonetheless recognizes the importance of subjective experience within the organization of behavior. As an organismic theory, SDT sees human experience as both a worthy object of research, and as phenomena to be understood in the context of the physiological, neurological, and behavioral data of which it is an aspect. The use of objective methods to study both motivated behavior and experience has been a long tradition within SDT, from its early experimental studies (e.g., Deci, Spiegel, Ryan, Koestner, & Kauffman, 1982; Grolnick & Ryan, 1987) to today's multi-method approaches (e.g., Reeve & Tseng, 2011). In this regard it seems a strong mischaracterization of SDT when Koole et al. claim it has "traditionally relied on self-reports collected in a single session" (p. xx).

We do agree that hundreds of cross-sectional self-report studies have been conducted on topics with SDT, many of which have been important in validating expected relations between constructs in diverse settings. But the use of other methods and designs is abundant. The SDT-

literature is replete with experimental (e.g., Benita, Shane, Elgali, & Roth, 2017; Deci et al., 1999; Wuyts, Vansteenkiste, Mabbe, & Soenens, 2017), longitudinal (e.g., Mageau et al., 2017), and experience-sampling studies (Ryan, Bernstein, & Brown, 2010; Thomaes, Sedikides, van den Bos, Hutteman, & Reijntjes, 2017), and SDT studies make use of a variety of "third person" and non-self-report methods including behavior observations (e.g., Ahmad, Vansteenkiste, & Soenens, 2013; Haerens et al., 2013), (neuro)physiological assessments (e.g., Reeve & Tseng, 2011), priming procedures (e.g., Radel, Sarazin, & Pelletier, 2009; Weinstein, Hodgins, & Ryan, 2010) and implicit measures (e.g., Ryan & Grolnick, 1986; Van Assche, Van der Kaap-Deeder, De Schryver, Audenaert, & Vansteenkiste, 2018). SDT thus has always been based on convergent sources of evidence that include both objective methods as well as the important information that can come from self-reports and third-party ratings (e.g., Ratelle, Morin, Guay, & Duchesne, 2018).

Does SDT distinguish motivation and volition? A second point of divergence according to Koole et al. is that PSI distinguishes motivation and volition, whereas SDT does not. Here we fully appreciate that in the German tradition, following Heckhausen (1991), the term *volition* is used in its own unique way, that is, that the person's capacity to form explicit plans and put these plans into action (Kuhl & Kazén, 1999). Yet SDT, within its own terminology distinguishes intentional behavior (which involves personal causation; de Charms, 1968) from impersonally caused or unintended behaviors, and then *within* intentional behaviors SDT further considers degrees of autonomy. In SDT the term volition is thus used in reference to the relative autonomy of motivation, as "volition" also has the meaning of "voluntary" in English.

But then Koole et al. go on to characterize SDT as suggesting that if people would simply make the right choices, all the problems of self-regulation are solved. But SDT does not hold this rather naive assumption. Even when pursuing goals that are autonomously chosen, people often encounter difficulties where the issue of competence is critical. SDT has articulated that intentional action requires perceived competence, and specifies conditions that facilitate that. Yet it *further* recognizes that not all intentional or "chosen" actions are created equal, as they can be very differentially motivated. These qualitative differences in the regulation of intentional action are

critical because they reliably predict differences in the efficiency, quality, and sustainability of actions. To illustrate, more autonomously motivated learners were found to more efficiently manage study time, procrastinate less, and get less distracted when studying (Vansteenkiste, Zhou, Lens, & Soenens, 2005). Also, when pursuing autonomous goals, individuals make use of more adaptive coping resources to handle setbacks, leading to better goal attainment, findings that have emerged in longitudinal research (e.g., Smith, Ntoumanis, Duda, & Vansteenkiste, 2011), as well as in experimental work involving the priming of motives (e.g., Ntoumanis et al., 2014). Such work illustrates that SDT focuses not only on individuals' "choices" in understanding motivation over time, but the paths they take to attain goals and cope with obstacles.

Growth Through Need Frustration? Koole et al. correctly noted that SDT is characterized by its strong emphasis on the value of need supports in facilitating human development, and the damage done by need-thwarting environments. Yet, they also implied that the focus on the satisfaction versus frustration of needs misses the idea that challenges can have adaptive value in development. They further implied that setbacks and unsupportive inputs play an important and positive role in creating resilience that SDT has ignored, a point also suggested by Bauer et al. in their contribution.

First, SDT's developmental model is an *organismic dialectic* (Ryan & Deci, 2017) and concerns the ongoing struggle of the synthetic function of self to assimilate and accommodate to a world of both inner drives and urges, and outer demands and seductions. SDT has always argued that people seek our challenges, and proactively attempt to resolve incoherence and contradiction in motives through integration. In SDT, development itself is understood as a challenge. Yet, we have not found evidence (nor did Koole et al. or Bauer et al. provide any) to suggest that pervasive or serious need thwarting during challenges fosters positive development, or even builds subsequent resilience. Yes, people grow through challenges, and sometimes they emerge well and integrate new lessons, as our organismic, dialectical perspective in SDT explicitly assumes (Ryan & Deci, 2017). But we still suggest that they do so more effectively and fare better if there is a presence (or internalized history) of basic need supports. Extensive evidence underpins our view that social supports for basic needs are better than thwarts or deprivations in facilitating people becoming more

skilled and adaptive (e.g., Bindman, Pomerantz, & Roisman, 2015; Perry, Dollar, Calkins, Keane, & Shanahan, 2018), and less vulnerable to psychopathology (Vansteenkiste & Ryan, 2013).

We need not introduce or expose individuals to damaging conditions to help them grow; adding toxins to the waters of childhood is not sufficient to create "resilience." Instead, resilience concerns how individuals respond to these threats and deprivations. SDT research suggests that resilience is facilitated by support for autonomy, scaffolding of competencies, and a sense of acceptance and connection. Children, adolescents, and young adults will come upon "hard knocks" on their own, and when they do, those with a backdrop of love and support will, SDT predicts, handle them better. Detailed research in areas such as coping (e.g., Chen, Soenens, Vansteenkiste, Van Petegem, & Beyers, 2016; Pitzer & Skinner, 2017; Van Petegem et al., 2017; Weinstein, Brown, & Ryan, 2009), developmental psychopathology (e.g. Ryan, Deci, & Vansteenkiste, 2016) and psychotherapy (e.g., Zuroff et al., 2007; Van der Kaap-Deeder et al., 2014) indicates that inner individual resources and contextual need supports are both critical in understanding human growth and resilience.

Second, in this context, it is critical to consider both the *duration* and *intensity* of need-thwarting experiences, which may determine how individuals handle the encountered obstacles and setbacks. Although SDT clearly holds that long-term and/or severe need-thwarting conditions are detrimental to psychosocial development and full functioning (Vansteenkiste & Ryan, 2013), momentary experiences of need frustration, especially if they are mild or moderate, can elicit more restorative attempts to overcome the experience of need frustration, and even energize subsequent effort. For example, past research has shown that in response to need-thwarting environments individuals' attention gets more readily drawn to the frustrated need (Radel, Pelletier, Sarrazin, & Milyavskaya, 2011). Further, Fang, He, Fu, Zhang, Mo and Meng (2018) reported an experiment in which some participants were asked to complete a highly difficult task in the first session and a task of medium difficulty in a second session, while those in a control group faced medium difficulty tasks in both sessions. In the second session, an enlarged feedback-related negativity (FRN) loss-win difference wave (d-FRN) was observed in the experimental group compared to the control group,

indicating that the competence-frustrated participants had *enhanced* motivation in this subsequent

task, providing evidence for a restoration process. Similarly, although chronic loneliness compromises

individuals' psychological and physical health, brief episodes of loneliness have been found to elicit

both the desire and even attempts to re-establish social contacts, potentially leading to restoration of

relatedness satisfaction (e.g., Sheldon & Gunz, 2009; Vanhalst et al., 2015). Yet we would also

maintain that the effectiveness of such restorative attempts (i.e., whether they yield greater need

satisfaction) significantly depends on their underlying motivational basis, with autonomous regulation

of need-restorative behavior being more successful than controlled or ego-driven regulation

(Ntoumanis et al., 2014). Interestingly, the motivational quality of this regulation is itself likely a

function of the individual's developmental history of need frustration engendering more controlled

and defensive restorative attempts (Hodgins & Knee, 2002).

Overall then, how people regulate themselves in the face of need-thwarting events is a

function of a complex interplay between traits, situational dynamics and the developmental history of

need satisfaction/frustration. Although it may be true that not enough SDT-based research has yet

examined this complex interplay, the theory provides a conceptual basis to examine these dynamics.

Meta-theoretically, SDT has always recognized that individuals are proactive, which not only

involves creating one's own path under supportive circumstances but also reacting in resilient ways

under adversity (Deci & Vansteenkiste, 2004).

Points of Convergence

Although we have taken issue with a few aspects of Koole et al.'s commentary, in our view

where PSI and SDT have historically overlapped is more impressive to us than the contrasts (Ryan,

2018). PSI comes at the problem of personality through its own network of abstract constructs, some

of which, being neither explicitly phenomenological nor neurological, do not directly or easily

translate into SDT's terms or concerns. Nonetheless our "sibling" theories have often focused on

common predictions, including the negative effects of controlling environments on intrinsic

motivation; the nature of introjections and self-infiltrations; the role of autonomy in the dynamics of vitality and depletion; the functional and mechanistic underpinnings of autonomous motivation; and other problems of common interest (e.g., Kazén, Kuhl, & Leicht, 2015; Ryan et al., 1997; Thomsen, Tonnesvang, Schnieber, & Olesen, 2011).

The first author has had a number of inspirational encounters with PSI founder Julius Kuhl in which we have largely agreed on organismic nature and meta-theory, as well as the importance of both objective and subjective perspectives to the understanding of personality development and functioning. Rather than being merely a "first person perspective," we see SDT as a framework that has tried to synthesize *both* first and third person methods and perspectives into a convergent evidence base that retains the psychology of the individual at its center. Indeed, we turn now to an article now detailing some of the work at the forefront of SDT's "third person" work on autonomy, and basic need satisfactions.

Neurological Basis of SDT

From the beginning of SDT we have been interested in the biological underpinnings of human autonomy and control (Deci & Ryan, 1980b). Yet only recently has the complex mechanistic foundation for autonomous self-regulation, as well as for controlled, defensive, and compartmentalized motives come more into the light (Ryan & Di Domenico, 2016). In their review, Reeve and Lee detail their programmatic research capturing some of the major neural underpinnings of intrinsic motivation and autonomous regulation. Their studies illustrate how basic need satisfactions have associated striatal activations indicative of inherent rewards, and they suggest a specific role for the anterior insular cortex in intrinsically motivated and autonomous engagement (e.g., Lee & Reeve, 2013, 2017).

Neurological Underpinnings of Need Satisfactions

This work is part of a fast-growing area of research on the neurobiology of autonomous functioning and need satisfaction. Di Domenico and Ryan (2017b) recently reviewed evidence for the role of dopaminergic systems in the striatum and midbrain in the promotion of interest and intrinsic motivation. This evidence stems from a growing body of work on both the underpinnings of intrinsic motivation, including how a focus on tangible extrinsic rewards during an inherently interesting activity can undermine subsequent intrinsic motivation (e.g., Lee & Reeve, 2013; Murayama, Matsumoto, Izuma, & Matsumoto, 2010), and how experiences of choice can facilitate motivation, in part through greater activation of multiple brain areas such as the striatum, the anterior insular cortex, and the anterior cingulate cortex (Leotti & Delgado, 2014). Evidence from Murayama et al. (2015) showed how more self-determined choices especially recruited regions of interest including the striatum, anterior insular cortex, and anterior cingulate cortex. Further, when more autonomously motivated, participants were less reactive to negative feedback in the ventromedial prefrontal cortex, a finding that helped explain their better task performance.

Relevant too is work using event-related potentials. Meng and Ma (2015) manipulated choice between tasks of equal difficulty. When choice was available, more negative stimulus-preceding negativity and an enlarged FRN loss–win difference wave (d-FRN) indicated an enhanced anticipation of positive outcomes as well as intensified intrinsic motivation for the task. Such results are consistent with SDT's position that choice can enhance subsequent motivation. Other work using event related potentials has shown how more autonomous motivation enhances conflict detection in the anterior cingulate cortex, facilitating performance at difficult tasks (e.g., Legault & Inzlicht, 2013).

Also exciting in Reeve's review is how researchers are moving beyond neural research on autonomy to look as well at experiences of competence and relatedness, the other core psychological needs at the heart of SDT. For example, Miura, Tanabe, Sasaki, Harada, and Sadato, (2017) showed that a game featuring "action-outcome contingencies" facilitated competence satisfaction, leading

participants to report greater enjoyment than a condition that lacked such contingencies. This version of the game elicited greater activation in the ventral striatum and midbrain, indicative of this intrinsic value. Similarly, Lee and Reeve (2017) showed how the striatum and anterior insular cortex was more recruited during engagement in more optimally challenging anagram problems than during under-challenging tasks.

In fact, the integrative process central to SDT can itself be studied at a neurological level, including how it is optimized by basic need supports. Work by Di Domenico and colleagues (Di Domenico, Fournier, Ayaz, & Ruocco, 2013; Di Domenico, Le, Liu, Ayaz, & Fournier, 2016) shows how persons reporting greater basic need satisfaction have greater access to self-relevant information, allowing better decision making when faced with difficult choices, a process mediated by the medial prefrontal cortex. More recently, Di Domenico et al. (2018) showed greater medial prefrontal cortex activation in people higher in basic need satisfaction when accessing past memories or future projections of self, again, this suggests that need satisfaction conduces to more ready access to self-representations across time.

Towards Increasing Consilience

As Reeve and Lee (2019) recently described, these new frontiers of research at the interface of SDT and neuroscience represent a rare "two-way street" between neuroscience and personality research in which SDT's large body of behavioral research and work on neurological functions and structures can iteratively inform each other. SDT actively embraces both "top-down" and "bottom up" explanations for the complex workings of human motivation and personality functioning. Still navigating this two-way street will undoubtedly have its complexities, especially given that the processes underlying the integrative self are not located in any one discrete area of the brain, but rather depend on networked processes involving multiple systems (Di Domenico & Ryan, 2017b). Moreover, self-regulation builds upon evolved foundations in economical ways, capitalizing on pre-existing motivational and energetic systems that thus serve multiple functions. Nor should this work

be limited to brain processes alone. We see increasingly how cardiovascular dynamics are implicated in motivation, and how controlling social contexts affect everything from blood pressure and cortisol secretion to vagal responsiveness (e.g. Hodgins, Weibust et al., 2010; Reeve & Tseng, 2011; Weinstein, Legate, Kumashiro, & Ryan, 2016).

Reeve and Lee thus bring into focus the spirit of *consilience* that has always deeply characterized the organismic perspective of SDT—the goal of coordinating knowledge across all levels of analysis, from biological to cultural. Their review also again contradicts the idea that SDT relies almost exclusively on subjective reports. Yet in stating this, we in no way repudiate self-reports as an important inroad to the human experiences that mediate much of human behavior (Ryan & Deci, 2017), and as a critical tool within personality research more generally. Indeed, we wish to temper those behavioral and personality psychologists who, as described by Reeve and Lee "believe that neuroscientific data (i.e., brain scans) are more objective, more substantial, and even more valid or real than are other types of data (i.e., self-reports)" (p xx). As scientists, we should be proud of well-validated tools that tap human experience, and their robust predictive power (e.g., Chen, Vansteenkiste, et al., 2015), as well as tools based on observations of brain or behavior. Well-constructed self-report instruments, which collate self-observations, have an important place within psychology, and are particularly relevant to motivation. They also must be interpreted within a nomological network of evidence drawn from multiple sources.

SDT and the Phenomenon of Narcissism

Sedikides, Ntoumanis, and Sheldon's contribution brings to light one of the many interfaces of SDT with the problems of ill-being and psychopathology, and we find in this commentary some fruitful ideas about future research and theorizing. SDT has a long history of investigations into various forms of psychopathology, relating especially to its formulations concerning the "dark" and "bright" side of personality functioning.

Narcissism as a Disrupted Self-esteem Dynamic

As an organismic approach SDT embraces a *developmental psychopathology* viewpoint (DP; Cicchetti & Toth, 2009). In particular, SDT focuses on both nonclinical and clinical populations, connecting the conditions supporting optimal development with the depriving and thwarting conditions that can channel individuals towards maladaptive coping, compensatory behaviors, and psychological defense. SDT particularly finds that pervasive psychological need frustration during development can precipitate deficits in capacities for self-regulation and social connection, often through layered and cascading negative effects (Vansteenkiste & Ryan, 2013). Consistent with this DP perspective, SDT describes multiple pathways to both health and ill-being, identifying the resources associated with integrative tendencies and resilience, and, oppositely, multiple pathways of harm. Factors impacting basic need satisfaction versus frustration are evident at every level of analysis, from physiological to socio-cultural, as summarized in our comprehensive reviews this area (e.g., Ryan, Deci, & Vansteenkiste, 2016).

Narcissistic personality, a disorder in which self-esteem figures centrally, is particularly interesting from a SDT perspective. Within SDT, self-esteem is *not* viewed as a basic need (Ryan & Brown, 2003), but rather as a process of self-evaluation with its own dynamics. Insofar as an individual is concerned with or seeking self-esteem, this is seen as a *deficit motive*—something that one strives for especially when it is lacking or insecure (Ryan & Deci, 2017). SDT research thus early on focused on the dark sides of defensive self-esteem in the form of *ego-involvement* and how it readily impairs autonomous self-regulation (Ryan, 1982, Plant & Ryan, 1985). Subsequently we elaborated this work into ideas about *contingent self-esteem* as an internally controlling process (Deci & Ryan, 1995; Van der Kaap-Deeder, Wouters et al., 2016) and its relations with unstable self-esteem, as well as self-esteem characterized by high discrepancies between the implicit and explicit level (Kernis, 2003).

Given that narcissism reflects a problematic dynamic in self-esteem, we would thus qualify the claim made by Sedikides et al. that narcissism can be regulated by autonomous motives. They asserted this claim because they assumed the pursuit of self-esteem would fall at the "autonomous end" of the motivational continuum (Sheldon et al., 2017). It is true that measures of self-esteem reflecting confidence and a stable sense of social acceptance are positively correlated with autonomy (e.g., Kernis, Paradise, Whitaker, Wheatman, & Goldman, 2000). Yet, the presence of self-esteem, as a desirable by-product of experienced need satisfaction, is different from being highly motivated to feel or pursue esteem. Indeed, being concerned with self-esteem or esteem from others is largely controlled in nature (Deci & Ryan, 1995; Ryan & Brown, 2003). Individuals high in vulnerable narcissism may be prone to introjected-avoidance regulation (Assor, Vansteenkiste & Kaplan, 2009), whereas those high in grandiose narcissism may regulate behavior more on the basis of introjected-approach motives. Thus although narcissists act in ways that are intentional and instrumental to attaining self-centered goals, because of its ego-driven and compensatory nature, this reflects behavior that is internally pressured. As noted by Sedikides et al., narcissists may perceive their behavior as highly useful, and intentional, yet, the question what motivates it deserves future empirical attention. One possibility is to consider the motivational profile of both grandiose and vulnerable narcissists, which may involve a partially overlapping and partially different mix of motives (see Ratelle, Guay, Vallerand, Rose, & Senecal, 2007; Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009).

Roots of Narcissism: Contingent Regard

Examining some potential contextual precursors of narcissism, an increasing number of studies show that *conditional regard* from parents (Assor, Roth, & Deci, 2004), even when positive, relates to more contingent self-worth and can be a hazard to healthy development (e.g., Roth, Assor, Niemiec, Ryan, & Deci, 2009; Wouters, Colpin, Luyckx, & Verschueren, 2018). A conditional approach by parents, in which parents' attention and regard is contingent upon children's compliance with standards, likely also represents a potentiating factor in the development of narcissistic

tendencies, and in the extreme, narcissistic personality disorder. The suggestion by Sedikides et al. (this issue) that both excessive love and excessive control characterize the parenting styles experienced by narcissistic individuals, are consistent with this perspective. Many narcissists have had parents who loved them contingently, particularly showing affection when they acted in ways that validated or supported the parents' wishes and unfulfilled dreams (Wuyts, Chen, Vansteenkiste, & Soenens, 2015), for instance by appearing smart, clever, or attractive, a pattern entailed in Roth et al.'s (2009) conception of positive conditional regard.

In related research by Assor and Tal (2012) showed that maternal positive conditional regard (i.e., the tendency to express more love and appreciation when the child meets standards) was related to adolescents' tendency to experience feelings of superiority and grandiosity following success. Such self-aggrandizement is a key feature of grandiose narcissism. At the same time, maternal positive conditional regard was related to adolescents' tendency to engage in self-derogation after failure, even controlling for other dysfunctional dimensions of parenting such as psychological control (Assor & Tal, 2012). Thus, it appears that positive conditional regard has the potential to account at least partly for both the grandiose and vulnerable dimensions of narcissism. Future research would do well, as suggested by Sedikides et al., to examine whether thwarting of the basic psychological needs represents a mediating mechanism explaining the role of conditional regard in narcissism. Conditional regard threatens children's psychological needs, in particular because the need for relatedness is pitted against the need for autonomy (Assor, Kanat-Maymon, & Roth, 2014; Soenens & Vansteenkiste, 2010). In turn, the development of narcissism may represent a defensive strategy to cope with these threatened needs.

The Lifestyle and Relationships of Narcissists

Narcissists, especially grandiose subtypes, are not only prone to a more pressured regulation of their behavior, but, as noted by Sedikides et al., may also more strongly value extrinsic goals, such as fame, the beauty ideal, or materialism. They may cling more strongly to such goals in attempt to

garner admiration. Moreover, because parents' appreciation and approval may be (or have been) contingent, their self-esteem is insecure and must be shored up by validating their self-worth and gaining others' adulation, something they may achieve by developing a life-style centered on the extrinsic goals (Wouters et al., 2014) that are the focus of SDT's *Goal Content Theory* (Kasser & Ryan, 1996).

As Ryan, Sheldon, Kasser, and Deci (1996) suggested, to the extent that individuals have lacked autonomy support and non-contingent love, they often turn toward extrinsic values to obtain a sense of power, self-importance, and worth, accompanied by corresponding lack of concern for others (see Kasser, Ryan, Zax, & Sameroff, 1995). A few studies have even directly demonstrated the hypothesized associations between narcissism and extrinsic goals (Abeyta, Routledge, & Sedikides, 2017; Kasser & Ryan, 1996). Beyond narcissism such factors have been associated with the development of the other two personality traits in the so-called "dark triad" (Jonason, Duineveld, Middleton, 2015), that is, Machiavellianism and psychopathy (McHoskey, 1999).

Sedikides et al. thus offer many useful speculations concerning connections between narcissistic phenomena and SDT, especially concerning the role of need thwarting in development. They explicitly connect narcissistic qualities with five of SDT's current mini-theories. We would add here that there is also a rich connection between narcissism and relationship qualities that can be integrated with SDT's sixth mini-theory, relationship motivation theory (RMT; Deci & Ryan, 2014). Specifically, in RMT it is argued that true intimacy depends upon autonomy support, something narcissists may lack, at least over the long run. In initial presentation, narcissist people can often be ingratiating and even delightful, a strategy through which they can obtain positive regard and validation. Yet, true autonomy support involves empathic caring for the other and agapic concern, whereas narcissists are prone to objectify others, and need or even demand praise and adulation. This instrumental attitude, in turn, helps explain the difficulties of narcissistically prone persons to

maintain relationships over time. New methods in dyadic analysis assessing mutuality of autonomy support (e.g., Deci, La Guardia, Moller, Scheiner, & Ryan, 2006) would be well applied in this sphere to examine the instabilities in narcissistic interpersonal dynamics, and the role played by deficiencies in supporting the needs of partners.

SDT and Research on Wisdom

Bauer, King and Steger attempt to tackle a most difficult topic, that of *wisdom* and its development. In their essay they cite a number of elements from SDT relevant to wisdom, including its focus on autonomy, intrinsic goals, and eudaimonia. Yet, perhaps to highlight what is unique about their view of wisdom, they argue that SDT is rather exclusively focused on individuals' psychological need satisfactions and intuitive information processing, at the expense of a more reflective mode of functioning, which is characteristic of *wisdom*. Wisdom, they argue, is defined on objective grounds and denotes the degree to which one thinks with informed complexly about a particular value or meaning.

We first agree that thus far in its history SDT researchers have not, to our knowledge, specifically focused on wisdom per se. This is fitting with the careful growth of the formal theory, and SDT's conservative tenets of making no errors of commission as discussed above. Yet, because Bauer et al. draw rather strong boundaries between their viewpoint on wisdom and SDT, several issues need clarification. Contrary to the claim that SDT has little to offer, we see a number of ways that SDT can contribute to wisdom research.

Points of Clarification

Does SDT Fail to Address the Complex Thinking Characteristic of Wisdom? One of the main critiques of Bauer et al. concerning SDT in relation to wisdom is that they maintain: (a) wise people think complexly and reflectively; (b) yet, because (in their view) SDT is a "follow your bliss"

theory, which emphasizes the importance of following one's gut feelings, SDT would fail to account for the phenomena of wisdom, let alone provide an explanation for how the complexity and maturity characteristic of wisdom would grow or emerge.

In making this claim, Bauer et al. seem to miss that SDT is *fundamentally* about the synthetic, integrative nature of the self, which is ever moving towards more complexity and "perspectivity" with development, as well as coherence. This movement towards increasing levels of integrative functioning is not simply achieved by following one's "gut feelings", a naïve assumption and one contradictory to SDT formulations of self-regulation. SDT has argued for the role of an open and receptive awareness as a foundation for autonomous regulation (see Ryan & Rigby, 2015). In fact, it is quite central to SDT's definitions of autonomy and integrity that they pertain to actions based in non-defensive awareness, and that one endorses at the highest level of reflection, a position aligned with both analytic and phenomenological philosophical views (Ryan & Deci, 2006). As Ryan and Deci (2017) explicitly argue, both internal feelings and external environments can be controlling influences, pushing people in directions they, after deeper consideration, would not reflectively value. Thus, awareness and reflectivity are critical to the gradual movement towards greater synthesis in self-regulation and personality development.

Indeed, we would further argue that what characterizes wise thinking is not just its complexity, but, more importantly, its *synthetic* nature. To the extent thinking is synthetic it necessitates being reflective of all things considered, and is therefore encompassing in its considerations. This is in part what separates the constructs of intelligence from wisdom. Intelligence can be complex and entails knowledge. Yet, wisdom, as a synthetic form of thought that is reflective of all considerations and the perspectives of all stakeholders, brings complexity and knowledge to bear *in a particular way*. A wise person has capacity to both differentiate and integrate factors within a situation as well as a *disposition* to apply an open, receptive, caring, and synthetic view.

As such, wise thinking requires one to transcend one's ego-involvements, which detract from and even interfere with wise thinking. Egoistic thinking can be complex, but it is usually not wise. Wise thinking should thus be associated with *hypo-egoic tendencies* (Brown and Leary, 2016). As detailed by Ryan and Martela (2016), the pursuit of self-transcendent goals involving caring for others characterizes eudaimonia, and we think wisdom. Wise people develop capacities to transcend ego-involvements, and engage in more integrative processing, a fundamental growth process within SDT (Niemiec, Ryan, & Brown, 2008).

This focus on what matters most, a flexibility in thought, and a disposition of reflective consideration, are all aspects of wisdom, each of which could be informed by SDT's developmental models, which predict the development of executive and self-regulatory functions, and the growth of empathy, concern for others, and related outcomes (see Ryan, Deci & Vansteenkiste, 2016). For instance, SDT-based research has shown that need-supportive socialization is conducive to more complex, flexible, and open-minded cognitive processing, both in early childhood (e.g., cognitive self-regulation; Bernier, Carlson, & Whipple, 2010) and adolescence (e.g., an information-oriented style of identity exploration; Smits et al., 2008; Soenens, Berzonsky, Dunkel, & Papini, 2011). Whereas need-supportive socialization has been found to contribute to empathic functioning in teens (e.g., Miklikowska, Duriez, & Soenens, 2011), controlling socialization predicts deficiencies in 5-6 year-olds' empathic responsiveness to sad feelings of others (e.g., Roth & Assor, 2010).

The emergence of another attribute of wisdom, namely the development of a broad knowledge base, can also be informed by SDT. One of the most central processes underlying SDT's model of growth is *intrinsic motivation*, which we have repeatedly connected with the Piagetian process of assimilation that Bauer et al. argued SDT neglects (see Ryan and Deci, 2013). There is a massive SDT literature on role of intrinsic and autonomous motivation in learning and growth. This is critical, because, s noted by Csikszentmihalyi and Rathunde (1990) in their earlier, and we think highly insightful, theory of wisdom, they posited that a wise person is likely also a curious, interested person. Such an individual finds the cultivation of knowledge and understanding personally satisfying and edifying, and thus intrinsic motivation is likely essential to the development of wisdom. In SDT

intrinsic motivation is seen as underpinning the structural changes associated with cognitive development (Deci & Ryan, 2013; Ryan, 1993), a position also taken by Flavell, Miller, and Miller (2002) among other Piagetians. Multiple studies also show how intrinsic motivation contributes to deeper processing and better performance (Cerasoli et al., 2014; Vansteenkiste, Zhou, Lens, & Soenens, 2005).

Is SDT limited to a Subjective View of Eudaimonia? Bauer et al. claim further that wisdom is also a critical facet of a eudaimonic life, an issue that in their view SDT ignores because it (again in their view) sees eudaimonia as merely a subjective phenomenon. As noted by Bauer et al., we have repeatedly written about this topic (e.g., Ryan and Huta, 2009; Ryan, Curren & Deci, 2013), but our view is not at all consistent with the one they describe. Indeed, we think they may be mistaking SDT with other eudaimonic perspectives. We have strongly argued that a true understanding of *eudaimonia* does *not* define it as a subjective state (e.g., Ryan, Huta & Deci, 2008). The wisdom of Aristotle's thinking on the good life is rather that it prescribes *ways of living* that embrace intrinsic values such as self-development, excellence, virtue, benevolence, and generativity. People living in a eudaimonic way have a greater focus on intrinsic over extrinsic values. We suspect the pursuit of these intrinsic values would also characterize wise people, who would be aware of what matters most, and be less focused on self-image, fame, or materialism. Consistent with this, evidence from Huynh, Oakes, Shah, and McGregor (2017) connects the pursuit of virtues such as giving to the community (an intrinsic aspiration) with indicators of wisdom.

The pursuit of intrinsic, relative to extrinsic, goals has been found to predict a wide range of indicators of well-being (Dittmar, Bond, Hurst, & Kasser, 2014). In contrast, even when attained, extrinsic goals do not readily produce benefits, even predicting lower levels of ego-integrity and less death acceptance among elderly (Van Hiel & Vansteenkiste, 2009). Yet it is important to note that although the pursuit and attainment of intrinsic goals typically contributes to happiness and well-being, intrinsic goals do not have happiness or satisfaction as their aim (e.g., Weinstein, Ryan, & Deci, 2012). Instead, these subjective benefits are by-products of a lifestyle focused on the pursuit and enactment of eudaimonic values. This was, in fact, exactly the basis by which Ryan and Huta (2009)

criticized Kashdan, Biswas-Diener and King (2008) when it was they who argued that psychologists should abandon eudaimonic perspectives, and instead focus on subjective satisfaction and positive affect as the primary benchmarks for a "good life," a position SDT explicitly opposes.

This focus on the importance of intrinsic goals fits with SDT's broader perspective on wellness and flourishing, which is not restricted to subjective happiness or life satisfaction, but instead focuses on the ideal of a *fully functioning* person (Ryan & Huta, 2009; Ryan & Martela, 2016). Apart from pursuing intrinsic goals, we characterize a fully functioning person as someone having authentic awareness and capacities for autonomy, integration and connection with others. As it turns out, the more aware and autonomous the person, the more responsible, prosocial, and relational they turn out to be. Probably also, the wiser.

Does SDT fail to Address People's Handling of Difficulty? Bauer et al. have a further concern: namely they argue that SDT doesn't address "road blocks and tragedies," the overcoming of which they suggest leads to wisdom. As we stated earlier, this claim seems ill-fitting with SDT's dialectical framework of challenge and growth. It also ignores SDT's many contributions to counselling, clinical and developmental psychopathology literatures (e.g., Ryan Vansteenkiste, and Deci, 2016; Ryan, Lynch, Vansteenkiste, and Deci, 2011; Zuroff et al., 2007). SDT research has addressed such topics as suicidal risk (Britton, Van Orden, Hirsch, and Williams, 2014), depression (e.g., Quitasol, Fournier, Di Domenico, Bagby, & Quilty, 2018), eating disorders (Vansteenkiste, Soenens, & Vandereycken, 2005), addictions (Zeldman, Ryan, & Fiscella, 2004), and severe mental illness (Jochems, van der Feltz-Cornelis, van Dam, Duivenvoorden, & Mulder, 2015). Relevant too to people's "road blocks and tragedies" would be SDT studies on: mindfulness and coping with stress (e.g., Donald, Atkins, Parker, Christie, & Ryan, 2016; Weinstein, Brown, and Ryan, 2009); on coping with need-thwarting (Chen, Soenens, Vansteenkiste, Van Petegem, and Beyers, 2016; Van Petegem et al., 2017); on emotional reliance in times of distress (Ryan et al., 2005); or when facing daily stigma (Legate, Ryan, and Rogge, 2017). Further, SDT-based research has addressed individuals' integration of identities that may be discrepant with personal or social norms. For example, need-supportive conditions have been shown to predict less conflicted and more integrated sexual identity (Weinstein

et al., 2012) and more open disclosure (Legate, Ryan, &Weinstein, 2012; Legate, Ryan & Rogge, 2017). In sum, Bauer et al.'s description of SDT as "having difficulty" with negatives and as a 'feel-good theory' seems at best a selective view of the literature of SDT, which is actually rather extensive when it comes to dealing with life's difficulties.

SDT does not have, however, a sound bite answer to how people "grow" through life challenges and obstacles. The fact of the matter is that many do not. Many are crushed or overwhelmed by the challenges that beset them, especially when need thwarting conditions are chronic or severe. SDT would argue that growth in the face of such circumstances would require the *integrative process,* and would be facilitated by need-supportive others.

There is growing body of research that sheds light on this complex process of integration under adversity (see Weinstein et al., 2013). To illustrate, Van der Kaap-Deeder, Vansteenkiste, Van Petegem, Raes, and Soenens (2016) showed that individuals' acceptance, of a past need-satisfying or need-thwarting event, indicative of integration, predicted more event-related positive affect. In contrast, continued rumination about the event, signaling poor integration, related to event-related negative affect. Presumably, such acceptance, indicative of a successful integrative process, buffers the potentially detrimental impact of need-thwarting events and adversity more broadly. SDT further maintains, in contrast to the romantic and somewhat individualistic view seemingly embedded in Bauer et al.'s "wise hero" narrative that people can more fully process and more beneficially grow from challenges when they can access social partners that are need-supportive. Having autonomy-supportive others, and engaging in emotional reliance on them (Ryan et al., 2005) facilitates growth during challenge, and is an aspect of what "resilience" looks like.

Future Directions: Attributes of Wise People

Although it may be an "error of omission" that SDT has not specifically addressed wisdom, as suggested above, the theory contains multiple ideas that we think could meaningfully contribute to the research on both wise thinking and wise personalities. Before leaving the topic a few additional issues deserve mention.

Critically, for people to adopt a reflective, deliberative stance at difficult time, an attribute of wisdom, they need to possess emotion regulation skills. We specifically expect that wisdom is related to a more *integrative emotion regulation* (IER; Ryan et al., 2016). IER facilitates the capacities required to set aside injury and ego-blows in one's deliberations. Specifically, IER entails going *toward* affect, both positive and negative, accepting them as sources of input, information and growth (see Ryan et al., 2016; Roth et al. 2017), a process also essential in psychotherapy (Ryan & Deci, 2008; Ryan & Deci, 2017). IER involves *taking interest* in and accepting negative emotions, and rather than positively reframing or suppressing them, listening to what they have to tell us. As Ryan, Deci and Vansteenkiste (2016, p. 409) detailed, a person optimally has: "rich access to both positive and negative feelings, a capacity to express them, and the ability to integrate and use them to inform one's behaviors and goals". Continuing, they argue that: "individuals high in emotional integration are more likely to be receptive to emotional signals, to take interest in them, and to experience them as valuable inputs to actions. In contrast, if regulatory processes are rigidly introjected and thus in conflict with the emotions, people are likely to suppress the feelings and thus ignore their personal meaning." Thus, IER allows for a deeply reflective, flexible, and complex way of processing emotions and of learning from emotions for future behavior.

Empirical research supports this IER approach. For example, Roth et al. (2017) examined the emotional, physiological, and cognitive consequences of IER and emotion suppression in relation to a fear-eliciting film. People high in IER evidenced more open and fuller processing of fearful stimuli to which they were exposed, leading to less distress on subsequent exposure. IER has also been found to promote a greater ability to support a partner in handling negative emotions (Roth & Assor, 2012). Brenning, Soenens, Van Petegem, and Vansteenkiste (2015) reported that increases in IER were associated with increases in self-esteem among young adolescents over a one-year interval, whereas suppressive regulation predicted increases in depressive symptoms.

In addition, we expect that in understanding and dealing with others, wise people would be more likely to practice autonomy support than control. They would, that is, work to understand the others' *internal frame of reference,* a process that SDT places as the foundation of autonomy support.

They would be accepting of others' experience, even when setting limits on or structuring behavior. They would not be manipulating or controlling, instead facilitating volitional change or volitional adherence to the status quo. Their focus would be "agapic", and fitting with a eudaimonic life focus.

We further expect that wise persons are likely to be happy, in large part because of basic need satisfaction experienced as they engage in positive acts. SDT research shows how acts of helping (Weinstein & Ryan, 2010) civic duty (Wray-Lake, DeHaan, Shubert, & Ryan, 2017) and giving (Martela & Ryan, 2016) fulfill basic psychological needs and result in greater happiness. Ironically, need satisfactions and their benefits accrue when happiness is *not* one's aim; helping for egoistic aims actually undermines that satisfaction, for which SDT provides attribution (Ryan & Deci, 2017) and evolutionary (Ryan & Hawley, 2016) accounts.

Finally, in line with Csikzentmihalyi and Rathunde (1990), wisdom is something largely acquired through intrinsic, and (we would add) autonomous motives. External or introjected motivational bases for developing wisdom would itself lead to the blind spots and biases that characterize so much of what we know as not-wise thinking. We thus think that intrinsic and integrative motivational tendencies are at the heart of wisdom development.

In sum, it is true that wisdom has not been a direct focus of SDT, either conceptually or empirically. As noted, SDT builds itself slowly, and tries to avoid errors of commission. The first author was exposed to much work by Baltes, Staudinger and other scholars when at Max Planck in the mid-nineties, and that exposure gave him a deep respect for the complexities of wisdom research, as well how easily it can be conflated with issues of intelligence and mere complexity. This is not a topic to tread into lightly. That said, we felt a need to nuance the rather strong comparative discussion of Bauer et al. by (a) clarifying that SDT is not just a theory about "gut feelings", but considers deep reflection to be integral to the movement towards more synthetic functioning (as well as wisdom); (b) highlighting the presence of both subjective and objective criteria to operationalize individuals' full functioning; (c) briefly reviewing relevant conceptual and empirical work that speaks to the issue of resilience and overcoming adversity, with the process of integration and contextual need-supports

being critical therein; and (d) highlighting many ways that SDT may shed light on the topic of wisdom and its development. We hope and expect that as wisdom research develops we will find strong links to central SDT constructs such as awareness, autonomy, intrinsic values, and integrative emotion regulation.

Relations between SDT and Whole Trait Theory

We turn now to some reflections on *Whole Trait Theory* (WTT) introduced by Prentice et al. We are particularly excited by the interface of Big Five theorizing and SDT, and the WTT in particular, with its division of descriptive (i.e., characteristics of variability in trait manifestations such as mean level, spread, and skew) and explanatory (i.e., the processes that account for trait manifestations) aspects of trait functioning. In fact, there has already been interesting work at this interface of the big five and SDT, which we shall briefly review before turning to new integrative possibilities.

Variability in Traits as a Function of Experienced Need Satisfaction

Over two decades ago we became interested in the relations between SDT's constructs and the "big-five" personality traits so central to contemporary personality research. The series of studies we review here are directly relevant to the *explanatory aspect* of WTT, or the role that situations and their construal has in impacting trait expressions.

In an early piece, Sheldon, Ryan, Rawsthorne, and Ilardi (1997) hypothesized that there is likely to be considerable variability in big five traits across life roles, such as being a student, employee, child, friend, or romantic partner. They reasoned in accord with SDT that this variation would in part reflect the extent to which these roles lead people to feel differentially *authentic*—that is, where they could not be their true selves. The researchers had participants describe the degree to which they felt authentic (i.e., autonomous and acting in accordance with abiding values and

preferences) in various roles, along with measures of role-specific big-five traits, and ratings of how satisfied they were in each role. As predicted, there was considerable variation in big-five traits across roles. Further, when in roles where people felt authentic they reported not only more satisfaction, but also higher extraversion, agreeableness, openness, and conscientiousness, and lower neuroticism.

Lynch, La Guardia, and Ryan (2009) used multilevel modelling to examine a similar question (see also Fleeson & Leicht, 2006; La Guardia & Ryan, 2007). They had samples from the U.S., Russia, and China rate their actual and ideal selves using "big–five" trait measures (Costa & McCrea, 1992). They then were asked to rate how they viewed themselves in terms of trait expressions when spending time with each of several primary social partners. At a within-person level, participants' trait ratings were closer to their ideal "big five" when they were with autonomy supportive social partners. Important for this discussion, participants were again more open, extraverted, agreeable, conscientious, and emotionally stable when with others who were supportive of their need satisfactions, a result consistent across these distinct cultural samples.

Church et al. (2013) expanded on these findings in a study that included participants from five countries (Venezuela, Philippines, China, Japan, U.S.). Across samples, they found that within-person fluctuations in need satisfaction co-varied with openness, agreeableness, conscientiousness, and emotional stability, as well as more positive and less negative affect. Church et al. highlighted that SDT's basic need satisfaction accounted for "a substantial portion (about 20-45%) of the within-person variability in personality traits" (p. 932).

The variability in individuals' trait manifestations is extremely important for both SDT and Big–Five thinking. Although we tend to think of traits as differences between people, the Big-Five are also personality attributes the expression and development of which is founded upon distinct brain systems that can be more or less activated by certain contexts (Di Domenico & Ryan, 2017a). Contexts described by SDT as need-supportive lower threat and enhance energetic and social

functions in individuals, which is reflected in changes in trait expressions. Remarkably this situation/trait expression linkage appears to be consistent across cultures, helping support its basic connection to human nature.

Individual differences in SDT and Big Five Traits

As noted by Prentice et al., *Causality Orientations Theory*, one of SDT's mini-theories, deals explicitly with individual differences in motivational dispositions a framework developed independently of the big five. Causality orientations (of which there are three types, autonomous, controlled and impersonal) are intended to denote characteristic ways individuals initiate and regulate behavior, and these orientations are thought to emerge from a history of interactions with one's environment, thereby not likely being simply reducible to big five traits. Both taxonomies were also developed in different ways, with causality orientations being theory-grounded and with the big five traits being largely empirically identified from a bottom-up approach (Goldberg, 1990). Yet in spite of these different backgrounds, it remains worthwhile to examine their relation and unique predictive validities.

In a large sample of students, Olesen, Thomsen, Schnieber, and Tønnesvang (2010) showed that Autonomy Orientation items fell onto a factor that was largely independent from big five trait factors, whereas the Control and Impersonal items evidenced both separation and overlap with Agreeableness and Neuroticism, respectively. Subsequently Olesen, (2011), surveyed a representative sample of Danish adults on measures of both SDT's causality orientations and the Big Five personality factors (McCrae & Costa, 2003). The Autonomy and Control orientations were again distinct from the big five, although, as before, the control orientation was correlated (negatively) with agreeableness, and the autonomy orientation was positively associated with extraversion and openness. The impersonal causality orientation showed more overlap with neuroticism, as might be expected. Findings also revealed that the causality orientations explained additional variance in a range of outcomes beyond what was collectively accounted for explained by the big five dimensions.

More recently, Reeve, Jang, and Jang (2018) examined the relative contributions of causality orientations and big five traits in predicting teachers' autonomy-supportive and controlling teaching styles and their susceptibility to benefit from a teacher training intervention. High levels of openness and agreeableness predicted teachers' autonomy support at baseline. Yet a high autonomous orientation predicted an increase in autonomy-support post-intervention, whereas a high controlled orientation predicted a post-intervention change in controlling teaching. Thus, the big five were relevant to explain initial individual differences between teachers, whereas causality orientations were more relevant to dynamic changes across time and susceptibility to the environment (in this case an intervention).

Such studies suggest the promise of WTT's differentiation of explanatory and descriptive aspects of traits as they relate to SDT constructs. But as they highlight, integrative research has yet to really advance, and there are many specific hypotheses that can be formulated at this interface. Fleeson et al. made several suggestions about ways in which SDT and existing personality trait frameworks could be helpful to one another. Here we elaborate on a number of their suggestions. In an overall sense, however, we agree that psychological needs satisfactions and frustrations are likely to be intertwined with trait development and trait manifestations in highly dynamic and reciprocal ways, with processes taking place both between-person (i.e., individual differences) and within-person (across time, roles, and situations) and across both long and short-term intervals. Against the background of this overall assumption of transactional and multilevel interplay between needs and personality, we forward three more specific areas of future research.

Long-Term Impact of Need-Relevant Conditions on Personality Development

Psychological need satisfactions and contextual influences on the needs are likely to play a role in the development of individuals' traits over time. Most evidence for such longer-term influences comes from research on dysfunctional personality traits (Csatho & Birkas, 2018). For instance, cold, rejecting, and controlling (i.e., need-thwarting) parenting has been shown to be involved in the development of various traits such as Machiavellianism (Lang & Birkas, 2014),

borderline personality disorder (Fruzzetti, Shenk, & Hoffman, 2005; Ryan, 1995; Stepp et al., 2014), and self-critical perfectionism (Koestner, Zuroff, & Powers, 1991; Kopala-Sibley & Zuroff, 2014; Soenens et al., 2008). Considered from SDT, these maladaptive traits can be seen as defensive and compensatory responses to deal with chronic exposure to need-thwarting conditions (Deci & Ryan, 2000; Ryan et al., 2016).

What remains unclear to date is why different people develop different traits in response to need thwarting (i.e., a question of multi-finality in development). Future research could attempt to achieve more precise insights into trait development in a number of ways. First, it is important to provide a comprehensive and at the same time fine-grained picture of the need-thwarting conditions. SDT offers a useful framework in this regard because it distinguishes between three broad dimensions of need-thwarting socialization: relatedness thwarting (i.e., cold, indifferent, and rejecting), competence thwarting (chaotic, unpredictable, and critical), and autonomy thwarting (intrusive, domineering, and controlling) (Soenens, Deci, & Vansteenkiste, 2017; Vansteenkiste & Soenens, 2015). Each of these dimensions could be involved somewhat differentially and uniquely in different dysfunctional traits. Or different combinations of need-thwarting dimensions could have differential implications, a possibility that could be addressed using more person-centered statistical approaches (e.g., Haerens et al., 2018). Moreover, SDT provides a fine-grained taxonomy of different socialization strategies within each of these broader dimensions. For instance, autonomy thwarting consists of both internally pressuring practices (i.e., practices that appeal to feelings such as shame, guilt, and separation anxiety, including love withdrawal and shaming) and externally pressuring practices (i.e., practices that pressure children from without, such as threats of punishment and withdrawal of privileges). Moreover, controlling practices can be subtle and seemingly mild (e.g., positive conditional regard) or more blunt and explicitly domineering (e.g., physical punishment) (Soenens & Vansteenkiste, 2010). Different practices might be relevant to different personality traits, with subtle controlling practices for instance being more strongly involved in narcissism (as discussed before) and with more blunt and harshly domineering practices being involved more strongly in other traits such as self-critical perfectionism (e.g., Soenens et al., 2008).

The role of needs in personality development can also be examined by researching how need-supportive and need-thwarting socialization interacts with genetic predispositions and early temperamental precursors of later personality traits. Most likely, a history of need-thwarting contributes to specific personality traits in combination with biological sensitivities and early behavioral inclinations (e.g., Hooper, Bryan, and Hagger, 2014).

There is also a need to go beyond examinations of the developmental roots of dysfunctional personality development and to address also the role of need-supportive conditions in adaptive, mature, and resilient personality development. SDT's distinction between bright and dark developmental pathways (Vansteenkiste & Ryan, 2013) might be particularly informative for research endeavors in this area. Here, greater precision can be achieved by relying on a comprehensive and detailed framework for conceptualizing and measuring "the environment" as well as by attending to narrower facets subsumed under the broad Big Five dimensions. Given that we assume an impact of need support and need satisfaction on trait development and expressions, it is important to "drill down" into these dynamics by looking at how different facets are related to specific need supports and thwarts (and corresponding satisfactions and frustrations). Because some of the neurobiological systems associated with trait aspects are known (Di Domenico & Ryan, 2017a) knowing how these are catalyzed in need supportive or satisfying conditions will be especially informative.

Effects of Personality on Need-Based Experiences

So far we discussed how need-based experiences may affect trait manifestations situationally and across longer periods of time. Yet these influences are likely to be bidirectional, as personality traits are also likely to affect experiences of need satisfactions. Indeed, studies of variability in personality traits may help us further understand how people get needs met or frustrated. To illustrate, in a meta-analytical review of the role of need-based experiences at work, Van den Broeck, Ferris, Chang, and Chang (2016) reported that agreeableness, conscientiousness, and extraversion related positively to the satisfaction of all three needs, whereas neuroticism was negatively related. Given the

cross-sectional nature of such studies, the processes through which personality and need-based experiences are linked remains unclear. Such processes are likely diverse, but include the appraisal of events, as well as the presence of evocative and proactive mechanisms (Caspi & Roberts, 2001).

Appraisals. In terms of contextual appraisals, personality may affect the *functional significance* of external events (Deci & Ryan, 1987; Vansteenkiste, Ryan, & Deci, 2008). That is, depending on their personality, individuals may be more inclined to see the informational and growth-promoting value of external events (e.g., rewards, provision of choice, or guilt-induction) or, in contrast, interpret these same events in more evaluative and threatening terms. Although a more informational appraisal style contributes to need satisfaction, a more evaluative appraisal may contribute to need frustration. The degree to which personality differences color the interpretation of these external events in particular and the social environment more broadly may depend on multiple factors, including: (a) the way of operationalizing the external event (i.e., objectively or perceived); (b) the congruence between the type of assessed personality variables and the type of studied environmental features; and, (c) the degree of need-supportiveness and need-thwarting characteristic of the studied environmental events as such. The more ambiguity, the more room there is for personality difference to play a role in modulating the interpretation of the environment.

Because the number of potentially relevant personality differences is extremely large, much as the number of contextual supports and thwarts, the literature on personality by need-relevant contextual conditions is large, and only selectively reviewed herein. Directly considering the role of big five traits, recent studies have begun addressing whether personality moderates the association between psychologically controlling parenting and outcomes, with adolescent-perceived and parent-reported differences in parenting being studied both at the level of individual differences (Mabbe, Soenens, Vansteenkiste, & Van Leeuwen, 2016) and at the level of daily, within-person fluctuations (Mabbe, Vansteenkiste, et al., 2018). These studies have shown that the number of moderating effects (across different outcomes and across informants) is limited. Important to SDT, in no findings did children, whatever their scores on personality dimensions, actually benefit from psychologically controlling parents. Thus, the moderating effects obtained were a matter of *gradation*. The most

consistent personality moderator across the studies was agreeableness, which can play a protective role against psychologically controlling parenting, particularly when considering externalizing problems as an outcome. Although children and teens high on agreeableness were less likely to display externalizing problems in response to psychologically controlling parenting, they evidenced internalizing distress, indicating that they paid an emotional cost for need-thwarting parenting. Agreeableness did not attenuate all costs. Such findings merge with SDT's universality claim which suggests that individuals regardless of their personality traits should pay a price for exposure to need thwarting.

To better understand differences in gradation and type of costs associated with controlling parenting, future work may consider the variation in individuals' coping strategies in relation to need frustration (Soenens, Vansteenkiste, & Van Petegem, 2015). Although people with more under-controlled and impulsive traits (e.g., low conscientiousness and agreeableness) may more easily engage in blunt defiance when facing need frustration, people with more over-controlled and restrictive traits (e.g., introversion and shyness) may more easily submit to need thwarting conditions, complying even with controlling demands and suppressing negative experiences. In turn, oppositional defiance may give rise to more externalizing problems following need frustration, whereas submissive compliance may increase risk for emotional distress (Skinner & Zimmer-Gembeck, 2007).

Future work may also move beyond the classic big five traits and consider surface personality traits that yield direct relevance to the studied contextual conditions. To illustrate, in two choice experiments, one among late elementary school children (Waterschoot, Vansteenkiste & Soenens, 2018) and another among mid-adolescent tennis players (De Muynck, Soenens, &Vansteenkiste, 2018), the contextual offer of choice yielded less pronounced advantages (i.e., reduced autonomy, less interest) for those individuals high in indecisiveness. Thus, children high in indecisiveness reaped less of the benefits of choice, although these benefits were not completely cancelled out. Another vulnerability factor concerns individuals' self-critical perfectionism, which was found to moderate the effect of contextually induced positive, relative to negative, normative feedback in tennis players,

such that especially those high in self-critical perfectionism experienced the negative feedback as competence-thwarting (De Muynck, Vansteenkiste, Vandekerckhove, and Soenens, 2018).

Though some personality variables may create an enhanced sensitivity for the costs associated with need-thwarting environments, other personality differences may play a more protective role. For instance, adult employees who were high in trait mindfulness suffered less from controlling work contexts (Schultz, Ryan, Niemiec, Legate, & Williams; 2015). Similarly, individuals high on autonomous causality orientation did not report a decrement in intrinsic motivation and free-choice behavior when provided a reward for engaging in an intrinsically motivating activity, while those high in control-orientation did (Hagger & Chatzisarantis, 2011). Presumably, the functional significance of the reward was different for autonomy-, relative to control-oriented individuals (see also Hagger, Koch, & Chatsizarantis, 2015). Other studies have focused on individual differences in students' motivational orientations, showing that even controlled individuals suffer from exposure to controlling teaching (De Meyer et al., 2016), whereas autonomy-oriented learners can derive greater benefits from a need-supportive class (Flünger, Mayer, & Umbach, 2018; Mouratidis, Vansteenkiste, Sideridis, & Lens, 2011).

This selective review points to an increasing number of SDT studies are addressing a variety of interpersonal differences, including big five traits. These studies vary widely, and it seems premature to draw any conclusion whether some personality features systematically attenuate or amplify the costs and benefits associated with need-thwarting and need-supportive environments. The various issues mentioned (i.e., type of design, type of studied trait and outcomes) all require consideration to draw nuanced conclusions regarding the role of personality in coloring the interpretation of external events and the outcomes that follow.

Evocative and Proactive Mechanisms. Expression of certain personality traits can elicit different responses from the social environment, with these responses affecting needs-based experiences. For instance, a well-established finding in developmental research is that children with more difficult traits (and impulsive traits in particular) pull for more need-thwarting parental

responses (e.g., harsh control) (Laukkanen, Ojansuu, Tolvanen, Alatupa, & Aunola, 2014; Lengua & Kovacs, 2005). Conversely, it is comparatively easier for parents to provide need support (which requires patience and flexibility) when children display resilient personality traits. In turn, parents' differential responses to traits are likely to feed into children's needs experiences, with the latter experiences further affecting adaptive (or maladaptive) personality development in a mutually reinforcing way.

In addition to these evocative processes, personality is likely to shape individuals' needs experiences in a proactive fashion. People scoring high on more mature and resilient traits may have more capacity for need-crafting. That is, they may be better able to select contexts and seek the company of people who provide opportunities for need satisfaction. Legault, Ray, Hudgins, Pelosi, and Shannon (2017) showed that individuals with higher autonomous causality orientations reported more asserted autonomy, that is, greater capacity to seek opportunities for autonomy on one's own. In contrast, people with more vulnerable personality traits may be more likely to select contexts that confer risk for need frustration. Individuals high on self-critical perfectionism, for instance, may be more inclined to select themselves into highly evaluative and competitive contexts, with such contexts increasing the probability of experiencing need frustration.

In sum, trait development and trait manifestations do not only result from needs-based experiences but also impact on those experiences through reciprocal processes. These processes play a role in both situation-specific adaptations, as well influencing as long-term, developmental outcomes. The interface between trait theory and the dynamic motivational view of SDT is thus exciting and generative, and as Prentice et al. highlight, there are many salient pathways toward integration and further discoveries.

Motive Disposition Theory and SDT: A Synthesis?

Schuler and colleagues focus on *Motive Disposition Theory* (MDT), derived from the now over 80-year old *personological approach* (e.g., Murray, 1938). In opening their piece, they ask us to consider three possibilities: a) subsuming SDT into MDT or vice-versa; b) not trying to integrate

them; or, c) finding some basis for integration. To respond to this question, it seems critical to clarify the criteria upon which integration can be founded. Vansteenkiste and Mouratidis (2016) proposed three. First, a compelling theoretical necessity is warranted. Different frameworks need to be *complementary*, addressing each other's lacunae by their respective strengths. Second, *clarification* of the conceptual and operational boundaries of core concepts of different frameworks is required to avoid a proliferation of jargon and assessment tools. Finally, theoretical unification requires a clarification of *meta-theoretical foundations*. For theories to be integrated, they need to be rooted in a similar view on human nature. This requires scholars to grabble with fundamental questions such as the question whether individuals are naturally proactive, taking initiative and being self-directed or whether, instead, they are better portrayed as being passive or reactive. We address these issues below as a way of reflecting on questions raised by Schüler et al.

Issues of Conceptualizations, Terminology, and Assessment

Motives and Needs. MDT is nearing 90 and SDT is now over 40, and yet to date there have been few attempts at integration (see Koestner & McClelland, 1990, for an exception). One reason for a lack of exchange between SDT and MDT is because their respective terminologies are not well aligned. Within MDT, the terms motive and need are used interchangeably (McCllelland, Atkinson, Clark, & Lowell, 1953). Unlike MDT, SDT explicitly distinguishes these notions. The term *needs* is used in reference to a limited number of universal nutrients, the satisfaction of which is considered essential for growth, integrity and wellness. In contrast, the term motive refers to people's (conscious or nonconscious) reasons for initiating and sustaining behavior. We were, in fact, surprised at Schüler et al.'s statement that "there is agreement between MDT and SDT that satisfaction and thwarting of needs have positive and negative effects on different aspects of health, which include effects on emotional and physical well-being and life satisfaction in general" (p. XX). Although this is an emphasis within SDT, which explicitly places importance on the satisfaction and frustration of three

specific psychological needs for wellness, we are not convinced that any similar formulation has been either widely embraced or researched to date within MDT.

Within *Organismic Integration Theory*, SDT has differentiated taxonomy of regulations that can apply to any motive, including achievement, affiliation and power. From a SDT perspective, the regulation underlying any motive would strongly qualify any of its effects on wellness. Thus, for example, in SDT there are varied achievement motives, with some individuals being pursing success and achievements to demonstrate their worth, and others doing so out of identified or intrinsic motives (e.g., Vansteenkiste, Smeets, et al., 2010). These different regulations underlying "achievement motivation" yield distinct effects.

Further, needs and motives are dynamically related in SDT, with experiences of need satisfaction promoting greater autonomous engagement, but improved need satisfaction also accounting for benefits associated with more autonomous regulation (Chen, Vansteenkiste et al., 2013; Weinstein & Ryan, 2010). Notably, because differences in autonomous behavioral regulation reflect more open, non-defensive functioning, as individuals' behavior is congruent with their personally held values, preferences, and needs, it can be theoretically predicted that the size of the discrepancy between individuals' implicit and explicit motivational system should be reduced among those regulating their behavior in more autonomous ways. As noted by Schüler et al., implicit and explicit assessments are typically unrelated, yet, this discrepancy varies widely across individuals. SDT then provides a theoretically grounded predictor, which has been found to predict lower implicit-explicit discrepancies in the motive for achievement, a finding that has appeared across a variety of cultures (Hofer et al., 2010; Thrash & Elliot, 2002).

Non-equivalence of the contents of MDT and SDT "needs". Achievement motivation is central to MDT, but from the SDT view it is a decidedly mixed construct. Achievement motivation has often been discussed as being related to intrinsic motivation, and it sometimes is. Yet, when one looks at the origins of MDT's implicit measures of achievement motivation, they were developed by inducing what in SDT we call "ego-involvement" (McClelland. 1961). Conceptualizations and measurement of

achievement motivation, implicit and explicit, have in fact been mixed in terms of the types of motives and needs being coded or assessed, and can range from controlled motivations to autonomous and intrinsic motivations, and from performance- to mastery-focused. Furthermore, SDT already has its own account of the varied motives that can underpin achievement, distinctions that are without parallels in MDT, and which have a strong history of empirical support.

Power, another core need within MDT, also has little correspondence to any SDT basic need. Instead, in SDT power is more typically understood as an extrinsic goal (e.g., Grouzet et al., 2005). Schüler et al. recognize that, even within MDT, power is a conceptually mixed bag, containing at least two facets: (1) desires for influence, control or domination, which can develop in either anti-social or pro-social directions; (2) desire to resist external influence and to act independently (both of which SDT strongly distinguishes from autonomy).

The issue of the multi-faceted nature of MDT's needs is particularly important regarding the kind of interaction effects Shuler et al. seek. Even when a moderation effect of an MDT "need" on the effects of SDT's need satisfactions emerges, interpretation will be at best muddy. It will not be clear what aspect of the MDT construct is being tapped in its relations with the more narrowly specified basic needs of SDT. Thus, as this brief discussion indicates, conceptual differences between MDT's core motives and SDT's basic needs are extensive, we think much deeper than Schüler et al. acknowledged.

Implicit motivation and its measurement. Within MDT, the importance of using implicit measures is heavily stressed based on the argument that, given their early socialization roots, individual differences in needs may be deeply ingrained and not accessible through self-report. Therefore, in many studies, participants complete a series of projective stories content of which is subsequently coded by external raters.

Of central concern in this context is the meaning of the term *implicit*. Measures of implicit motive "strength," derived from rating people's projective stories, do not necessarily reflect anything "unconscious" in the dynamic sense, or "fast" in the cognitive sense of accessibility and intuitive

processing. Although respondents may not know the criteria of scoring, they are making explicit statements, which then get coded. How this type of "implicit" measure then relates to reaction time-based measures such as the implicit associations test (IAT) and /or the neurological responses to which implicit motives are presumably tied has received limited attention, even though this has huge implications for any meaningful speculations about "dual processes" in motivation.

A second, more important concern is that it remains fairly unclear within narrative-based measures what they exactly assess. As noted by Busch and Hofer (2012, p. 130), "implicit motives are broad constructs with a lot of facets." Hence, the question is open whether these implicit measures reflect people's *desire* to get a need met, the *importance* attached to a need, a previous *history* of or the presence of need satisfaction/frustration, or involve a mix of these different issues. Interpreting these scores directly as representing *need strength* thus seems at best premature. This is one reason why SDT-scholars have been adopting a more differentiated approach, separating, for instance, need desire from need valuation. In Van Assche et al. (2018; Study 1) both of these measures of "need strength" were unrelated. Further, because different story domains or story telling contexts may elicit different aspects of people's need-based functioning, this may help explain the rather low reliabilities that have been obtained with these measures (e.g., Busch and Hofer, 2012). Indeed, any obtained interaction between an implicit motive measure and the SDT-needs is hard to interpret given the fact that multiple facets are potentially driving the interaction.

Although Schüler et al. claim that SDT researchers "do not focus on implicit needs" and "exclusively use self-reports" (p. XX), as we have already documented this has simply never been the case. SDT research includes many examples in which IAT, priming and projective measures have been used (e.g., see Ryan & Grolnick, 1986 for an early example). More recently some SDT researchers have attempted to develop implicit measures of need desires using the IAT, both for the need for competence (see Van der Kaap-Deeder et al., in press, Study 1 & 2) and autonomy (see Van Assche et al., 2018). Apart from these implicit assessments, a number of priming studies have shown that individuals' motivational orientations (autonomous or controlled) can be activated outside awareness, with reliable differences following from these differentially primed orientations (Banting,

Dimmock, & Grove, 2011; Weinstein, Hodgins, & Ryan, 2010; Radel et al., 2009). Hence, SDT-scholars have considered motivational processes that occur at the implicit level, but we see a need for a lot more basic science ahead before formalizing any propositions of dual process theories in this area insofar as they are founded on current methods.

Reflections on Meta-Theoretical Assumptions

Needs as Essential Requirements. A strong reason to be skeptical about any crisp integrations of SDT with MDT is that MDT's core "needs" are defined differently both in conceptual status and function. SDT-scholars have primarily paid attention to the satisfaction and frustration of individuals' psychological needs because needs are understood as universal requirements for growth and well-being. Need satisfaction is said to fuel several growth-tendencies, including the processes of intrinsic motivation, internalization, and emotional integration. As far as we know, MDT's needs do not specify such relations. Indeed, to our knowledge MDT has not established a strong theory of how these motives relate to human well-being and flourishing as such. Instead, MDT seems largely a conditioning theory, in which individuals are said to develop individual differences in motive strength based on early reinforcement dynamics. MDT is thus clear about how differences in implicit motive for power or achievement may arise and thematically define an identity, but less clear about what fulfilling implicit power or achievement motives results in. McClelland's (1961) mission of creating societies of entrepreneurship, and creating places that "hum," is not the same as SDT's interests in the factors predicting individual and community wellness.

Further, in contrast to SDT, MDT also does not hypothesize any regularities in the functional synergies between needs (Ryan & Deci, 2017). For example, SDT argues that true relatedness entails the convergence of autonomy and relatedness satisfactions. Similarly, the sense of competence that enhances true self-esteem requires the convergence of autonomy and competence satisfactions. SDT's understanding of the synergy between basic needs also stands behind its expectation of the high inter-correlations between need satisfactions and frustrations (see Vansteenkiste, Niemiec, et al., 2010). In

contrast, MDT sees its varied needs as relatively independent individual differences, which may or may not be fused or subordinated to one another. They also are quite independent empirically, unlike SDT's concepts, which strongly and consistently relate, especially at the more general level (Mabbe, Soenens, Vansteenkiste, Van der Kaap-Deeder, & Mouratidis, 2018; Ryan & Deci, 2017).

Needs as Motives. Schüler and colleagues seem to limit SDT's viewpoint on needs to its role as a requirement for wellness. It is true that within SDT a strong emphasis is placed on the role of needs-as-requirements and, as a result, a lot of attention was drawn to the study of contexts supportive of individuals' need satisfaction. Yet, human beings don't simply wait for social contexts to fulfil their psychological needs; they proactively engage in need fulfilling activities. The intrinsically motivated child, exploring and playing, by no means represents a passive model of development. Need satisfaction supports active *propensities*, and individuals gravitate towards need-supportive situations (Deci & Ryan, 1985b).

At the same time, it is true that at the empirical level, little attention has been paid within SDT to the issue of needs-as-motives. The main reason derives, however, from SDT's distinctions between needs and motives. Within SDT people can fulfil a need without ever being specifically motivated to attain that end. When a child explores his or her environment, he or she is not aiming to feel autonomy or competence, the aim is to master or understand a specific feature of the world. The organismic satisfactions of autonomy and competence derive from, and support, such intrinsically motivated propensities. Thus, although people gravitate toward activities where they can experience autonomy, competence or relatedness, this does not imply that their *goal* or *motive* is focused on attaining the need satisfaction. In fact, typically people would *not* fulfil basic psychological needs by directly seeking out that gratification (e.g., they don't "hunt" for more autonomy), but rather they engage in activities that afford experiences of volition, effectiveness, or connection to others. So in SDT, motives for a particular need can be more or less activated, with no clear implication for "need strength" in the sense of the functional importance of a need to the individual.

Further, when psychological needs get frustrated, especially chronically, the satisfaction of these needs may become a more salient enterprise. Need frustration may lead individuals to express a stronger desire to get these thwarted needs compensated (Chen, Vansteenkiste, et al., 2015; Sheldon & Gunz, 2009). The question whether such activated needs-as-motives may lead one to get one's needs better met is, nonetheless, an open question. Critical from the SDT-perspective would be how this need-searching behavior gets regulated, as individuals can both be more ego-involved or can regulate these goals in more autonomous ways. To illustrate, one may aim to pursue competence in an activity to demonstrate one's worth (ego-involvement) or because one values the opportunity to further refine or extend one's skills (autonomous regulation). Such differences in the regulation of one's need-crafting behavior may be momentarily activated or be rooted in a longer history of exposure to need-conducive and need-thwarting contexts.

Finally, although several of the needs-as-motives, as defined and measured within MDT, have been linked to need-based experiences (e.g., Michou, Matos, Gargurevich, Gumus, & Herrera, 2016), the question how exactly they may impact need satisfaction is a muddy enterprise, as several facets get both conceptually and empirically conflated. Thus, in examining needs as motives within SDT researchers would do well to focus on needs as defined in SDT rather than the multi-faceted motive constructs tapped in MDT.

Complimentary Aspects?

Interpersonal Differences. Schüler et al. highlight several similarities between MDT and SDT, including both SDT's and MDT's focus on a limited set of human needs (i.e., autonomy, competence, relatedness within SDT; power, affiliation, and achievement within MDT) which are considered critical to understand and predict variation in individuals' motivational functioning. At the same time, their principle critique is that (according to Schüler et al.) SDT is exclusively focused on differences in the satisfaction of needs, and ignores individual differences in "need strength."

It is the case that previous SDT-research has considered the predictive power of within (e.g., Van der Kaap-Deeder, Vansteenkiste, Soenens, and Mabbe, 2017) and between (e.g., Van den Broeck et al., 2016) person differences in basic need satisfaction as the most critical or 'fruitful' starting point for predicting individuals' motivation, performance, and wellness (Deci and Ryan, 2000, p. 232). This is for good reason—there are reliable and robust effects at that interface. Yet, SDT has, from a formal theory standpoint, no problem in examining how individual differences in *motives* may affect the functional impact of experienced need satisfaction or its expression (Deci & Ryan, 2000). SDT scholars have looked at such differences in at least two ways.

First, a *differentiated approach* has been emerging towards individual differences in need-dynamics. For example, interpersonal differences in *need desire*, which reflect individuals' longing to new experiences of need satisfaction, are correlated with need frustration, presumably because one has more salient desires for what one lacks (Chen, Vansteenkiste, et al., 2015; Chen, Van Assche et al., 2015; Sheldon and Gunz, 2009; Van Assche et al., 2018). In contrast, a stronger *valuation of the needs* has been found to be positively related with experiences of need satisfaction (Van Assche et al., 2018), presumably because individuals begin valuing the importance of having their needs met if they have experienced its rewarding nature. Because of these differential relations with need satisfaction and frustration, it was suggested that need desire and need valuation represent, respectively, deficit-based and growth-oriented individual differences (Van Assche et al., 2018). As argued earlier, implicit motive measures used within MDT that supposedly tap "need strength" may instead tap into a mixture of issues concerning need salience, importance, desire, value, or compensation, each with differing implications.

Second, there has been growing interest within SDT on the question of whether individual differences in need-based functioning can play a *moderating* role (Chen, Vansteenkiste, et al., 2015; Van Assche et al., 2018). This issue received increasing attention because of SDT's universality claim, which was interpreted by Schuler et al. as if all individuals should benefit *equally* from experiences of need satisfaction and frustration, as if no variation in experience, benefits or costs could be expected. Such a "one size fits all" standpoint is too simplistic a portrayal of SDT, which has

a more nuanced perspective. Specifically, the *(de)sensitization hypothesis* (Moller, Deci, & Elliot, 2010) suggests that some people may be more (in)sensitive to the benefits or costs of, respectively, need satisfaction and frustration. People with a history of need satisfaction may benefit more able to savor need-satisfying events (sensitization) and be armed better against detrimental effects of need-frustrating events (desensitization). In contrast, people with a history of need frustration (who may defensively downplay or devalue the importance of the needs) may be more vulnerable to new need frustrating events (sensitization) and less likely to reap the benefits of need satisfying events (desensitization). To the extent individual difference variables capture these differing need-based sensitivities, variation in the association between need-based experiences and well-being and ill-being may indeed result.

In an earlier study, Sheldon, Elliot, Kim, and Kasser (2001), using a pairwise comparison procedure to pit the explicit valuation of different needs against one another, reported that the contribution of autonomy, competence, and relatedness satisfaction to the satisfying event-related emotions was unmoderated by a measure of need preference. Katz, Kaplan, and Gueta (2009) showed that elementary and junior school students' level of explicit expressed needs, operationalized as the *importance* of having a specific need met, moderated the contribution of teacher need support in the prediction of students' autonomous motivation. Although, congruent with the (de)sensitization hypothesis, students low in expressed needs also reported more autonomous motivation in response to teacher need support, just less strongly. Chen, Vansteenkiste et al. (2015) examined university students from the USA, Belgium, China, and Peru. In a first study they examined if need *value*, explicitly measured, would moderate the effects of need satisfaction and frustration on wellness outcomes. It did not. In a second study they examined whether the effects of satisfaction or frustration of SDT's basic psychological needs would vary as a function of explicit need *desire*. A similar lack of evidence for moderation was found.

More recently, Van Assche et al. (2018) went further by systematically examining the role of both explicit and implicit desire and valuation, albeit only in relation to the need for autonomy. In two samples, involving South-African adolescents and adult Belgian prisoners, (the latter presumably

autonomy deprived) some evidence for moderation by explicit (but importantly, not implicit) need desire and valuation was reported (i.e., 7 out of 32 interactions were significant). Consistent with the (de)sensitization hypothesis, those high in need desire appeared to benefit more from autonomy satisfaction and to suffer more from autonomy frustration, although there was some inconsistency in the type of interactions found. Moving to another domain, Wörtler, Van Yperen and Barelds (2018) reported in that in Dutch and American adult workers all three of SDT's need satisfactions predicted work engagement and organizational citizenship, but this was largely unmoderated by individual differences.

Reflections. This brief review of previous studies of individual differences complements studies reviewed by Schüler et al. (e.g., Hofer & Busch, 2011; Schüler, Sheldon, & Fröhlich, 2010; Sheldon & Schüler, 2011), who have also examined the role of individual differences in MDT's affiliation and achievement needs in the association between need satisfaction and outcomes. Eventually, as this body of research evolves, a meta-analytical study will be needed to shed light on the robustness of any proposed moderating effects. Yet overlooking the available literature today, there appears to be substantial variation in the reliability of interaction effects, both within (e.g., Sheldon & Schüler, 2011) and across studies (e.g., Chen, Vansteenkiste et al., 2015; Van Assche et al., 2018), and the meaning of obtained effects is often unclear. Several issues possibly play a role, including: (a) the nature of the individual difference variable; (b) the type of assessment (e.g., implicit vs. explicit); (c) the outcome targeted (e.g., domain-specific vs. general); and (d) study design. Such issues will require considerably more resolution before drawing firm integrative conclusions. Still there are several interesting issues in this area of research to note.

First, although SDT is open to between-person variation in the effects of need-based experiences in the prediction of well-being (e.g., the (de)sensitization hypothesis), what would be problematic for SDT (and specifically BPNT) is if some people would fail to benefit, or even suffer from, basic needs being meaningfully supported or satisfied. Similarly, although certain individual differences (e.g., mindfulness) may buffer against experienced need thwarts, what would be problematic for SDT is that need thwarting was in any way beneficial to wellbeing. Technically then,

the type of interactions SDT does not predict are crossover interactions. Said differently, the benefits associated with need satisfaction and the costs associated with need frustration may vary in *gradation*, yet not in infinite ways. Claiming universality of needs, does not imply that every person, especially within in every domain or task, would *equally* benefit or suffer from need-satisfying or need-frustrating experiences (Soenens, Vansteenkiste, & Van Petegem, 2015).

Second, across studies there seems to be strong support for Deci and Ryan's (2000) claim that main effects account for substantial variance in outcomes (e.g., Van den Broeck et al., 2016). In contrast, findings on moderation are inconsistent. If an interaction systematically accounts for incremental variance, this moderator deserves attention. Yet, null-findings also deserve attention, and have theoretical importance. As exemplified by Van Assche et al. (2018), Bayesian analyses allow one to quantify the support for a specific model against alternatives (e.g., a main effect model vs. a main effect and interaction effect model), thereby shedding light on the probability of finding evidence for similar models in the future.

Third, to understand the benefits and costs associated with need satisfaction and need frustration, we encourage researchers to include a range of outcomes instead of limiting themselves to a single outcome, to derive a better picture of the systematic nature of observed moderation effects. How costs and benefits of need satisfaction and frustration get channeled may vary, with differences in personality in general and motive strength in particular playing a critical role. For example, Mabbe et al. (2016) included measures of both externalizing and internalizing problems, finding that although teens high in agreeableness did not display externalizing symptoms, they did experience internalizing problems in relation to parental control. If solely externalizing problems had been assessed, the conclusions would not have revealed the costs of that need-thwarting environment for agreeable teens.

Fourth, the exact place where individual differences may play a role deserves more attention. For instance, individual differences may play a role (a) between context and need satisfaction and (b) between need satisfaction and outcomes. As noted, the first issue has been dealt with SDT through various research streams, including work on functional significance. There exist different ways for

different individuals to satisfy (or frustrate) basic (e.g., Van Yperen, Wortler & De Jonge, 2016), with some pathways being more reliable (Vansteenkiste, Aelterman, Haerens, & Soenens, 2018). The moderating role of individual differences in the second part of the sequence may also be more constrained, because, once *perceived* as satisfying or frustrating, effects of needs should follow, albeit the gradation of their impact may vary, especially within narrow domains of behavior.

Fifth, individual differences patterns and effects of need satisfactions may be function of different histories of need-support and thwarting. Assessing exposure to need-supportive and thwarting contexts over longer periods of time may be useful in predicting reactions to new need-related experiences, and provide new avenues to examine (de)sensitization hypotheses. Illustrative of such dynamics, Van Petegem et al. (2017) followed adolescents' trajectories of exposure to autonomy-supportive and controlling parenting over a four-year period. They found that those exposed to more controlling parents reacted in a more defiant way to a new, hypothetical controlling interaction with parents.

Summary

Where does this leave us with respect to Schüler et al.'s opening question about whether SDT and MDT should be integrated? Our hesitation to say yes is grounded in the nontrivial conceptual and terminological differences between the frameworks; questions about the meaning, reliability and validity of MDT's implicit measures; and the fact that the available work on "need strength," measured both explicitly and implicitly, remains limited and inconsistent in results and interpretation. In pursing these issues, we suggest that implicit assessments of individual differences should both establish construct validity beyond an absence of correlations with explicit measures and, further, distinguish the issues of valuation and desire, which, as noted, may reflect growth versus deficit orientations.

In cautioning against a premature synthesis of MDT and SDT we nonetheless reiterate the openness of SDT's scientific agenda. SDT, which moves ahead without trying to make errors of commission, is nonetheless interested in all potential moderation effects. Yet as we described earlier, SDT only integrates (i.e., formalizes) new principles into theory when there are clear conceptual bases and replicable data. Right now neither MDT (at least as a theory of wellness) nor dual process models built upon it stand, in our view, on firm enough theoretical or methodological foundations, either concerning the nature and assessment of implicit processes, or the facets of their "core" needs as they relate to health and wellness.

A more proximal goal, at least within SDT, would be to continue to test implicit and explicit measures of need desire and need valuation using SDT's need constructs, rather than importing the more mixed motivational constructs of MDT. Interactions should be examined at every level of the motivation process, both in general and in specific domains in search of reliable patterns. Because people dynamically satisfy needs across multiple domains, compensatory models must also be in focus. Thus, we encourage continuing exploration of the questions raised by Schuler et al., but using carefully defined and well-validated constructs that will be more readily interpretable within the framework of SDT.

Conclusion

The push for differentiation in academia considerably competes with the systematic development of broad or "grand" personality theories today. Yet, there are a lot of advantages to having broad theories, particularly in contemporary personality science, where different models have proliferated. This is a time of multidisciplinary behavioral science, where we have the advantage of being able to track phenomena and predicted dynamics across multiple levels of analysis and diverse methods. Theory, if flexible and consilient, can accommodate these multiple inputs into its network of observations and constructs. SDT has that capacity, an issue highlighted through the fact that so many different phenomena and theories have been connected to SDT in the larger literature. Authors in this

issue introduce a number of new programs for research, growing out of thinking shaped by evidence-supported theory.

SDT, like any broad theory, needs to be ambitious in its explorations yet conservative and rigorous in formal growth. We thus expressed caution for attempts to "leap frog" the development of SDT or its combination with other models. The mere fact of observing associations between constructs coming from different theories does not suffice for theories to be integrated. Just as within organismic development, the task of integration within theory means fully bringing coherence, structure, meaning, and value together into a larger synthesis, one that can be supported by evidence and practice. The efforts of the scholars who contributed to this special issue have great value in either pointing us in that direction, or showing us to some chasms that may be difficult to cross.

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