SEEKING STABILITY IN STORMY EDUCATIONAL TIMES: A NEED-BASED PERSPECTIVE ON (DE)MOTIVATING TEACHING GROUNDED IN SELF-DETERMINATION THEORY

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ABSTRACT

Given the complexity of societal, technological, and economic challenges encountered by schools and teachers, one may wonder whether and how teachers can still optimally motivate their students. To adopt a motivating role in today's ever-changing, even stormy, educational landscape, teachers need more than a checklist of motivating practices. They also need a fundamental theoretical perspective that can serve as a general source of inspiration for their everyday classroom practices across various situations and in interaction with different students. Herein, we argue that self-determination theory represents such a valuable perspective. In Part I, we discuss the satisfaction of learners' psychological needs for autonomy, competence, and relatedness as a source of student motivation, engagement, and resilience. We also present a recently developed circular model involving a broad variety of motivating (i.e., need-supportive) and demotivating (i.e., need-thwarting) teaching practices appealing to these three needs. In Part II, we discuss several implications of this circular model, thereby discussing the diverse pathways that lead to student need satisfaction, motivation, and engagement as well as

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highlighting teachers' capacity for calibration to deal with uncertainty and change. We conclude that school principals and teachers do well to invest in both students' and teachers' psychological need experiences, such that they become skilled in flexibly adjusting themselves to diversity, uncertainty, and change.

Keywords: Psychological needs; self-determination theory; teacher autonomy support; teacher motivation; teacher structure; change

When thinking back about our own school time, many of us can vividly recall a motivating teacher (Niemiec, 2013). In many cases, motivating teachers are remembered as being understanding and patient, displaying contagious enthusiasm, and being appreciative of our efforts. Unfortunately, we can probably also recall teachers who were less motivating, if not demotivating, for instance, because they yelled in an effort to maintain discipline, neglected or suppressed our opinion and complaints, and were grade-focused (e.g., Krijgsman et al., 2017). The question what exactly a teacher needs to do to motivate children is a topic of lively discussion in the teacher's room and in the broader public debate.

This topic also receives substantial attention among policymakers because teachers are said to be increasingly challenged in maintaining a motivating style (Reeve, 2009). In many countries, teachers are expected to integrate information and communication technology in their lessons, to deal with very heterogeneous groups as a result of the evolution toward inclusive education and the increasing mobility and migration of students, to handle time-consuming administrative tasks, and to implement revised curricula. Also, some teachers may feel that principals and parents hold them increasingly accountable for the progress their pupils make. Apart from these technological, pedagogical, and administrative pressures from "above," teachers also encounter pressures from "below" (Pelletier, Séguin-Lévesque, & Legault, 2002). That is, the constellation of their classrooms is changing. Teachers face culturally diverse classrooms, and at least some teachers hold the belief that pupils are nowadays increasingly assertive or even impolite and defiant. Such a perception of students as being overly assertive may pull for a more controlling and domineering teaching approach. In brief, teachers face various, either threatening or challenging changes, which requires them to display high adaptability (Collie & Martin, 2016). While some teachers handle these changes in a constructive and resilient way, others become helpless, demotivated, and even cynical.

Given the complexity of the societal and economic changes and challenges encountered by schools and teachers, one may wonder how teachers can still optimally motivate their students. Obviously, there is no easy answer to this question. Simple lists with straightforward tips (e.g., "teach in students' preferred ways"; Jang, Reeve, & Halusic, 2016; "using inviting language," Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004) are important to strengthen teachers' capacity to have a lasting impact on students' motivation in an ever-changing educational context, but they may not suffice. Thus, teachers need a more fundamental perspective that can serve as a general source of

inspiration for their everyday classroom practices across various situations and in interaction with different students. Self-determination theory (SDT; Ryan & Deci, 2017; Ryan, Deci, & Vansteenkiste, 2016), a general theory on motivation in social context that has been applied intensively in the context of education, offers such a fundamental perspective. Specifically, SDT maintains the assumption that students have a set of inherent, psychological needs that require satisfaction to foster deep-level learning, curiosity, and well-being and to promote resilience and adaptive coping in response to change (Vansteenkiste, Niemiec, & Soenens, 2010).

At the same time, teachers need guidance in the translation of such a fundamental perspective into concrete teaching practices. Recent developments in SDT-based research are promising in this regard, with research providing an increasingly detailed and fine-grained view on what a motivating style involves and how different motivating styles relate to one another. These recent developments are discussed in Part I, while their implications are elaborated upon in Part II, thereby clarifying how these developments and implications have relevance for the topic of change and stability central to this volume.

PART I: A HELICOPTER PERSPECTIVE ON TEACHER AUTONOMY SUPPORT AND TEACHER STRUCTURE

At the Heart of Self-determination Theory: The Basic Psychological Needs

Need Satisfactions and Need Frustrations

When walking into a toddler class, one can easily notice children being highly enthusiastic and eager to learn, that is, intrinsically motivated to experiment, discover, and learn. Although intrinsic motivation constitutes a natural growth process, its development and maintenance do not take place automatically but require contextual nurturance in the form of the satisfaction of learners' psychological needs for autonomy, competence, and relatedness (Ryan & Deci, 2017). Autonomy refers to the experience of psychological freedom and volition. When satisfied, students feel that they can be themselves and that they are the 'owner' of their thoughts, actions, and feelings. Competence denotes the experience of effectiveness and mastery. When satisfied, students feel confident and capable to execute a learning task and to exercise and extend their skills. Relatedness involves experiences of warmth, bonding, and mutual care. When satisfied, students feel strongly connected to and understood by significant others, while also displaying a reciprocal concern toward others.

These psychological needs are said to underlie individuals' proactive and growth-oriented nature (Niemiec & Ryan, 2009; Ryan & Deci, 2017), thereby determining the direction of behavior and leading individuals to proactively take action in shaping their environment (Legault, Ray, Hudgins, Pelosi, & Shannon, 2017; Sheldon, 2011). That is, people naturally engage in *need-crafting* behavior because they have a propensity to seek out activities and to develop relations in which we experience a sense of volition, mastery, and deep connection. Individuals thus naturally gravitate toward need-conducive contexts, activities,

and relational partners because these are experienced as more inherently satisfying and well-being enhancing. Indeed, the satisfaction of these psychological needs is considered a critical resource for students' high-quality motivation (Grolnick, Ryan, & Deci, 1991; Mabbe, Soenens, De Muynck, & Vansteenkiste, 2018), engagement and learning (Jang, Kim, & Reeve, 2012), and perceived meaning in life (Martela, Ryan, & Steger, 2018). Because these three psychological needs form an integral part of individuals' psychological make-up, it logically follows that they are operative among individuals across the world (i.e., cross-cultural relevance) and throughout the lifespan (i.e., cross-age relevance). Underscoring this universality claim, the beneficial role of psychological need satisfaction has been demonstrated across different age groups, including elementary, middle, and high school and university students (e.g., Ahmad, Vansteenkiste, & Soenens, 2013; Véronneau, Koestner, & Abela, 2005), among individuals residing in countries with a markedly different cultural heritage (Chen, Vansteenkiste, et al., 2015; Jang, Reeve, Ryan, & Kim, 2009; Yu, Chen, Levesque-Bristol, & Vansteenkiste, 2018) and even among individuals who express little desire to get these needs met (Katz, Kaplan, & Gueta, 2010; Van Assche, Van der Kaap-Deeder, Audenaert, De Schryver, & Vansteenkiste, 2018). The benefits associated with need satisfaction emerged not only cross-sectionally, but also longitudinally, with students involved in trajectories of either stable high or increasing need satisfaction reporting the highest levels of academic, social, and emotional adjustment (Ratelle & Duchesne, 2014).

Of course, in rapidly changing educational times, students' need satisfactions may get easily threatened or frustrated, rendering students vulnerable for motivational problems, poor adjustment in school, and even psychopathology (Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011; Ryan et al. 2016; Vansteenkiste & Ryan, 2013). Autonomy frustration then involves a sense of pressure and inner conflict, with students feeling pushed into an unwanted direction; relatedness frustration denotes experiences of feeling disconnected, lonely, and abandoned; competence entails feelings of failure and inadequacy. The detriments associated with need frustration are manifold and include a loss of motivation (Haerens, Aelterman, Vansteenkiste, Soenens, & Van Petegem, 2015), disengagement (Jang, Kim, & Reeve, 2016), as well as a broad array of both internalizing problems, such as test anxiety (Bartholomew et al., 2018) and depressive symptoms (Campbell, Boone, Vansteenkiste, & Soenens, 2018), externalizing problems, such as the proneness for bullying (Hein, Koka, & Hagger, 2015) and cheating (Kanat-Maymon, Benjamin, Stavsky, Shoshani, & Roth, 2015), as well as physical problems, such as poor sleep (Campbell, Soenens, Beyers, & Vansteenkiste, 2018) and elevated blood pressure (Weinstein, Legate, Kumashiro, & Ryan, 2016).

Need-based Dynamics and Environmental Change and Instability

One of the reasons why uncertainty and change may be experienced as energy-draining and anxiety-provoking is because uncertain and changing environments impact on individuals' need-based experiences. To illustrate, surveying two

groups of Chinese students, the one having temporarily moved to Belgium to study abroad and the other group still being involved in an application procedure in their home country, Vansteenkiste, Luyckx, Soenens, and Lens (2006) reported that sojourners reported significantly lower need satisfaction which, in turn, was associated with lowered well-being and elevated depressive symptoms. Presumably, these students experienced the (cultural) change as fairly stressful because it came with a loss of autonomy and connection and because it challenged their capacity to adapt to change.

Importantly, while both uncertainty and actual change are potentially need-threatening, the effects of these factors largely depend on their attributed meaning or *functional significance* (Deci & Ryan, 1985). That is, environmental insecurity and change could be perceived as challenging and refreshing, thereby eliciting curiosity and being endorsed and welcomed, or could be perceived as rather threatening and pressuring, thereby eliciting worry, anxiety, and even defiance (Lazarus & Folkman, 1984). The predominance of one of both appraisals depends, among other factors, on key characteristics of the change process itself, such as its (in)predictable character and the degree of change. To illustrate, both sudden and large-scale change may be experienced more easily as stressful and pressuring, leading one to feel pushed into undesired directions; as overwhelming, leading one to doubt one's capacity to accommodate to the changes; and as socially disruptive, leading one to feel alienated and disconnected from one's social environment.

In principle, perceived environmental instability may not only impact on one's psychological need experiences as such but may also alter effects of psychological need satisfaction on students' development. Indeed, according to Maslow's (1943) principle of *hierarchical prepotency*, environmental insecurity may outweigh the effects of psychological needs, thereby diminishing or even canceling out the benefits typically associated with need satisfaction. That is, as far as environmental safety concerns a lower-level need and the SDT needs represent three higher-order needs in Maslow's need-pyramid, the latter needs should play a minimal or even negligible role in case one's environmental safety is threatened. This is because the individuals' attention gets completely allocated to coping with the uncertain and unsafe environment, leading individuals to overlook the importance of higher-order needs. This assumption was tested in a number of recent studies but was not confirmed. The psychological need satisfaction was found to still play a critical role in predicting well-being even among South-African participants living in dangerous and violent neighborhoods (Chen, Assche, Vansteenkiste, Soenens, & Beyers, 2015). Such findings suggest that – in spite of the perceived environmental instability and uncertainty – experiences of volition, mastery, and connection are integral to individuals' well-being (Rasskazova, Ivanova, & Sheldon, 2016).

More work on the interface between physical/environmental safety and psychological need satisfaction is welcomed, with both factors likely yielding a reciprocal influence on one another (see Weinstein & Stone, 2018). That is, although changing (and temporarily insecure) circumstances may impact on individuals' need-based experiences, it is also possible that individuals with more

elevated levels of need satisfaction react in more resilient ways toward the encountered changes and insecurities (Vansteenkiste & Ryan, 2013). That is, high need-satisfied individuals may perceive changing and unstable circumstances differently and also recruit different coping resources to handle the situation. Because high need-satisfied individuals have more energy available, their *psychological threshold* for perceiving change as threatening may be much higher. Also, once appraised as a threat, they may make use of more problem-focused and proactive coping strategies as well as more mature emotional regulation skills to handle the uncertainty and change. In contrast, high need-frustrated individuals may use more maladaptive coping and poorer emotion regulation strategies to handle the uncertainty and change (Ntoumanis, Edmunds, & Duda, 2009; Weinstein & Ryan, 2011).

The resilient role of need satisfaction and high-quality motivation in the context of potential stress and insecurity has been demonstrated in the work context. Specifically, the relation between role ambiguity and distress was shown to be less pronounced among highly autonomously motivated employees, who have their psychological needs better met (Trépanier, Fernet, & Austin, 2013). Also, employees' autonomous motivation buffered against a cycle of resource-loss such that initial burnout failed to predict a longitudinal decrease in job resources among highly autonomously motivated and need-satisfied employees (ten Brummelhuis, ter Hoeven, Bakker, & Peper, 2011). Even to the contrary, highly autonomously motivated employees actively and increasingly sought resourceful job characteristics, such as seeking support from colleagues, a set of findings that would need replication in the educational context.

Need-supportive Teaching: Differentiating a Basic Attitude from Motivating Practices

Given the significant importance of psychological need satisfaction for students' adjustment, the question how to support individuals' needs, in general, and the topic of a motivating teaching style, in particular, have received considerable attention (Reeve, 2009). Much progress has been made in the field due to the reliance on a mixture of correlational and experimental work, with the former type of studies primarily focusing on a combination of (de)motivating teaching practices as assessed through self-reports (Taylor & Ntoumanis, 2007) or observations (Haerens et al., 2013; Stroet, Opdenakker, & Minnaert, 2015) and with the latter type of studies zooming in on specific motivating practices through experimental isolation (Jang, Reeve et al., 2016; Vansteenkiste, et al., 2004).

To continue and further facilitate the in-depth examination of teachers' motivating style, we propose a dual conceptualization, thereby distinguishing between the basic attitude or spirit underlying a motivating style (Vansteenkiste & Soenens, 2015) and the different motivating practices that teachers routinely use to motivate their students (Reeve, 2009). This basic attitude or spirit denotes teachers' more general approach, interpersonal tone, and sentiment vis-à-vis their students. When teachers adopt a need-supportive motivating style, they put students' perspective very central, while they are more self-centered in case they adopt a

need-thwarting teaching style. Without this basic attitude, teachers are unable to fully take students' perspective or they may even bypass the learners' frame of reference. Consequently, they may miss opportunities to choose and apply the most motivating practices (e.g., offer of choice, provision of help), instead being more at risk for a rather mechanistic application of motivating practices. In the absence of this basic attitude, teachers may simply 'go through the motions' and fail to apply motivating practices effectively, that is, without harnessing all the potential benefits of a motivating teaching practice. This basic attitude thus allows teachers to flexibly monitor their used motivating practices such that these practices are ongoingly experienced as need-congruent by students.

While both teacher autonomy support and teacher structure are highly student-centered, the specific aspects of students' viewpoint to which teachers seek connection differs for the basic attitude behind teacher autonomy support and teacher structure. When teachers are highly autonomy-supportive, teachers primarily attend to students' emerging interests, preferences, and values. To connect with these inner motivational resources, teachers high on autonomy support adopt a basic attitude of *curiosity, receptivity*, and *flexibility*. Such an interpersonal tone and sentiment allows them to better empathize with and nurture learners' interests, values, and preferences (see Reeve, Jang, & Jang, 2018). As a consequence, learners are more likely to experience a sense of ownership with respect to their thoughts, feelings, and behaviors.

Teachers high on structure primarily seek connection with students' emerging skills, strengths, and learning potential, which serve as a starting point to build their structuring practices around. To get in contact with students' ability level, teachers do well to adopt a *process-* and *progress-oriented* basic attitude, thereby displaying basic *trust* in learners' capacity to steadily advance their skills. This interpersonal tone and sentiment allows teachers to better align with students' momentary skill level, thereby make use of a variety of strategies to nurture students' feelings of competence. As a consequence, learners perceive the classroom environment to be predictable, safe, and focused on their progress, such that they experience a sense of increasing mastery.

Classroom constellations are rapidly changing nowadays, with classes becoming increasingly heterogeneous, including children with different skill levels and coming from different cultural backgrounds. In light of these changes, the adoption of this basic attitude may be more critical than before. To fully appreciate the large heterogeneity in children's preferences and strengths, teachers will need to display an interpersonal tone of curiosity, openness, and trust. Doing so will enable teachers to better empathize with students' viewpoint and to make use of the most appropriate motivating practices in the situation at hand. Indeed, apart from this basic attitude, a motivating style also consists of a variety of motivating practices (e.g., offering choice; providing rationales; setting expectations) that teachers routinely use in their day-to-day interaction with learners (Reeve, 2009). New developments in research on these motivating practices are discussed next.

Toward More Integrative and Fine-grained Insight into (De)motivating Teaching Practices: The Teaching Wheel

Although teachers do well to adopt the basic attitude characterizing teacher autonomy support and structure, they also need to be equipped with a set of more concrete motivating practices that translate the attitude into the real-life classroom context. Recent research (Aelterman et al., 2018) indicates that a variety of motivating practices can be situated within a *layered perspective* toward teachers' motivating style. Specifically, a motivating style (e.g., autonomy support) could be broken down into more specific motivating approaches (e.g., participative approach), which represent a cluster of motivating practices that closely relate to each other (e.g., offer of choice). As depicted in Fig. 1, evidence was obtained for the existence of eight different (de)motivating approaches, which can be meaningfully integrated in a circumplex model or teaching wheel.

Integrative Insight

To obtain evidence for the existence of the circumplex model or teaching wheel, Aelterman et al. (2018) made two contributions to the extant literature. First, while much past work focused on a single or a limited set of (de)motivating styles, four key motivating styles (i.e., autonomy support, control, structure, chaos) were simultaneously assessed in relation to a variety of authentic teaching situations (e.g., "Introducing classroom rules"; "Anxiety surfaces"). Second, Aelterman et al. (2018) made use of multidimensional scaling, an explorative statistical technique graphically visualizing the relation between different (de) motivating practices by plotting inter-item distances in a geometrical space. These analyses, conducted on two large samples of secondary school teachers

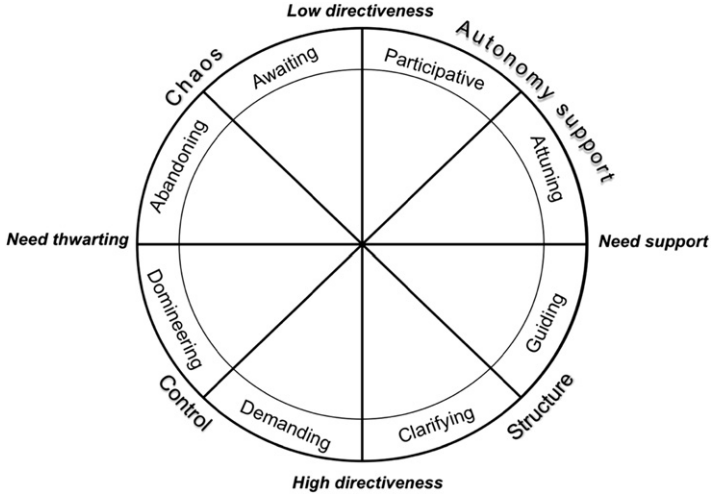

Fig. 1. Graphical Representation of the Circumplex Model. *Source*: Aelterman et al. (2018).

($N = 1{,}332$) and students ($N = 1{,}735$), provided evidence for the circumplex model displayed in Fig. 1. This model emerged both when analyzing teachers' self-reported and students' perceived engagement in the diverse (de)motivating practices. In a direct comparison of the teacher-reported and student-perceived teaching wheel, the circumplex appeared to be very stable, suggesting that teachers and students alike perceive the structural relations between these (de)motivating practices to be very similar. Further evidence for a similar circumplex structure was obtained in two large samples of coaches and athletes in the sport domain (Delrue et al., 2018), providing confidence in the generalizability of the obtained circumplex.

This circumplex model is promising as it allows for a helicopter view on associations between the different motivating styles. That is, much as one has a better viewpoint of what happens on the ground from a cycling helicopter, by placing different teaching practices in an integrative model the circumplex provides a more in-depth and rich account of how a given (de)motivating practice relates to other practices. Specifically, the various assessed teaching practices could best be represented by a circumplex structure consisting of four broader areas (i.e., autonomy supportive, controlling, structuring, and chaotic practices) and being described according to two overarching dimensions. As noted in Fig. 1, the horizontal dimension (i.e., *x*-axis), labeled teacher need support, reflects the degree to which the teacher supports or rather thwarts students' psychological needs. While autonomy support and structure yielded positive coordinates (being indicative of high need support), control and chaos were found to yield negative coordinates (being indicative of high need thwarting). The vertical dimension (i.e., *y*-axis), labeled teacher directiveness, concerned the extent to which the teacher takes the lead in the interaction or rather transfers the lead more to the students themselves, thereby leaving the initiative more to them. While structure and control yielded positive coordinates (being indicative of high teacher directiveness), chaos and autonomy support yielded negative coordinates (being indicative of low teacher directiveness). The identification of these two overarching dimensions produced a more *integrative* insight because critical motivating and demotivating dimensions now fitted into a coherent whole (instead of studying them in isolation) and could be characterized along both dimensions.

Fine-grained Insight

The circumplex also generated a more *refined* insight into the overarching motivating styles of teacher autonomy support, structure, chaos, and control, as each of these styles got segmented into two subareas, reflecting two associated yet distinct motivating approaches. Moving along the circumplex, an autonomy-supportive motivation style fell apart in a participative and attuning approach, structure in a guiding and clarifying approach, control in a demanding and domineering approach, and chaos in an awaiting and abandoning approach. As implied in a circumplex model, each of these teaching approaches can be characterized by varying levels of need support and directiveness.

Importantly, and consistent with the assumptions of a circumplex, these identified approaches correlated in an ordered way with one another. While adjacent approaches were positively correlated (being indicative of their compatible nature), the correlations weakened and became even negative (being indicative of their more conflictual nature) when moving away along the circular structure. To illustrate, whereas the guiding approach correlated positively with the adjacent attuning and clarifying approaches, it yielded a negative correlation with the abandoning approach. Importantly, this ordered pattern of correlates, representing a sinusoid structure, was also found in relation to external outcomes. To illustrate, students' ratings of teacher's quality systematically correlated with the distinguished subareas (Aelterman et al., 2018), with the correlations peaking and being most strongly positive for the attuning and guiding subarea ($rs = 0.65$), while being most strongly negative for the domineering ($r = -0.35$) and abandoning ($r = -0.49$) subareas.

This pattern of correlates emerged for a variety of student outcomes, including autonomous motivation, deep-level learning, planning, and persistence. Note that this pattern aligns with earlier work that provided evidence for gradations in the correlations of different motivating practices. For instance, Assor, Kaplan, and Roth (2002) found the promotion of relevance – an attuning practice – to be more strongly predictive of learners' positive affect and engagement compared to the provision of choice – a participative practice.

Moving along the Teaching Wheel

An autonomy-supportive motivating style breaks down into a *participative* and *attuning* approach (Aelterman et al., 2018). As can be noticed in Fig. 1, when participative, teachers are rather low in directiveness as they largely transfer the initiative, choice, and decision power to their students. The participative approach includes teaching practices such as welcoming students' input and suggestions (e.g., Jang et al., 2016), incorporating students' preferences by giving them voice via a dialog (e.g., Hagay & Baram-Tsabari, 2015), as well as the offer of choice (e.g., Patall, Cooper, & Wynn, 2010). These practices cluster together in the participative approach as the teacher allows students to participate in a joint decision process. A potential pitfall of being participative is that the space offered to students is too open and may even (temporarily) create confusion and uncertainty, which helps explain why the participative approach is situated next to the awaiting approach in the teaching wheel.

Teachers are somewhat more directive when they adopt an attuning approach as they then more strongly take the lead themselves. This does not imply that students' viewpoint is neglected, on the contrary. Fundamental to the attuning approach is that the used instructional practices are aligned with and even nurture, students' interests, preferences, and values. Specifically, when attuning, teachers highlight the relevance of the learning material or introduced guidelines for the learners themselves (e.g., Assor et al., 2002; Vansteenkiste et al., 2018), they offer learning contents that match with students' interests and that promote enjoyment (e.g., Patall et al., 2018), they use inviting language

communicated through supportive prosody (i.e., higher pitch, slower speech rate, mild voice quality; Zougkou, Weinstein, & Paulmann, 2017) and they accept instead of countering expressions of negative affect (e.g., Deci, Eghrari, Patrick, & Leone, 1994). In turn, all of these practices have been found to promote greater student engagement and deep-level learning.

Closely associated with the attuning approach is the guiding approach, which is part of teacher structure. When guiding, teachers express confidence in students' capacity to successfully complete tasks, they positively encourage students, and they offer adjusted and helpful information and suggestions as to support students' progress (Jang, Reeve, & Deci, 2010; Mouratidis, Vansteenkiste, Michou, & Lens, 2013). Guiding teachers select learning tasks and build in scaffolds such that students feel optimally challenged and can actively use and stretch their skills. Both the guiding and attuning approach yields the most pronounced correlates with students' autonomous motivation, self-regulated learning, and engagement (Aelterman et al., 2018; Delrue et al., 2018), presumably because these approaches are most directly conducive to students' need-based experiences. Indeed, both approaches load on the far right end of the need-supportive, relative to the need-thwarting, dimension.

When structuring, teachers do more than guiding students' skill development. They also need to be clear up front regarding their expectations. In the case of the clarifying approach, teachers are clear about the learning objectives, they formulate expectations for desirable behavior, and they follow-up on these objectives and expectations in a consistent way (Haerens et al., 2013; Jang et al., 2010), practices that were found to relate positively to student-reported concentration and persistence, while being negatively related to externalizing problems (Vansteenkiste et al., 2012). Especially when teachers intervene in student misbehavior, it is hard to maintain a process-focus and there is a risk of being guided by mistrust (see Enzle & Anderson, 1993). In the latter case, teachers' clarifying approach may be perceived as more intrusive and meddlesome, which helps explain why the clarifying approach is situated next to the demanding approach in the circumplex model.

Common to the demanding and domineering approach is teachers' exertion of pressure such that students think, act, or feel in teacher-prescribed ways (Reeve, 2009; Soenens, Sierens, Vansteenkiste, Goossens, & Dochy, 2012). When being controlling, teachers often approach students from a tunnel-perspective. That is, they start from their own expectations and agenda to evaluate, judge, and possibly stigmatize students (Vansteenkiste & Soenens, 2015). The circumplex model indicates that the controlling style falls apart into a *demanding* or a *domineering* approach, which differ in their need-thwarting character (Aelterman et al., 2018). When demanding, teachers point to students' duties and responsibilities, thereby using commands and forceful language (Vansteenkiste et al., 2004), threats of sanctions, or the contingent use of rewards (Deci, Koestner, & Ryan, 1999), either to enforce children's participation in uninteresting activities (Patall et al., 2018) or to oblige them to stick to introduced guidelines (Aelterman et al., 2018). The key target for demanding teachers is the students' behavior, which is addressed in a forceful way.

Instead, when teachers are domineering, the focus shifts to the students' characteristics. That is, rather than "playing the ball," when teachers adopting a domineering approach, they start "playing the student," which in many cases comes across as highly intrusive, critical, and perhaps even humiliating. That is, domineering teachers are highly judgmental and condemning, such that students may feel personally attacked and hurt. Specifically, when domineering, teachers make use of highly power-assertive practices such as guilt-induction, shaming, and intimidation (Soenens et al., 2012), conditional regard (Assor, Roth, & Deci, 2004) and they actively suppress children's perspective (Patall et al., 2018), practices that relate to poorer self-regulated learning and lower achievement (Soenens et al., 2012). Of course, given that student−teacher interactions are not a one-way street, students' disruptive behavior also pulls for such a domineering approach (Fernet, Guay, Senécal, & Austin, 2012; Van den Berghe, Cardon, Tallir, Kirk, & Haerens, 2016).

Interestingly, in the circumplex, the domineering approach is situated adjacent to the abandoning approach, the first subarea of a chaotic teaching style. Teachers high in chaos act in an inconsistent and unpredictable way, which creates confusion and which may interfere with students' skill development and their well-being more generally. In the case of an abandoning approach, teachers leave the students to their own devices. After repeated interventions, they have completely given up. Teachers' withdrawal may happen fairly sudden and unexpected such that it may come as a surprise to students who start questioning themselves as persons. Under these circumstances, students are likely to feel forced into independence and self-reliance (see Soenens et al., 2007). Although at least some abandoned students may want to rely on their teacher for extra support and guidance, the observation that their teacher is no longer available for them may elicit feelings of helplessness and defiance (Aelterman et al., 2018). Dynamically, the domineering approach may be the last "resort" before teachers abandon their students, which also helps explain their adjacent location in the circumplex. That is, in despair with students' misbehavior or failures, teachers may attempt to intensify student investment through a domineering approach. Yet, because such a domineering is rarely successful (often leading to superficial student engagement at best and sometimes even to reactance against teacher authority; Haerens et al., 2015; Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005), teachers risk giving up altogether. Clearly, both the domineering and the abandoning approaches come with considerable motivational and well-being costs (Aelterman et al., 2018; Delrue et al., 2018), presumably because these two approaches strongly contribute to experiences of need frustration in students.

Yet, the chaotic style of teachers is not necessarily very detrimental, as teachers can also more simply adopt an awaiting approach, the second subarea of chaos. In this case, teachers adopt a wait-and-see attitude: they do not plan too much, but instead await how things unfold and whether students will take initiative themselves. Different from the clarifying approach, which is situated in a diametric position vis-à-vis the awaiting approach, teachers adopting the awaiting approach are very low in directiveness. Although potentially adaptive under

certain circumstances, this approach may create considerable confusion and elicit uncertainty among learners.

PART II: REFRESHING INSIGHTS AND FUTURE DIRECTIONS DERIVED FROM THE CIRCUMPLEX MODEL

Given that key motivating and demotivating teaching styles have been largely studied in isolation from one another in SDT-based educational literature, the teaching wheel in Fig. 1 represents, at least in our perspective, a significant advancement for the field. In this second part, we discuss a number of potentially refreshing insights that can be derived from the circumplex model, thereby especially paying attention to its potential value in times of uncertainty and change.

From a Categorical Perspective Toward a Gradual Perspective

The circumplex model highlights the fact that motivating and demotivating approaches do not differ in a black-and-white fashion. Instead, the ordered pattern of correlates observed between the identified approaches themselves and the external outcomes implies a *gradual* approach instead of a categorical approach toward (de)motivating teaching. These differences are captured by the degree to which each identified approach in the circumplex is need-supportive relative to need-thwarting and high relative to low in teacher directiveness.

Because of their most pronounced need-satisfying properties, the guiding and attuning approaches were labeled as *need-nurturing* (Aelterman et al., 2018). Instead, the participative and clarifying approaches yielded somewhat less strong correlates with desirable learning outcomes presumably of their *need-enabling* character. That is, when being participative or clarifying, teachers create the condition for students to get their needs met, yet their satisfaction is not guaranteed. To illustrate, although the offer of choice is potentially autonomy-enhancing, this effect also depends on the type of choice (i.e., action versus option choice; De Muynck, Soenens, Degraeuwe, Vande Broek, & Vansteenkiste, 2018; Reeve, Nix, & Hamm, 2003), the type of options (i.e., trivial vs. meaningful; Katz & Assor, 2007; Pan & Gauvain, 2012), the number of options (Patall, Cooper, & Robinson, 2008), as well upon the style of implementing choice (i.e., informational vs. steering; Moller, Deci, & Ryan, 2006).

This gradual approach also appears fruitful to better understand the variation in the demotivating practices: some of the identified subareas (e.g., domineering, abandoning) may be highly *need-thwarting*, thereby actively undermining learners' motivation and engagement, while other approaches (e.g., awaiting) may yield a more modest need-thwarting effect and may even be merely *need-depriving*. That is, they fail to support learners' psychological needs and motivation but they do not necessarily yield an intense blow to students' psychological needs, thereby eliciting intense need frustrating experiences.

The circular structure has implications for how different motivating and demotivating teaching practices are examined in research. Instead of treating

different motivating and demotivating approaches as different categories that need to be pitted against one another to identify the most powerful predictor and to demonstrate their unique contribution, it becomes more critical to examine their pattern of correlates. That is, the pattern of correlates should be ordered along a continuum of decreasing magnitude as one moves away from one approach to the oppositional approach in the circumplex, with the correlates again becoming increasingly positive when reverting back to the initial approach. Our emphasis on this gradual pattern of correlates does not imply that the quest for unique correlates (e.g., Patall et al., 2018) with student outcomes is no longer meaningful, but demonstrating such a unique pattern (for instance through regression analyses or structural equation models) is not an absolute prerequisite. That is, such an ordered pattern of correlates is informative in its own right and reduces the need to garner evidence for unique correlates of specific motivating approaches.

Identifying a Critical Motivating Skill in Times of Change: The Capacity for Calibration

The observation that different motivating approaches fall into a circular structure highlights a critical capacity that teachers need to possess if they want to optimally motivate their students: they need to be capable of calibrating their motivating approach to characteristics of the learners and situation at hand. Although SDT recognizes that there are many in-roads to learners' experiences of need satisfaction, a well-calibrating teacher is capable of choosing the most motivating pathway in light of student and circumstantial characteristics. This skill may perhaps even be more critical nowadays than before given that teachers are facing numerous changes and challenges. The skill for calibration would then signal their capacity to respond in an adaptive and flexible way to changes in student functioning and in the circumstances as such.

To illustrate, although the provision of clear instructions is of utmost importance so learners feel effective in accomplishing the task at hand, this is less the case if learners know the steps required for successful task completion (Goemaere, Beyers, De Muynck, & Vansteenkiste, 2018). Under these circumstances, the provided help and instructions are not perceived as helpful in the eyes of the recipient, presumably because they fail to nurture learners' need satisfaction. Calibration then involves adjusting one's motivating approach, which requires the teacher to first engage in a dialog (or conduct a formative assessment) to get a better insight in students' understanding of the task requirements and the skill level already present. Subsequently, calibrating teachers may decide to offer fewer instructions, to build in choice allowing learners to decide for themselves how much instructional help they want (i.e., participative approach), or, alternatively, they could provide a meaningful rationale for the long instructions as to justify its use (i.e., attuning approach). A second example concerns the offer of choice. Although this motivating practice is often recommended to foster engagement, in some situations, especially those being unfamiliar and unclear, students may prefer their teacher to make decisions for them.

A well-calibrating teacher notices this desire for clarity and guidance, thereby shifting from the participative to the clarifying approach, which may be a more fruitful pathway to need satisfaction for the students on that moment. If only a subgroup of students would benefit from more detailed instructions, which quite often happens to be the case in today's heterogeneous classrooms, calibration involves breaking down the class in subgroups and varying the dose of instructions as a function of student needs, thus involving the combination of a participative and guiding approach.

Such examples suggest that teachers' capacity for calibration is a multilayered skill, involving different steps and associated skills. First, teachers need to endorse the basic attitude behind need-supportive teaching because such an attitude allows them to gain an insight in and become aware of various personal attributes of students, including their motivation (e.g., "Are the children autonomously motivated or amotivated?"), needs, norms, and preferences (e.g., "Are these children socialized into acting independently and making their own decisions or not?") and their knowledge and skills (e.g., "Are these highly able children with a lot of potential?"). In many cases, these personal attributes are intertwined with specific socio-demographic characteristics, like learners' age, gender, and socio-economic or cultural background. At the same time, well-calibrating teachers are aware of a variety of environmental features, including characteristics of the task (e.g., difficulty level; pursued learning objectives) and of the situation at hand (e.g., group size; moment of the day; time pressures; heterogeneity of the group). Although teachers may infer some of this knowledge themselves, the best way to get an insight in students' personal attributes is probably by giving them a voice. A participative approach allows teachers to gain more accurate information about students' viewpoint, instead of being misguided by a biased perspective on students' goals and interests.

Second, equipped with this knowledge and awareness, a well-calibrating teacher is in a better position to select the motivating approach (e.g., attuning) and motivating practice (e.g., promoting interest) that best fits with students' attributes and situational requirements. Such alignment or *tailoring* between teachers' motivating practices and these various characteristics maximizes students' opportunities for need satisfaction. Because such alignment may look fairly different depending on student and situational features, there might arise quite some variability in learners' pathways to enhanced need satisfaction. Whereas a participative approach may, for instance, be more warranted among highly skilled learners, thereby allowing them to advance their knowledge and skill level independently, lowly skilled individuals may benefit more from a guiding approach, thereby offering them models and strategies how to solve the task at hand. Future research may examine the role of students' experienced perceived task-related competence and skill level as a potential moderator of the effectiveness of different motivating approaches (see Patall, Sylvester, & Han, 2014).

Finally, calibration involves the ongoing *monitoring* of the used motivational practices as to infer whether they require adjustment and optimization in light of changing characteristics of the situation and students themselves. Through this monitoring process, well-calibrating teachers are better able to use multiple

motivating practices, thereby paying attention to the order (e.g., "Should I first recognize the source of their irritation and resistance before giving a rationale?") and the time spent on each of the motivating practices (e.g., "Should I continue ask for input from my students or move towards clarifying my expectations?"). As students' preferences and knowledge are constantly in flux, a motivating practice which initially was found to be need-conducive and engagement-promoting may have lost its motivational potential on a later moment in time.

To calibrate their practices in light of the situation at hand and students' attributes, teachers can best adopt the curious, open, and process-focused attitude to approach students discussed above. Such a fundamental need-congruent attitude allows them to better estimate which approach and, more specifically, which teaching practice is most appropriate (i.e., most motivating) in the given situation. Also, the ongoing adjustment of the used motivating strategies will be facilitated if this basic attitude is adopted. To illustrate, although teachers may apply a specific strategy, such as giving a rationale or offering help, the practice may be ill-timed (i.e., not well calibrated) such that the practice is not fully embraced by the students. When teachers adopt a receptive and curious attitude, they would more easily notice that the used motivating practice is not effective with their students, leading them to adopt the motivating strategy (e.g., "Reducing the dose of instructions and help") or shift toward a different strategy or approach (e.g., 'Giving a rationale'). In contrast, teachers low in receptivity and curiosity will fail to notice the students' perspective, which prevents them from readjusting the used practice to the situation at hand. Instead, they will rather stick rigidly to their initial motivating strategies, the potential of which may not get actualized.

The Notion of Multiple Pathways and SDT's Universality Claim: Two Irreconcilable Ideas?

The idea that motivational tailoring is critical to maximize students' need satisfaction suggests that there might exist different recipes to spur students' motivation and engagement. Indeed, depending on student characteristics and situational circumstances, well-calibrating teachers may follow different pathways. Although at first sight being in contradiction with SDT's universality claim, the idea of multiple need-conducive trajectories is well compatible with the assumption of universality. Three points deserve being clarified.

First, SDT's universality assumption holds especially for learners' experience of autonomy, competence, and relatedness. As far as learners experience volition, mastery, and mutual understanding, they should thrive (Chen, Vansteenkiste et al., 2015; Niemiec & Ryan, 2009; Ryan & Deci, 2017). Yet, the way how these experiences come about may be somewhat variable. That is, there are several routes to students' need-based experiences, with some routes being more effective than other routes for some students under certain circumstances. In this respect, SDT highlights both the issue of uniformity (i.e., need-based experiences are fundamental for all students) and diversity (i.e., the routes leading toward these universal processes can be somewhat different).

Second, in studying the role of the social context and teachers' motivating style, a distinction needs to be made between the *subjective* perception of a motivating approach (as assessed through self-reports) and the *objective* reality, which can be observed by external ratings in the classroom or which can be manipulated through experimental work (Soenens, Vansteenkiste, & Van Petegem, 2015). Overall, there might be more room for moderation in the way how the objective social context is interpreted by students than in the way how subjective experiences of need satisfaction and frustration relate to student outcomes. Indeed, student attributes (e.g., their developmental history, personality, and cultural background) may color the appraisal of the context (Grolnick, Levitt, & Caruso, 2018; Helwig, To, Wang, Liu, & Yang, 2014; Soenens et al., 2018; Van der Kaap-Deeder et al., 2016), that is, these student characteristics may have an impact on the functional significance or perceived meaning of the context. Yet, once learners subjectively *perceive* the context as being need-supportive, they are likely to benefit on average (Deci & Ryan, 1985; Soenens et al., 2015).

At the same time, there are likely limits to the variability with which the objective environment can be interpreted. Potentially need-supportive practices are unlikely to be perceived as need-thwarting (and vice versa). The degree to which objective practices are perceived as need-supportive or need-thwarting is a matter of gradation, with the effects being attenuated or even canceled out, but not completely reversed as a function of different student characteristics (see Mabbe, Soenens, De Muynck, & Vansteenkiste, 2018). Indeed, from an SDT perspective, a match hypothesis is unlikely to be confirmed as such a perspective implies a complete reversing of the observed effects. To illustrate, even controlled motivated individuals do not benefit from teachers who adopt a controlling style, in spite of the match (De Meyer et al., 2016).

Third, this second point can be further nuanced from the circumplex model, adding an extra layer of complexity. Subjective perceptions of the directly need-nurturing zones (attuning, guiding) and of the directly need-thwarting (domineering, abandoning) zones are likely to yield, respectively, rather universal motivating and demotivating effects. In contrast, the effects of the perceived need-enabling (participative, clarifying) and need-depriving (awaiting, demanding) approaches may be more variable and dependent upon other factors. Indeed, motivating approaches intermediate between the highly need-nurturing and the highly need-thwarting approaches in the teaching wheel are situated in a more "gray" and ambiguous area with room for interpretation. Hence, the intermediate zones may be more susceptible for different appraisals, resulting in more room for moderation by students' characteristics.

Congruent with this assumption, choice (i.e., a participative practice) was found to promote mainly intrinsic motivation among individuals scoring high on either task-related competence (Patall et al., 2014) or autonomous motivation (Mouratidis, Vansteenkiste, Sideridis, & Lens, 2011) and among individuals low in indecisiveness (De Muynck et al., 2018). Further, Marbell-Pierre, Grolnick, Stewart, and Raftery-Helmer (2017) found that parental provision of choice only related to positive developmental outcomes among US adolescents and not

among Ghanaian adolescents. In contrast, parental perspective taking, a key practice of the attuning approach, was systematically related to a wider range of outcomes (i.e., higher intrinsic motivation, engagement, and self-worth and lower depressive symptoms), an effect that was *un*moderated by country. Such findings underscore the more context-dependent effects of the participative, relative to the attuning, approach,

The more variable effects associated with the participative approach can be understood from the circumplex model. Given that the participative approach is situated adjacent to the awaiting approach (see Fig. 1), the question is for whom and when the participative approach is perceived as too open, thereby eliciting uncertainty and even confusion, and for whom and when it provides opportunities for volitional action and self-realization. The perceived meaning of the participative approach may be fairly different in combination with the attuning (compared to the awaiting) approach. Illustrative in this context is the finding that adolescents only reported making more their own decisions if they perceived their parents to promote independent decision making (i.e., being participative) in an attuning way such that their sense of volition got fostered (Fousiani, Van Petegem, Soenens, Vansteenkiste, & Chen, 2014). A future research line on motivational tailoring may continue to examine for whom and under which conditions these more intermediate motivating approaches (i.e., participative, clarifying) yield the most predictive power and, in analogy, when the harmful effects of the intermediate demotivating approaches (i.e., demanding, awaiting) would be canceled out.

Practical Advantages of a Circumplex Approach

The circumplex model yields a number of advantages for teaching practice. First, the differentiation of the key teaching dimensions into approaches and their ordering along a circular model allows teachers to gain a direct insight into their teaching style. That is, after completing the questionnaire, teachers can be provided with a personalized and graphically attractive circumplex (e.g., through a spider structure), which highlights their strengths as a teacher and which points toward areas of improvement. Indeed, because of its normative character, it can easily be made clear to teachers in which direction they may, by preference, change, that is, toward the adoption of more need-supportive approaches (i.e., attuning, guiding), while trying to stay away from the more need-thwarting approaches (i.e., domineering, abandoning). As noted, the effectiveness of intermediate approaches may be more heterogeneous, but because of its normative assumption, the circumplex may serve as a *compass* for teachers in daily practice. Practice-friendly information can then be provided by discussing the key building blocks and associated motivating practices of each motivating area. Teachers' own responses can further be enriched with students' responses, which, for many teachers, appear to be discrepant (Aelterman et al., 2018, den Brok, Bergen, & Brekelmans, 2006). These discrepancies – with students, on average, perceiving their teachers to be less motivating and more demotivating (Aelterman et al., 2018) – may be a lever for action. Noting that their student

scores deviate from their own viewpoint may elicit curiosity and enhanced readiness to pursue change among teachers (although some teachers may also respond defensively to such information and be reluctant to change). The circumplex model may get embedded in future intervention work (Reeve, 2015) to examine whether the effectiveness of the intervention gets enhanced and more sustainable effects are obtained. Indeed, trainers may observe teachers' in-class behavior through the lens of the circumplex, as the circular model offers them the chance to engage in a structured dialog with the observed trainers, possibly leading to improved insight in their own teaching.

Apart from gaining more insight into one's own teaching style, the circumplex may offer a more sophisticated conceptual understanding of how different teaching styles work in tandem and relate to each other. For instance, while some teachers may equate autonomy-supportive teaching with the provision of choice and, hence, narrow the concept down to the participative approach, the circumplex indicates that autonomy-supportive teaching also involves an attuning approach. Further, the circumplex may also speak to some of the anxieties of teachers. For instance, the belief that a participative approach may result in endless discussions and may hamper student progress, thus eliciting chaos, is confirmed by the circumplex as the participative approach is situated next to the awaiting approach. The circumplex also offers a direct solution to avoid the pitfalls of being participative, that is, building in sufficient clarity and help through guidelines and models for how to choose effectively. Moving toward the other side of the circumplex, the pitfalls of structure also become evident. That is, the introduced structure may be perceived as rigid and forceful (i.e., demanding approach). Also, in this case, the antidote is offered by the circumplex, that is, the clarifying approach can best be coupled with a more attuning (e.g., providing a rationale) or participative (i.e., asking for input regarding introduced guidelines) approach to optimize its benefits (Sierens, Vansteenkiste, Goossens, Soenens, & Dochy, 2009; Vansteenkiste et al., 2012).

From the Teacher to the Principal: How to Deal with Uncertainty and Change?

The circumplex model may not only apply to teachers' motivating style in interaction with their students, but also to principals' leadership style in relation to their teachers (Deci, Olafsen, & Ryan, 2017), an issue that deserves attention in future work. Directly relevant to the topic of the present volume, the way how principals communicate, initiate, and optimize change processes may be characterized along the various identified approached on the circumplex. To the extent principals' style is more need-supportive, teachers' need-based experiences will be better safeguarded, thereby eliciting less exhaustion and defiance and even promoting greater ownership of change (see Eyal & Roth, 2011). Following the circumplex pattern in Fig. 1, a process of shared decision making can be fostered by having teachers a say in the type, order, and rhythm of implementing change (i.e., participative); principals can provide a meaningful, that is, teacher-centered rationale and accept rather than counter the resistance elicited by the change (i.e., attuning); principals can develop a clear change plan involving different

steps (i.e., clarifying) and provide help, encouragement, and positive feedback to foster ongoing engagement during the change process itself (i.e., guiding). Consistent with these ideas, a more autonomy-supportive leadership style of implementing change in a telecommunication company was found to promote greater acceptance of change one year later (Gagné, Koestner, & Zuckerman, 2000). Further, teacher perception of their principal as being autonomy-supportive related positively to their adaptability, a personal resource which denotes teachers' capacity to respond constructively to change and uncertainty at work (Collie, Granziera, & Martin, 2018).

Principals' autonomy-supportive leadership style also allows teachers to better handle job insecurity or role ambiguity, two demanding job characteristics that may more easily be present in times of change. Specifically, in times of economic recession and ongoing changes, different aspects of teachers' *job security* may easily get threatened, with resulting effects on teachers' job functioning. While quantitative job insecurity denotes the uncertainty of losing one's job as a whole, qualitative job insecurity pertains to the potential loss of valued aspects or conditions of one's job (Hellgren, Sverke, & Isaksson, 1999). Past research has convincingly demonstrated the costs (e.g., greater burnout) associated with both types of job insecurity, with the frustration of the psychological needs for autonomy, competence, and relatedness largely accounting for the observed detriments (Van den Broeck et al. 2014; Vander Elst, Van den Broeck, De Witte, & De Cuyper, 2012). Along similar lines, *role ambiguity*, which denotes one's uncertainties about the actions needed to fulfill role-related expectations, was found to relate negatively to teachers' sense of personal accomplishment through reduced competence satisfaction (Fernet, Austin, Trépanier, & Dussault, 2013). Such ambiguity regarding role-related expectations can be avoided when principals endorse a clarifying and guiding motivating style or their negative effects can be canceled out if their jobs are also characterized by need-conducive job resources (Van den Broeck, Vansteenkiste, De Witte, and Lens, 2008). For instance, the opportunity for teachers to make autonomous decisions and to learn something new (Bakker & Bal, 2010; see also Vujci, Oerlemans, & Bakker, 2017) were positively related to week-to-week variation in teachers' engagement. Future work may examine whether principals' need-supportive leadership style and the presence of job demands and job resources relate not only to teachers' personal functioning but may also be predictive of teachers' use of the different motivating and demotivating approaches in the circumplex (Aelterman et al., 2018).

CONCLUSION

The way how we can best organize contemporary education is a topic of intense public debate. Critical voices indicate that it is five to midnight to modernize our outdated ways of teaching and organizing schools as to optimally prepare new generations of youngsters for an increasingly complex adult work life. As a result, school principals and teachers are facing multiple changes nowadays, with teachers also being challenged to ongoingly adjust their teaching style.

Such flexibility is especially required if teachers face disengaged and even disrupting students (Pelletier et al., 2002). In this chapter, we suggested that a strong theoretical foundation is needed to provide principals and teachers the much-required stability in these stormy educational times. We discussed how the experiences of autonomy, competence, and related need satisfaction may play a unifying role in understanding how the motivation of different school-related actors (i.e., students, teachers, and principals) can be nurtured or may get forestalled and what is needed for teachers to optimally motivate their students. The presented teaching wheel may serve as a guide, if not a compass, to further optimize already effective interventions (Aelterman, Vansteenkiste, Van den Berghe, De Meyer, & Haerens, 2014; Reeve, 2015) such that teachers begin and continue interacting with their students in motivating and need-supportive ways. Key to achieve this goal is the principals' own leadership style in interaction with teachers. If they develop a need-supportive leadership style, teachers may be more resilient in handling change, to the benefit of the learning, progress, and well-being of themselves as well as their students (Table 1).

Table 1. Description of the Identified Motivating Approaches in the Circumplex.

Autonomy Support	
Participative	A participative teacher identifies students' personal interests by engaging in a dialog with students and inviting them to provide input and suggestions. In addition, where possible, the teacher tries to offer (meaningful) choices in how students deal with learning activities and optimally follows their pace
Attuning	An attuning teacher nurtures students' personal interests by trying to find ways to make the exercises more interesting and enjoyable, accepting students' expressions of negative affect and trying to understand how students see things. The teacher allows students to work at their own pace and provides explanatory rationales that are meaningful in the eyes of students
Structure	
Guiding	A guiding teacher nurtures students' progress by providing appropriate help and assistance as and when needed. The teacher goes through the steps that are necessary to complete a task, so that students can continue independently and, if necessary, can ask questions. Together with the students the teacher constructively reflects on mistakes, so that they see for themselves what can be improved and how they can improve
Clarifying	A clarifying teacher communicates expectations to students in a clear and transparent way. The teacher offers an overview of what students can expect from the lesson and monitors students' progress in meeting the communicated expectations
Control	
Demanding	A demanding teacher requires discipline from the students by using powerful and commanding language to make clear what students have to do. The teacher points students on their duties, tolerates no participation or contradiction, and threatens with sanctions if students don't comply

Table 1. (*Continued*)

Domineering	A domineering teacher exerts power to students to make them comply with his/her requests. The teacher suppresses students by inducing feelings of guilt and shame. While a demanding teacher tries to change students' thoughts, feelings, and behaviors into something more acceptable to the teacher, a domineering approach is characterized by a "personal attack" on students
Chaos	
Abandoning	An abandoning teacher gives up on students. The teacher allows students to just do their own thing, because eventually, students have to learn to take responsibility for their own behavior
Awaiting	An awaiting teacher offers a laissez-faire learning climate where the initiative fully lies with the students. The teacher tends to wait to see how things evolve, doesn't plan too much and rather let things take their course

Source: Aelterman et al. (2018)

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REFERENCES

Aelterman, N.*, Vansteenkiste, M.*, Soenens, B., Fontaine, J., Haerens, L., Delrue, J., & Reeve, J. (2018). Towards a fine-grained understanding of the components of need-supportive and need-thwarting teaching: The merits of a gradual approach (*equal contributions). *Journal of Educational Psychology*, *in press*.

Aelterman, N., Vansteenkiste, M., Van den Berghe, L., De Meyer, J., & Haerens, L. (2014). Fostering a need-supportive teaching style: Intervention effects on physical education teachers' beliefs and teaching behaviors. *Journal of Sport & Exercise Psychology*, *36*, 595–609. doi:10.1123/jsep.2013–0229.

Ahmad, I., Vansteenkiste, M., & Soenens, B. (2013). The relations of Arab Jordanian adolescents' perceived maternal parenting to teacher-rated adjustment and problems: The intervening role of perceived need satisfaction. *Developmental Psychology*, *49*, 177–183. doi:10.1037/a0027837

Assor, A., Kaplan, H., & Roth, G. (2002). Choice is good, but relevance is excellent: Autonomy-enhancing and suppressing teacher behaviours predicting students' engagement in schoolwork. *British Journal of Educational Psychology*, *72*, 261. doi:10.1348/000709902158883

Assor, A., Roth, G., & Deci, E. L. (2004). The emotional costs of perceived parental conditional regard: A self-determination theory analysis. *Journal of Personality*, *72*, 47–87. doi:10.1111/j.0022-3506.2004.00256.x

Bakker, A. B., & Bal, P. M. (2010). Weekly work engagement and performance: A study among starting teachers. *Journal of Occupational and Organizational Psychology*, *83*, 189–206. doi:10.1348/096317909X402596

Bartholomew, K. J., Ntoumanis, N., Mouratidis, A., Katartzi, E., Thøgersen-Ntoumani, C., & Vlachopoulos, S. (2018). Beware of your teaching style: A school-year long investigation of controlling teaching and student motivational experiences. *Learning and Instruction*, *53*, 50–63. doi:10.1016/j.learninstruc.2017.07.006

Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., Bosch, J. A., & Thøgersen-Ntoumani, C. (2011). Self-determination theory and diminished functioning: The role of interpersonal control and psychological need thwarting. *Personality and Social Psychology Bulletin*, *37*, 1459–1473. doi:10.1177/0146167211413125

Campbell, R., Boone, L., Vansteenkiste, M., & Soenens, B. (2018). Psychological need frustration as a transdiagnostic process in associations of self-critical perfectionism with depressive symptoms and eating pathology. *Journal of Clinical Psychology*, *74*, 1775−1790.

Campbell, R., Soenens, B., Beyers, W., & Vansteenkiste, M. (2018). University students' sleep during an exam period: The role of basic psychological needs and stress. *Motivation and Emotion*, *42*, 671−681. doi:10.1007/s11031-018-9699-x

Chen, B., Assche, J. V., Vansteenkiste, M., Soenens, B., & Beyers, W. (2015). Does psychological need satisfaction matter when environmental or financial safety are at risk? *Journal of Happiness Studies*, *16*, 745−766. doi:10.1007/s10902-014-9532-5

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van Der Kaap-Deeder, J., … Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion*, *39*, 216−236. doi:10.1007/s11031-014-9450-1

Collie, R. J., Granziera, H., & Martin, A. J. (2018). Teachers' perceived autonomy support and adaptability: An investigation employing the job demands-resources model as relevant to workplace exhaustion, disengagement, and commitment. *Teaching and Teacher Education*, *74*, 125−136. doi:10.1016/j.tate.2018.04.015

Collie, R. J., & Martin, A. J. (2016). Adaptability: An important capacity for effective teachers. *Educational Practice and Theory*, *38*, 27−39. doi:10.7459/ept/38.1.03

De Meyer, J., Soenens, B., Vansteenkiste, M., Aelterman, N., Van Petegem, S., & Haerens, L. (2016). Do students with different motives for physical education respond differently to autonomy-supportive and controlling teaching? *Psychology of Sport & Exercise*, *22*, 72−82. doi:10.1016/j.psychsport.2015.06.001

De Muynck, G-J., Soenens, B., Degraeuwe, L., Vande Broek, G., & Vansteenkiste, M. (2018). *Towards a more refined insight in the critical motivating features of choice: An experimental study among recreational rope skippers* (Manuscript in revision at *Psychology of Sport and Exercise.*).

Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality*, *62*, 119−142. doi:10.1111/j.1467-6494.1994.tb00797.x

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, *125*, 627−668. doi:10.1037/0033-2909.125.6.627

Deci, E. L., Olafsen, A. H., & Ryan, R. M. (2017). Self-determination theory in work organizations: The state of a science. *Annual Review of Organizational Psychology and Organizational Behavior*, *4*, 19−43. doi:10.1146/annurev-orgpsych-032516-113108

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York, NY: Plenum Press.

Delrue, J., Reynders, B., … Vansteenkiste, M. (2018). Towards a fine-grained and integrative insight in motivating and demotivating coaching Behavior: A circumplex approach. *Psychology of Sport and Exercise* (*in press*).

den Brok, P. J., Bergen, T. C. M., & Brekelmans, J. M. G. (2006). Convergence and divergence between students' and teachers' perceptions of instructional behaviour in Dutch secondary education. In D. L. Fisher & M. S. Khine (Eds.), *Contemporary approaches to research on learning environments: World views* (pp. 125−160). Singapore: World Scientific.

Enzle, M. E., & Anderson, S. C. (1993). Surveillant intentions and intrinsic motivation. *Journal of Personality and Social Psychology*, *64*, 257−266. doi:10.1037/0022-3514.64.2.257

Eyal, O., & Roth, G. (2011). Principals' leadership and teachers' motivation: Self-determination theory analysis. *Journal of Educational Administration*, *49*, 256−275. doi:10.1108/09578231111129055

Fernet, C., Austin, S., Trépanier, S.-G., & Dussault, M. (2013). How do job characteristics contribute to burnout? Exploring the distinct mediating roles of perceived autonomy, competence, and relatedness. *European Journal of Work and Organizational Psychology*, *22*, 123−137. doi:10.1080/1359432X.2011.632161

Fernet, C., Guay, F., Senécal, C., & Austin, S. (2012). Predicting intraindividual changes in teacher burnout: The role of perceived school environment and motivational factors. *Teaching and Teacher Education*, *28*, 514−525. doi:10.1016/j.tate.2011.11.013

Fousiani, K., Van Petegem, S., Soenens, B., Vansteenkiste, M., & Chen, B. (2014). Does parental autonomy support relate to adolescent autonomy? An in-depth examination of a seemingly simple question. *Journal of Research on Adolescence*, *29*, 299−330. doi:10.1177/0743558413502536

Gagné, M., Koestner, R., & Zuckerman, M. (2000). Facilitating acceptance of organizational change: The importance of self-determination. *Journal of Applied Social Psychology*, *30*, 1843−1852.

Goemaere, S., Beyers, W., De Muynck, G.-J., & Vansteenkiste, M. (2018). The paradoxical effect of long instructions on negative affect and performance: When, for whom and why do they backfire? *Acta Astronautica*, *147*, 421−430. doi:10.1016/j.actaastro.2018.03.047

Grolnick, W. S., Levitt, M., & Caruso, A. (2018). Adolescent autonomy in context: Facilitating parenting in different cultures, domains, and settings. In B. Soenens, M. Vansteenkiste, & S. Van Petegem (Eds.), *Autonomy in adolescent development: Toward conceptual clarity* (pp. 94−118). Abingdon, UK: Routledge Psychology Press.

Grolnick, W. S., Ryan, R. M., & Deci, E. L. (1991). Inner resources for school achievement: Motivational mediators of children's perceptions of their parents. *Journal of Educational Psychology*, *83*, 508−517.

Haerens, L., Aelterman, N., Van den Berghe, L., De Meyer, J., Soenens, B., & Vansteenkiste, M. (2013). Observing physical education teachers' need-supportive interactions in classroom settings. *Journal of Sport & Exercise Psychology*, *35*, 3−17. doi:10.1123/jsep.35.1.3

Haerens, L., Aelterman, N., Vansteenkiste, M., Soenens, B., & Van Petegem, S. (2015). Do perceived autonomy-supportive and controlling teaching relate to physical education students' motivational experiences through unique pathways? Distinguishing between the bright and dark side of motivation. *Psychology of Sport and Exercise*, *16*, 26−36. doi:10.1016/j.psychsport.2014.08.013

Hagay, G., & Baram-Tsabari, A. (2015). A strategy for incorporating students' interests into the high-school science classroom. *Journal of Research in Science Teaching*, *52*, 949−978. doi:10.1002/tea.21228

Hein, V., Koka, A., & Hagger, M. S. (2015). Relationships between perceived teachers' controlling behaviour, psychological need thwarting, anger and bullying behaviour in high-school students. *Journal of Adolescence*, *42*, 103−114. doi:10.1016/j.adolescence.2015.04.003

Hellgren, J., Sverke, M., & Isaksson, K. (1999). A two-dimensional approach to job insecurity: Consequences for employee attitudes and well-being. *European Journal of Work and Organizational Psychology*, *8*, 179−195. doi:10.1080/135943299398311

Helwig, C. C., To, S., Wang, Q., Liu, C. Q., & Yang, S. G. (2014). Judgments and reasoning about parental discipline involving induction and psychological control in China and Canada. *Child Development*, *85*, 1150−1167.

Jang, H., Kim, E. J., & Reeve, J. (2012). Longitudinal test of self-determination theory's motivation mediation model in a naturally occurring classroom context. *Journal of Educational Psychology*, *104*, 1175−1188. doi:10.1037/a0028089

Jang, H., Kim, E. J., & Reeve, J. (2016). Why students become more engaged or more disengaged during the semester: A self-determination theory dual-process model. *Learning and Instruction*, *43*, 27−38. doi:10.1016/j.learninstruc.2016.01.002

Jang, H., Reeve, J., & Deci, E. L. (2010). Engaging students in learning activities: It is not autonomy support or structure but autonomy support and structure. *Journal of Educational Psychology*, *102*, 588−600. doi:10.1037/a0019682

Jang, H., Reeve, J., & Halusic, M. (2016). A new autonomy-supportive way of teaching that increases conceptual learning: Teaching in students' preferred ways. *The Journal of Experimental Education*, *84*, 686−701. doi:10.1080/00220973.2015.1083522

Jang, H., Reeve, J., Ryan, R. M., & Kim, A. (2009). Can self-determination theory explain what underlies the productive, satisfying learning experiences of collectivistically oriented Korean students? *Journal of Educational Psychology*, *101*, 644−661. doi:10.1037/a0014241

Kanat-Maymon, Y., Benjamin, M., Stavsky, A., Shoshani, A., & Roth, G. (2015). The role of basic need fulfillment in academic dishonesty: A self-determination theory perspective. *Contemporary Educational Psychology*, *43*, 1−9. doi:10.1016/j.cedpsych.2015.08.002

Katz, I., & Assor, A. (2007). When choice motivates and when it does not. *Educational Psychology Review*, *19*, 429. doi:10.1007/s10648-006-9027-y

Katz, I., Kaplan, A., & Gueta, G. (2010). Students' needs, teachers' support, and motivation for doing homework: A cross-sectional study. *The Journal of Experimental Education*, *78*, 236−267. doi:10.1080/00220970903292868

Krijgsman, C., Vansteenkiste, M., van Tartwijk, J., Maes, J., Borghouts, L., Cardon, G., … Haerens, L. (2017). Performance grading and motivational functioning and fear in physical education: A self-determination theory perspective. *Learning and Individual Differences*, *55*, 202−211. doi:10.1016/j.lindif.2017.03.017

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York, NY: Springer.

Legault, L., Ray, K., Hudgins, A., Pelosi, M., & Shannon, W. (2017). Assisted versus asserted autonomy satisfaction: Their unique associations with well-being, integration of experience, and conflict negotiation. *Motivation and Emotion*, *41*, 1−21. doi:10.1007/s11031-016-9593-3

Mabbe, E., Soenens, B., DeMuynck, G.-J., & Vansteenkiste, M. (2018). The impact of valence of feedback and style of communication on intrinsic motivation in middle childhood: Experimental evidence and generalization across individual differences. *Journal of Experimental Child Psychology*, *170*, 134−160.

Marbell-Pierre, K. N., Grolnick, W. S., Stewart, A. L., & Raftery-Helmer, J. N. (2017). Parental autonomy support in two cultures: The moderating effects of adolescents' self-construals. *Child Development*. doi:10.1111/cdev.12947

Martela, F., Ryan, R. M., & Steger, M. F. (2018). Meaningfulness as satisfaction of autonomy, competence, relatedness, and beneficence: Comparing the four satisfactions and positive affect as predictors of meaning in life. *Journal of Happiness Studies*, *19*, 1261−1282. doi:10.1007/s10902-017-9869-7

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, *50*, 370−396. doi:10.1037/h0054346

Moller, A. C., Deci, E. L., & Ryan, R. M. (2006). Choice and ego-depletion: The moderating role of autonomy. *Personality and Social Psychology Bulletin*, *32*, 1024−1036. doi:10.1177/0146167206288008

Mouratidis, A., Vansteenkiste, M., Michou, A., & Lens, W. (2013). Perceived structure and achievement goals as predictors of students' self-regulated learning and affect and the mediating role of competence need satisfaction. *Learning and Individual Differences*, *23*, 179−186. doi:10.1016/j.lindif.2012.09.001

Mouratidis, A., Vansteenkiste, M., Sideridis, G., & Lens, W. (2011). Vitality and interest−enjoyment as a function of class-to-class variation in need-supportive teaching and pupils' autonomous motivation. *Journal of Educational Psychology*, *103*, 353−366. doi:10.1037/a0022773

Niemiec, C. P. (2013, June). *In their own words: Naturally emerging themes of need support in written narratives across life domains*. Plenary address presented at the Fifth International Conference on Self-Determination Theory, Rochester, NY.

Niemiec, C. P., & Ryan, R. M. (2009). Autonomy, competence, and relatedness in the classroom: Applying self-determination theory to educational practice. *Theory and Research in Education*, *7*, 133−144. doi:10.1177/1477878509104318

Ntoumanis, N., Edmunds, J., & Duda, J. L. (2009). Understanding the coping process from a self-determination theory perspective. *British Journal of Health Psychology*, *14*, 249−260. doi:10.1348/135910708X349352

Pan, Y., & Gauvain, M. (2012). The continuity of college students' autonomous learning motivation and its predictors: A three-year longitudinal study. *Learning and Individual Differences*, *22*, 92−99. doi:10.1016/j.lindif.2011.11.010

Patall, E. A., Cooper, H., & Robinson, J. C. (2008). The effects of choice on intrinsic motivation and related outcomes: A meta-analysis of research findings. *Psychological Bulletin*, *134*, 270−300. doi:10.1037/0033-2909.134.2.270

Patall, E. A., Cooper, H., & Wynn, S. R. (2010). The effectiveness and relative importance of choice in the classroom. *Journal of Educational Psychology*, *102*, 896–915. doi:10.1037/a0019545

Patall, E. A., Steingut, R. R., Vasquez, A. C., Trimble, S. S., Pituch, K. A., & Freeman, J. L. (2018). Daily autonomy supporting or thwarting and students' motivation and engagement in the high school science classroom. *Journal of Educational Psychology*, *110*, 269–288. doi:10.1037/edu0000214

Patall, E. A., Sylvester, B. J., & Han, C. (2014). The role of competence in the effects of choice on motivation. *Journal of Experimental Social Psychology*, *50*, 27–44. doi:10.1016/j.jesp.2013.09.002

Pelletier, L. G., Séguin-Lévesque, C., & Legault, L. (2002). Pressure from above and pressure from below as determinants of teachers' motivation and teaching behaviors. *Journal of Educational Psychology*, *94*, 186–196. doi:10.1037/0022-0663.94.1.186

Rasskazova, E., Ivanova, T., & Sheldon, K. (2016). Comparing the effects of low-level and high-level worker need-satisfaction: A synthesis of the self-determination and Maslow need theories. *Motivation and Emotion*, *40*, 541–555. doi:10.1007/s11031-016-9557-7

Ratelle, C. F., & Duchesne, S. (2014). Trajectories of psychological need satisfaction from early to late adolescence as a predictor of adjustment in school. *Contemporary Educational Psychology*, *39*, 388–400. doi:10.1016/j.cedpsych.2014.09.003

Reeve, J. (2009). Why teachers adopt a controlling motivating style toward students and how they can become more autonomy supportive. *Educational Psychologist*, *44*, 159–175. doi:10.1080/00461520903028990

Reeve, J. (2015). Autonomy-supportive teaching: What it is, how to do it. In J. C. K. Wang, W. C. Liu, & R. M. Ryan's (Eds.), *Motivation in educational research: Translating theory into classroom practice*. New York, NY: Springer.

Reeve, J., Jang, H.-R., & Jang, H. (2018). Personality-based antecedents of teachers' autonomy-supportive and controlling motivating styles. *Learning and Individual Differences*, *62*, 12–22.

Reeve, J., Nix, G., & Hamm, D. (2003). Testing models of the experience of self-determination in intrinsic motivation and the conundrum of choice. *Journal of Educational Psychology*, *95*, 375–392. doi:10.1037/0022-0663.95.2.375

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. New York, NY: Guilford Press.

Ryan, R. M., Deci, E. L., & Vansteenkiste, M. (2016). Autonomy and autonomy disturbances in self-development and psychopathology: Research on motivation, attachment, and clinical process. In D. Cicchetti (Eds.), *Developmental psychopathology* (Vol *1*, pp. 385–438). Hoboken, NJ: John Wiley & Sons Inc.

Sheldon, K. M. (2011). Integrating behavioral-motive and experiential-requirement perspectives on psychological needs: A two process model. *Psychological Review*, *118*, 552–569.

Sierens, E., Vansteenkiste, M., Goossens, L., Soenens, B., & Dochy, F. (2009). The synergistic relationship of perceived autonomy support and structure in the prediction of self-regulated learning. *British Journal of Educational Psychology*, *79*, 57–68. doi:10.1348/000709908X304398

Soenens, B., Park, S.-Y., Mabbe, E., Vansteenkiste, M., Chen, B., Van Petegem, S., & Brenning, K. (2018). The moderating role of vertical collectivism in South-Korean adolescents' perceptions of and responses to autonomy-supportive and controlling parenting. *Frontiers in Psychology 9*.

Soenens, B., Sierens, E., Vansteenkiste, M., Goossens, L., & Dochy, F. (2012). Psychologically controlling teaching: Examining outcomes, antecedents, and mediators. *Journal of Educational Psychology*, *104*, 108–120.

Soenens, B., Vansteenkiste, M., Lens, W., Luyckx, K., Goossens, L., Beyers, W., & Ryan, R. M. (2007). Conceptualizing parental autonomy support: Adolescent perceptions of promotion of independence versus promotion of volitional functioning. *Developmental Psychology*, *43*, 633–646. doi:10.1037/0012-1649.43.3.633

Soenens, B., Vansteenkiste, M., & Van Petegem, S. (2015). Let's not throw out the baby with the bathwater: Applying the principle of 'universalism without uniformity' to autonomy-supportive and controlling parenting. *Child Development Perspectives*, *9*, 44–49. doi:10.1111/cdep.12103

Stroet, K., Opdenakker, M.-C., & Minnaert, A. (2015). What motivates early adolescents for school? A longitudinal analysis of associations between observed teaching and motivation. *Contemporary Educational Psychology*, *42*, 129−140. doi:10.1016/j.cedpsych.2015.06.002

Taylor, I. M., & Ntoumanis, N. (2007). Teacher motivational strategies and student self-determination in physical education. *Journal of Educational Psychology*, *99*, 747−760. doi:10.1037/0022-0663.99.4.747

ten Brummelhuis, L. L., ter Hoeven, C. L., Bakker, A. B., & Peper, B. (2011). Breaking through the loss cycle of burn-out: The role of motivation. *Journal of Occupational and Organizational Psychology*, *84*, 268−287.

Trépanier, S.-G., Fernet, C., & Austin, S. (2013). The moderating role of autonomous motivation in the job demands-strain relation: A two sample study. *Motivation and Emotion*, *37*, 93−105. doi:10.1007/s11031-012-9290-9

Van Assche, J., Van der Kaap-Deeder, J., Audenaert, E., De Schryver, M., & Vansteenkiste, M. (2018). Are the benefits of autonomy satisfaction and the costs of autonomy frustration dependent on individuals' autonomy strength? *Journal of Personality*, *86*, 1017−1036. doi:10.1111/jopy.12372

Van den Berghe, L., Cardon, G., Tallir, I., Kirk, D., & Haerens, L. (2016). Dynamics of need-supportive and need-thwarting teaching behavior: The bidirectional relationship with student engagement and disengagement in the beginning of a lesson. *Physical Education and Sport Pedagogy*, *21*, 653−670.

Van den Broeck, A., Sulea, C., Vander Elst, T., Fischmann, G., Iliescu, D., & De Witte, H. (2014). The mediating role of psychological needs in the relation between qualitative job insecurity and counterproductive work behavior. *Career Development International*, *19*, 526−547. doi:10.1108/CDI-05-2013-0063

Van den Broeck, A., Vansteenkiste, M., De Witte, H., & Lens, W. (2008). Explaining the relationships between job characteristics, burnout, and engagement: The role of basic psychological need satisfaction. *Work & Stress*, *22*, 277−294. doi:10.1080/02678370802393672

Van der Kaap-Deeder, J., Soenens, B., Boone, L., Vandenkerckhove, B., Stemgée, E., & Vansteenkiste, M. (2016). Evaluative concerns perfectionism and coping with failure: Effects on rumination, avoidance, and acceptance. *Personality and Individual Differences*, *101*, 114−119. doi:10.1016/j.paid.2016.05.063

Vander Elst, T., Van den Broeck, A., De Witte, H., & De Cuyper, N. (2012). The mediating role of frustration of psychological needs in the relationship between job insecurity and work-related well-being. *Work and Stress*, *26*, 252−271. doi:10.1080/02678373.2012.703900

Vansteenkiste, M., Aelterman, A., De Muynck, G-J., Haerens, L., Patall, E., & Reeve, J. (2018). Fostering personal meaning and self-relevance: A self-determination theory perspective on internalization. *Journal of Experimental Education*, *86*, 30−49. doi:10.1080/00220973.2017.1381067

Vansteenkiste, M., Luyckx, K., Soenens, B., & Lens, W. (2006). Autonomy and relatedness among Chinese sojourners and applicants: Conflictual or independent predictors of well-being and adjustment? *Motivation and Emotion*, *30*, 273−282. doi:10.1007/s11031-006-9041-x

Vansteenkiste, M., Niemiec, C. P., & Soenens, B. (2010). The development of the five mini-theories of self-determination theory: An historical overview, emerging trends, and future directions. In T. C. Urdan & S. A. Karabenick (Eds.), *The decade ahead: Theoretical perspectives on motivation and achievement* (Vol. 16A, pp. 105−166). Bingley: Emerald.

Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration*, *23*, 263−280. doi:10.1037/a0032359

Vansteenkiste, M., Sierens, E., Goossens, L., Soenens, B., Dochy, F., Mouratidis, A., … Beyers, W. (2012). Identifying configurations of perceived teacher autonomy support and structure: Associations with self-regulated learning, motivation and problem behavior. *Learning and Instruction*, *22*, 431−439. doi:10.1016/j.learninstruc.2012.04.002

Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. M., & Deci, E. L. (2004). Motivating learning, performance, and persistence: The synergistic effects of intrinsic goal contents and autonomy-supportive contexts. *Journal of Personality and Social Psychology*, *87*, 246−260.

Vansteenkiste, M., Simons, J., Lens, W., Soenens, B., & Matos, L. (2005). Examining the motivational impact of intrinsic versus extrinsic goal framing and autonomy-supportive versus internally controlling communication style on early adolescents' academic achievement. *Child Development*, *76*, 483−501.

Vansteenkiste, M., & Soenens, B. (2015). *Vitamines voor groei: ontwikkeling voeden vanuit de Zelf-Determinatie Theorie*. Leuven: Acco.

Véronneau, M., Koestner, R. F., & Abela, J. R. (2005). Intrinsic need satisfaction and well−being in children and adolescents: An application of the self−determination theory. *Journal of Social and Clinical Psychology*, *24*, 280−292. doi:10.1521/jscp.24.2.280.62277

Vujci, M. T., Oerlemans, W. G. M., & Bakker, A. B. (2017). How challenging was your work today? The role of autonomous work motivation. *European Journal of Work and Organizational Psychology*, *26*, 81−93.

Weinstein, N., Legate, N., Kumashiro, M., & Ryan, R. M. (2016). Autonomy support and diastolic blood pressure: Long term effects and conflict navigation in romantic relationships. *Motivation and Emotion*, *40*, 212−225. doi:10.1007/s11031-015-9526-6

Weinstein, N., & Ryan, R. M. (2011). A self-determination theory approach to understanding stress incursion and responses. *Stress and Health*, *27*, 4−17. doi:10.1002/smi.1368

Weinstein, N., & Stone, D. N. (2018). Need depriving effects of financial insecurity: Implications for well-being and financial behaviors. *Journal of Experimental Psychology*, *10*, 1503−1520.

Yu, S., Chen, B., Levesque-Bristol, C., & Vansteenkiste, M. (2018). Chinese education examined via the lens of self-determination. *Contemporary Educational Psychology*, *30*, 177−214. doi:10.1007/s10648-016-9395-x

Zougkou, K., Weinstein, N., & Paulmann, S. (2017). ERP correlates of motivating voices: Quality of motivation and time-course matters. *Social Cognitive and Affective Neuroscience*, *12*, 1687−1700. doi:10.1093/scan/nsx064