THE SATISFACTION AND FRUSTRATION OF BASIC PSYCHOLOGICAL NEEDS IN ENGAGING LEADERSHIP

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The purpose of the current study was to test engaging leadership, which is a recently developed leadership concept based on basic psychological needs theory. Drawing on self-determination theory, the current study hypothesized that basic psychological needs mediate the relationship between engaging leadership and both positive and negative outcomes. An association between need satisfaction and positive results and an association between need frustration and adverse outcomes were expected. The survey data, collected from three comparable groups from two multinational, technical engineering organizations (*N* = 304), were analyzed using partial least squares structural equation modeling. Autonomy satisfaction was found to play a pivotal role in the leadership model and was associated with increased positive outcomes, such as work engagement and autonomous motivation, and decreased unfavorable motivational consequences, such as controlled motivation and amotivation. The highlighted role of autonomy satisfaction informs leaders to focus on the positive aspects of leadership and need fulfillment rather than aiming to diminish

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frustration. Additionally, the current study adds to the growing body of knowledge on effective leadership approaches in a fast-changing complex business world and on the benefits of autonomy-supportive work environments.

Popular positive leadership concepts such as transformational (Bass, 1985) and authentic (George, 2003) leadership are associated with favorable outcomes, including employee engagement (Babcock-Roberson & Strickland, 2010) and performance (Wang, Oh, Courtright, & Colbert, 2011). As research has continuously aimed to identify effective leadership behaviors, the positive behaviors leaders need to display have expanded (Hoch, Bommer, Dulebohn, & Wu, 2016), and the required depth of leaders' self-awareness and authenticity has increased (Ilies, Morgeson, & Nahrgang, 2005). However, effective leadership behaviors, such as deep listening, asking open-ended questions, giving positive feedback, and shaping psychological safety through elevated levels of self-awareness and authenticity (e.g., Edmondson & Lei, 2014), do not explain the positive outcomes of leadership approaches. Knowing why a particular leadership approach may prove effective remains a relevant question, as organizations face considerable challenges in today's business environment, which is often characterized as fundamentally volatile, uncertain, complex and ambiguous (Bennett & Lemoine, 2014): New generations of employees bring new values to the workplace (Rodriguez & Rodriguez, 2015) and challenge command-and-control hierarchies, while innovative practices such as agile workplaces have rapidly gained ground, also in traditional industries and global corporations (Brosseau, Ebrahim, Handscomb, & Thaker, 2019).

Judge, Woolf, Hurst, and Livingston (2006) called upon researchers to develop more rigorous research designs to provide insight into the process of leadership and potential mediating mechanisms in order to explain the effectiveness of transformational leadership. In the article, the authors considered several studies exploring different mediators to explain the relationship between leadership and various outcomes and noted that the studies had been conducted in a scattered, non-systematic fashion. More recent studies highlighted the mediating role of self-efficacy (Salanova, Lorente, Chambel, & Martínez, 2011), trust

(e.g., Braun, Peus, Weisweiler, & Frey, 2013), psychological empowerment (Avolio, Zhu, Koh, & Bhatia, 2004), leader-member exchange (Yukl, Mahsud, Hassan, & Prussia, 2013), and job characteristics (Piccolo & Colquitt, 2006), to name a few. While some of the studies mentioned identify direct or indirect relationships between leadership and work outcomes, such as work engagement, none of them are based on a comprehensive theory of motivation (Schaufeli, 2015).

Self-determination theory (SDT; Deci & Ryan, 2000) is one such theory of motivation. A growing number of studies on the effectiveness of leadership approaches use SDT to explain the relationship between these approaches and positive outcomes through the satisfaction of three basic psychological needs: autonomy, competence, and relatedness (e.g., Hetland et al., 2015; Kovjanic, Schuh, Jonas, Quaquebeke, & van Dick, 2012). Needs satisfaction is viewed as a promising mechanism (e.g., Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008) or even as the primary explanatory mechanism (Solansky, 2014) underlying leadership effectiveness and leader development. Engaging leadership (EL, Schaufeli, 2015), the subject of the present study, is based on SDT and is conceptualized as a process to create work contexts where people can flourish, self-develop, meaningfully contribute, and perform well through the satisfaction of basic psychological needs (Ryan & Deci, 2017). EL is expected to positively relate to established outcome measures such as work engagement (Schaufeli, Bakker, & Salanova, 2006) and work motivation (Gagné et al., 2014).

BASIC PSYCHOLOGICAL NEEDS THEORY AND LEADERSHIP

SDT is a meta-theory for framing motivational studies through "mini-theories" (Ryan & Deci, 2017), one of which is basic psychological needs theory (BPNT), which posits that human thriving and well-being universally depend on the satisfaction of three basic psychological needs (autonomy, competence, and relatedness; Deci & Ryan, 2000; Ryan & Deci, 2017). Autonomy

refs to the experience of volition and the sense that one's actions are determined by his or her choices (De Charms, 1968). Competence refers to the experience of a sense of effectiveness or competence in interacting with one's environment and is mostly explained in reference to White (1959). Relatedness refers to the experience of being loved and cared for by others (Baumeister & Leary, 1995). Work environments that satisfy the three basic psychological needs of employees are said to promote autonomous motivation, performance, and well-being (Deci, Olafsen, & Ryan, 2017).

SDT specifies the mechanisms involved in the integration and psychological growth of employees because it points to elements of social environments, such as organizations' leadership practices, that facilitate or undermine human growth processes (e.g., Vansteenkiste & Ryan, 2013). The theoretical rationale behind these mechanisms is SDT's organismic integration theory (OIT), which is a specific SDT-mini-theory that conceptualizes human beings as (pro-) active organisms. It assumes that human beings strive to self-organize, self-develop, and grow by integrating their life experiences into an increasingly unified sense of self through a dialectical relationship with their environment (Deci & Ryan, 1985). The social-contextual support offered by an organization's leadership can positively promote integration through "nutrients" in the form of the fulfillment of the basic psychological needs for autonomy, competence, and relatedness (Ryan, 1995), creating a context within which human beings, as employees and managers, function. Hence, the leadership of an organization shapes the daily social environment wherein employees may find their needs satisfied or thwarted. SDT, through BPNT and OIT, provides a theoretical substantiation for the popularity of emerging leadership approaches and management practices promoting self-leadership, shared leadership, collaborative leadership, self-managing organizations (Lee & Edmondson, 2017), and other decentralized, less hierarchical forms of organization.

AUTONOMOUS MOTIVATION AND CONTROLLED MOTIVATION

The fulfillment of the three basic psychological needs helps employees take in or internalize values, strategies, goals, or behavioral regulations and transform them into their own (Ryan & Deci, 2017). When the internal-ization of extrinsic incentives and motives is positive and effective, employees experience their behavior as self-determined or autonomously regulated or motivated (Deci & Ryan, 2000); this experience is associated with higher levels of well-being, creativity, and work engagement and is referred to as *autonomous motivation*. Employees with high levels of autonomous motivation also tend to take on more initiative and responsibilities willingly, direct more energy toward the work at hand, and display higher levels of perseverance in task completion (Grant & Shin, 2012). For instance, a leader may create a clear, appealing vision for her or his department or team. Additionally, when the leader engages employees in the vision creation process and grants the employees a say in translating the vision into concrete strategies and goals, the leader actively supports the integration process through the satisfaction of the need for autonomy: as a result employees may identify stronger with the vision offered by the leader and make it into their own (Gagné & Deci, 2005; Niemiec & Spence, 2016). Organizing the integration process in an atmosphere of psychological safety, through fostering meaningful interpersonal relations between employees and between employees and their supervisor, help satisfy the need for relatedness. The need for competence can be satisfied if an organization actively finds ways for employees to meaningfully contribute to the department's goals, optimally deploy their talents and develop their skills in an environment of positive feedback (Gagné & Deci, 2005).

Types of motivation that do not satisfy employees' basic needs are *controlled motivation* and *amotivation*. Controlled motivation is a type of motivation in which the incentive for action remains extrinsic to the individual and cannot be internalized or can be only partly internalized (Van den Broeck, Lens, De Witte, & Van Coillie, 2013). A supervising manager who pushes for results, stresses deadlines, prioritizes the realization of key performance indicators, and focuses on compliance with process controls and progress reporting shapes a work context in which employees may feel controlled. Consequently, employees may comply with the pressures and controls to avoid negative consequences or to obtain positive consequences (Baard, Deci, & Ryan, 2004). It is typical in a setting of controlled motivation for certain behavior to stop when the incentive stops, which forces managers to continue

exerting control in order to maintain employee performance (Deci & Ryan, 2000): Work environments with high levels of controlled motivation and low needs satisfaction require high levels of controlling management attention. Within SDT, researchers speak of amotivation when employees feel their efforts make no difference, their contribution is meaningless, and their work is pointless. Amotivation typically occurs when controlling management behavior is pervasive and strongly associates with adverse work outcomes and low work engagement (Gagné et al., 2014).

An organization's leadership may mold a work context that fulfills the basic psychological needs for and autonomy, competence, and relatedness. Through that need fulfillment, the underlying mechanism of internalization and integration of extrinsic motives is nourished and may lead to higher levels of autonomous and intrinsic motivation. Over the years, scholars have consistently emphasized the pivotal role leaders play in creating productive work contexts in which employee motivation is nurtured and nourished through the satisfaction of basic psychological needs (Baard et al., 2004; Deci et al., 2017; Gagné & Deci, 2005; Ryan & Deci, 2017; Stone, Deci, & Ryan, 2009).

NEED FRUSTRATION

SDT posits that the mechanism explaining positive psychological outcomes also explains the darker side of people's functioning, which is associated with ill-being and negative effects such as burnout and poor performance through the frustration or thwarting of the three basic needs (Deci & Ryan, 2000; Vansteenkiste & Ryan, 2013). Recent research combined frustration with the satisfaction of basic needs to shed light on how positive and negative personal psychological outcomes are produced: need thwarting induces adverse outcomes such as burnout, and needs satisfaction induces positive outcomes such as work engagement (e.g., Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011; Gillet, Fouquereau, Huyghebaert, & Colombat, 2015; Huyghebaert, Gillet, Lahiani, Dubois-Fleury, & Fouquereau, 2018).

The lack of satisfaction of a basic need is not the same as need frustration: one's needs may not be satisfied, but dissatisfaction does not necessarily imply the thwarting or frustration of basic needs; Needs frustration and needs satisfaction must be understood as two separate dimensions with a distinct predictive validity in relation to outcomes, although both operate on the same psychological mechanism explained by OIT. Sometimes the underlying psychological mechanism is referred to as a unifying principle (e.g., Meyer & Gagné, 2008). For example, the satisfaction of basic psychological needs in autonomy-supportive environments is predictive of higher levels of well-being, autonomy, openness, resilience, and vitality (Ryan & Deci, 2017). In contrast, the frustration of basic needs may lead to the search for need substitutes (Deci & Ryan, 2000). Need frustration may even induce negative compensatory behaviors (Ryan, Deci, Grolnick, & La Guardia, 2006), such as loss of self-control, display of rigid behavioral patterns, and oppositional defiance (for an overview of studies into the separate effects of needs satisfaction and needs thwarting or frustration see Vansteenkiste & Ryan, 2013). However, the way that the satisfaction and frustration of needs behave vis-à-vis each other when they are simultaneously included in one structural model remains unanswered. Are lower frustration levels also associated with higher satisfaction levels, and can increased satisfaction levels also prevent unfavorable outcomes? These questions are essential for organizational leaders and may provide vital information on what to focus on in leadership. Thus, the current study included not only needs satisfaction but also needs frustration.

WORK ENGAGEMENT AND LEADERSHIP

New generations of employees bring new values to the workplace and challenge the traditional command-and-control leadership model. These employees find it essential to have meaningful work, that is, to make a contribution through their work to something beyond the work itself, to have the space to self-organize, and to develop and grow professionally and personally through what they do (Laloux, 2014; Shuck & Herd, 2012). One of the challenges leaders face today is how to maintain high levels of employee engagement: A yearly Gallup report estimates that only 15% of the full-time working population worldwide is enthusiastic about and engaged with their work, whereas organizations with high employee engagement are more productive and profitable than those with low levels of engagement (Gallup, 2017). Recent research by

Schneider, Yost, Kropp, Kind, and Lam (2018) identified a strong connection between the level of employee engagement and a company's financial performance. The concept of work engagement, its antecedents and its effects have been extensively studied and documented in a broad array of studies across the globe (for an overview, see Schaufeli, 2012). Overall, the literature tends to underscore work engagement as a central concern for leadership: Leaders who actively engage their employees, generate measurable and positive differences and are more aligned with emerging models and practices of the modern workplace (Ardichvili, Dag, & Manderscheid, 2016; Shuck & Herd, 2012).

ENGAGING LEADERSHIP

EL (Schaufeli, 2015) is a recently developed leadership concept based on the theoretical considerations offered by SDT, particularly BPNT. Schaufeli's primary aim with developing EL was to develop a positive model of leadership with sound theoretical foundation and high predictive validity in fostering work engagement. Transformational leadership (Bass, 1985) was not a suitable candidate because it lacks a firm theoretical foundation (Van Knippenberg & Sitkin, 2013). In the first published study (Schaufeli, 2015) EL was integrated in the Job Demands-Resources (JD-R) model (Schaufeli & Bakker, 2004) with work engagement as an outcome variable and job demands and job resources as mediators. Many earlier studies found strong confirmation of the direction of the relationship between the JD-R model and work engagement (for a recent review, see Schaufeli & Taris, 2013). Instead of considering leadership as a mere job resource, as was done in previous JD-R studies, Schaufeli (2015) argued that leadership should be considered in its own right: leaders allocate and manage demands and resources and thus indirectly influence employee well-being and motivation. Indeed, in the 2015 study, job demands and job resources mediated the impact of EL on burnout and engagement. However, relationships between variables in the JD-R model were specified without any particular psychological explanation (Schaufeli & Taris, 2013, p. 55). For this reason, BPNT served as the underlying, explanatory mechanism.

As such, EL proposes a conceptualization of leadership that aims to support leaders to shape a work environment that satisfies the three basic psychological needs of employees: autonomy, competence, and relatedness. Also, through fulfilling basic needs, EL aims to facilitate the internalization of extrinsic motives, such as the organizations' purpose, values, processes, and controls, which may lead to higher levels of autonomous motivation and work engagement.

Building on SDT and the satisfaction of the needs for autonomy, competence, and relatedness, EL distinguishes three aspects leaders should pay attention to, empowering, strengthening, and connecting (Schaufeli, 2015). Empowering aims to satisfy the need for autonomy and is the aspect of leadership that creates space for employees to experience freedom of choice in how to complete their tasks and supports high levels of accountability. Engaging leaders encourage team members to speak out about what is important to them without repercussions. Engaging leaders acknowledge the importance of giving feedback, particularly positive feedback, and recognize the individual contributions of team members (Reeve, 1998). Engaging leaders actively involve employees in strategic decision-making and promote self-regulation and autonomy, without losing sight of the relevance of a context and structure that allows employees to feel safe and free (Edmondson & Lei, 2014).

Strengthening refers to supporting employees to self-develop and grow and optimally deploy their talents within the work environment. Within this style of leadership, promoting strengths is preferred to correcting weaknesses, and as such, strengthening associates with the basic need for competence. Engaging leaders acknowledge that employees wish to make a difference and want to contribute to the realization of something of value beyond their immediate self-interest (Martela & Pessi, 2018). Also, engaging leaders support employees to grow professionally and develop their skill levels and recognize the personal and professional importance of being good at something (Gagné & Deci, 2005). Connecting is an aspect of EL that promotes teamwork, team spirit, and collaboration between team members and across functions, and it stresses the importance of meaningful, interpersonal, in-depth relationships. Connecting aims to satisfy employees' basic need for relatedness and refers to supervisor behavior that is supportive and trustworthy and promotes the safety employees need to speak up, voice concerns and show themselves without any fear of negative consequences (May, Gilson, & Harter, 2004).

Engaging leaders recognize the strong positive effects of belongingness on both emotional and cognitive levels (Baumeister & Leary, 1995).

THE CURRENT STUDY

Previous studies modeled basic psychological needs as either a common, composite factor, aggregating the three needs as "need satisfaction" (e.g., Hetland et al., 2015), or as separate needs for autonomy, competence, and relatedness (e.g., Kovjanic et al., 2012). Aggregating the three separate needs into one higher-order construct aligns with the idea that all three needs should be satisfied or balanced and "hang together" (Sheldon & Niemiec, 2006). In addition, it seems practical and economical to aggregate all three needs under one construct. Van den Broeck, Ferris, Chang, and Rosen (2016), however, pointed out that aggregating the needs runs counter to the very conceptualization of the basic needs as separate entities; the authors argued that the three needs are not interchangeable, cannot be reduced to each other, and may differ in their predictive

validity. Consequently, in the current study, the needs were modeled both as an aggregate and separately to study the predictive validity of the needs in both setups. The essential question from a leadership perspective is as follows: Do all needs require equal leadership attention?

Bringing the elements together leads to a study design in which the effects of EL on work motivation (amotivation, controlled motivation, and autonomous motivation) and work engagement are studied in a structural path model via the satisfaction and frustration of basic psychological needs in a parallel mediation design (see Figure 1).

The present study tested the concept of EL and its effects on work motivation and engagement via the satisfaction and frustration of basic psychological needs. The roles of need satisfaction and need frustration are simultaneously tested with their respective items, and it is specifically studied how the psychological needs relate, both as a common factor and separately, to work motivation and work engagement. The following hypotheses are posed:
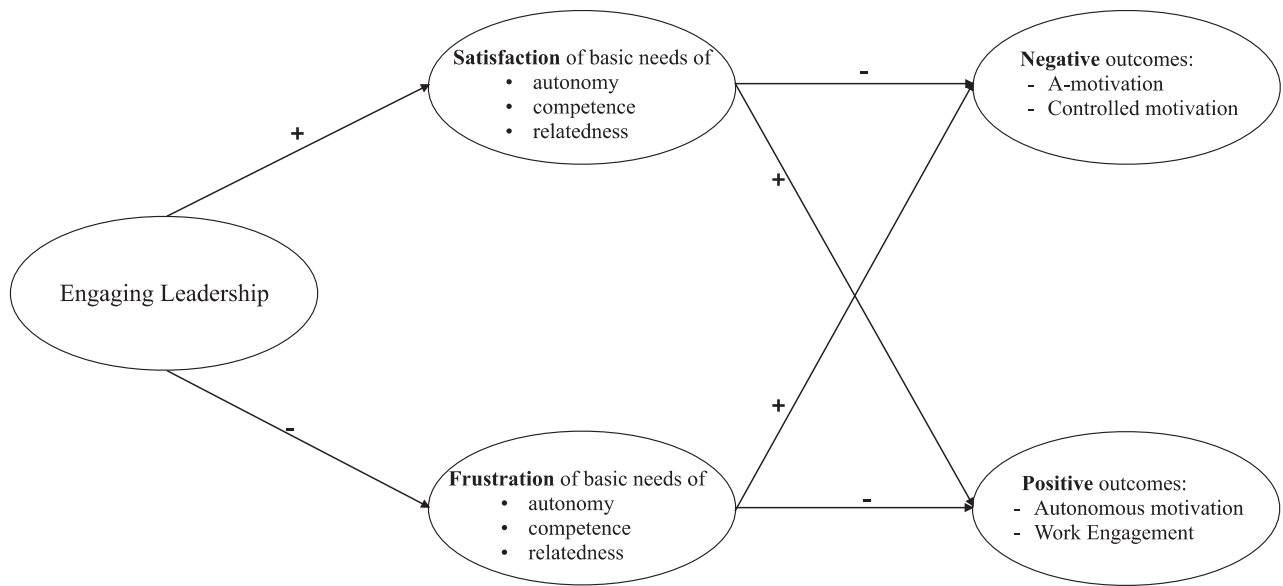
Figure 1   The Research Model and Hypotheses

Note. The figure depicts the parallel mediation model with both satisfaction and frustration of basic needs. For reasons of readability the structural model is depicted in the essentialized form. The construct of Engaging leadership is directly connected with the outcome measures in the mediation analysis. The constructs for needs satisfaction and frustration are analyzed both as a common factor model, and as six separate constructs for the satisfaction and frustration of the three individual basic needs. Lastly, the four outcome measures are depicted as two clusters, one for negative and one for positive outcomes.

1. The satisfaction of the needs for autonomy, competence, and relatedness mediates the relationship between EL and positive outcomes (i.e., work engagement and autonomous motivation).
2. The frustration of the needs for autonomy, competence, and relatedness mediates the relationship between EL and negative outcomes (i.e., amotivation and controlled motivation).

Method

PARTICIPANTS AND PROCEDURE

Three groups of employees were included. Two groups were from a Dutch technology- and engineering-driven multinational organization, and the third group was from a Dutch subsidiary of a comparable German multinational organization. A total of 499 invitations to an online questionnaire in the English language were distributed via email, with an invitation letter from a representative of senior management. Group sizes and response rates varied. In the first group (from the Dutch organization), 144 invitations were sent and 108 surveys were completed (75%). In the second group (from the Dutch organization), 279 invitations were sent and 127 surveys (46%) were completed. In the third group (from the Dutch subsidiary of the German organization), 76 invitations were sent and 69 surveys were completed (92%). Hence, a total of 304 questionnaires was returned completed (overall response rate 61%).

The total sample included 160 male (53%) and 90 female respondents (30%); 82.2% of all respondents disclosed their gender. In the sample, 54% of respondents were younger than 34, 20% were between 35 and 49, 28% were older than 49, and 73.3% disclosed their age. All demographic questions were optional, while the other items in the survey were not. There were fewer than 1% missing values on the questionnaire items, and mean replacement of missing values was applied. Outliers were not identified, and skewness and kurtosis were within acceptable limits.

MEASURES

EL was measured with the 9-Item Engaging leadership Scale developed by Schaufeli (2015). Strengthening, connecting and empowering were measured by three items each. An example of strengthening is "My supervisor encourages team members to develop their talents as much as possible." Connecting, which aims to align with the need for relatedness, includes items such as "My supervisor encourages collaboration among team members." Empowering is designed to align with autonomy, and related items include "My supervisor gives team members enough freedom and responsibility to complete their tasks."

Basic psychological needs were measured with the scale developed and validated by Chen et al. (2014), which measures the satisfaction and frustration of the three basic psychological needs. The full scale consists of 24 items, 12 for needs satisfaction and 12 for needs frustration, with four items per basic need. An example of an item for autonomy satisfaction is "I feel a sense of choice and freedom in the things I undertake," a relatedness satisfaction example item is "I feel connected with people who care for me, and for whom I care," and a competence satisfaction example item is "I feel confident that I can do things well." An example item for autonomy frustration is "I feel forced to do many things I would not choose to do," an example item for relatedness is "I feel that people who are important to me are cold and distant toward me," and an example item for competence frustration is "I feel disappointed with much of my performance."

Work motivation was measured by the 19-Item Multidimensional Work Motivation Scale (Gagné et al., 2014). The scale measures six dimensions for work motivation along the motivation continuum. Amotivation as well as extrinsic social, extrinsic material, identified, and intrinsic regulation are all measured through three items. Introjected regulation is measured with four items. The header for the items is "Why do you or would you put effort into your job?" An example item for amotivation is "I don't know why I'm doing this job; it's pointless work"; extrinsic social regulation: "To get others' approval (e.g., supervisor, colleagues, family, clients)"; extrinsic material regulation: "Because others will reward me financially only if I put enough effort into my job (e.g., employer, supervisor).”; introjected regulation: "Because I have to prove to myself that I can."; identified regulation: "Because I consider it important to put effort into this job."; and intrinsic regulation: "Because I have fun doing my job."

Work engagement was assessed using the 9-item version of the Utrecht Work Engagement Scale (Schaufeli et al., 2006). It measures vigor, dedication, and absorption. Following Schaufeli et al.'s (2006) recommendations, one common factor for engagement was used. Examples of items are "At my work, I feel like I am bursting with energy" (vigor), "I am enthusiastic about my job" (dedication), and "I feel happy when I am working intensely" (absorption).

Results

The data were analyzed using partial least squares structural equation modeling (PLS-SEM) with SmartPLS version 3. The structural model is complex because it combines the separate needs satisfaction measures and the separate needs frustration measures into one model with the outcome variables, resulting in 11 latent variables, and their respective indicators (44). PLS-SEM is said to be an effective method under such conditions (Hair, Hult, Ringle, & Sarstedt, 2017).

MEASUREMENT MODEL

To evaluate the measurement model, following recommendations to establish construct validity in cross-sectional studies (Conway & Lance, 2010), the internal consistency, convergent validity, and discriminant validity of the measures were assessed. The PLS algorithm was set to the factor weighting scheme, the maximum number of iterations was set to 300 (which is the default setting), and the stop criterion was set at 10E-7. The measurement model converged with eight iterations. Factor loading values of .70 or higher are preferred. Loadings between .40 and .70 should be examined in relation to theory, and loadings below .40 should be removed in all cases (Hair et al., 2017). The average variance extracted (*AVE*) should be larger than .50, indicating that the variance explained by the latent variable is larger than the unexplained variance. Composite reliability (*CR*) and Cronbach's alpha (α) should be between .60 and .90 (Hair et al., 2017). Cronbach's alpha is said to underestimate true reliability because it is lower bound. A popular and widely used alternative in conjunction with structural equation modeling is *CR* (Peterson & Kim, 2013), although *CR* tends to overestimate internal consistency reliability. Some scholars suggest reporting both α and *CR* (e.g., Hair et al., 2017), which is what was done in the present study. The latent variables were also checked for collinearity issues. To establish measurement invariance between the three groups of respondents, the three-step procedure for testing measurement invariance in composite models analyzed with partial least squares was followed (Henseler, Ringle, & Sarstedt, 2016), which resulted in full measurement invariance between the groups.

EL was measured as a one-factor model. In the measurement model evaluation, one item was excluded because it loaded below the .70 threshold ("My supervisor delegates tasks and responsibilities to team members"). The internal consistency of the remaining 8-item scale was α = .92, *CR* = .93.

For *basic psychological needs*, all six constructs, with four items per construct, were used. All loadings of the indicators with their latent variables were above .70. The reliability and consistency scores for the three constructs that together form need satisfaction were α = .77–.84, *CR* = .86–.89; need frustration scores were α = .73–.80, *CR* = .83–.87. The discriminant validity of the separate constructs was assessed by examining the cross-loadings and by calculating the heterotrait-monotrait ratios, which were all well below 1 (Henseler, Ringle, & Sarstedt, 2015).

Work motivation consisted of amotivation, controlled motivation, and autonomous motivation. Amotivation was measured through three items and had an *AVE* = .72, α = .81, and *CR* = .89. Controlled motivation should conceptually be a combination of extrinsic social, extrinsic, material, and introjected regulation. Introjected regulation had an alpha value <.60, the *AVE* was <.50, and only one of the four items loaded >.70: "Because it makes me feel proud of myself." One item for introjection loaded better on identified regulation. Controlled motivation, modeled with extrinsic social, extrinsic material, and introjected motivation, resulted in an *AVE* of .35. Therefore, the introjected construct was dropped from the model completely. Then, controlled motivation was recalculated with social and material regulation only. Although it had a good alpha value (.78), the *AVE* was still <.35. Controlled motivation was specified by combining the items of social and material regulation and following the prescribed procedure for measurement model evaluation with partial least squares (Hair

et al., 2017). Eventually, a combination of two items from extrinsic social regulation and one item from the extrinsic material subscale resulted in *AVE* = .58, α = .66, and *CR* = .81. For autonomous motivation, the three indicators for intrinsic regulation were used, resulting in *AVE* = .79, while internal consistency and reliability were still good (α = .86, *CR* = .92). Thus, work motivation was summarized in three essential aspects: amotivation, controlled motivation, and autonomous motivation.

In evaluating the scores for work engagement, two items (UWE08 and 09) loaded below the .70 threshold; hence, they were excluded. The construct was then tested for collinearity. All items with a variance inflation factor (VIF) >3.0 were excluded, and three items thus remained to measure work engagement—"At my job, I feel strong and vigorous" (vigor); "I feel happy when I am working intensely" (absorption); "I am proud of the work that I do" (dedication)—resulting in *AVE* = .74, α = .82, and *CR* = .89. (see also Schaufeli, Shimazu, Hakanen, Salanova, & De Witte, 2019). Work engagement and autonomous motivation were interpreted as positive outcome measures, and amotivation and controlled motivation were interpreted as negative outcome measures.

Table 1 includes an overview of the means, standard deviations, and intercorrelations between the latent variables after all unsound items are cleared from the measurement model. EL (*M* = 3.86, *SD* = .74) is positively correlated (*r* = .48, *p* < .001) with needs satisfaction (*M* = 3.79, *SD* = .44) and negatively correlated (*r* = −.46, *p* < .001) with needs frustration (*M* = 2.26, *SD* = .54). The construct of EL also correlates positively with autonomous motivation (*r* = .37, *p* < .001) and work engagement (*r* = .44, *p* < .001). The correlation with the negative outcome measure of amotivation is negative (*r* = −.37, *p* < .001), and the correlation with controlled motivation (*r* = −.07, *p* = .46) is not significant. The relations of the six needs to the separate measures are all significant at the *p* < .001 level. The correlations between needs satisfaction and needs frustration and the outcome measures are also all significant at the *p* < .001 level.

STRUCTURAL MODEL

The mediation model was tested by connecting EL to the outcome measures via needs satisfaction and needs frustration in a parallel mediation design (see Figure 1). In the model, need satisfaction and need thwarting

Table 1   Analysis of Means, Standard Deviations and Intercorrelations of Latent Variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
Engaging leadership	3.86	0.74	1												
Autonomy satisfaction	3.51	0.65	.42	1											
Relatedness satisfaction	3.73	0.59	.33	.43	1										
Competence satisfaction	4.12	0.49	.36	.41	.31	1									
Needs satisfaction	3.79	0.44	.48	.83	.77	.7	1								
Autonomy frustration	2.75	0.79	−.44	−.64	−.34	−.41	−.61	1							
Relatedness frustration	2.11	0.66	−.42	−.38	−.67	−.39	−.63	.4	1						
Competence frustration	1.92	0.64	−.20	−.41	−.27	−.66	−.56	.4	.42	1					
Needs frustration	2.26	0.54	−.46	−.63	−.55	−.62	−.77	.8	.77	.76	1				
Amotivation	1.58	0.61	−.37	−.48	−.38	−.35	−.53	.5	.52	.4	.5	1			
Controlled motivation	2.95	0.79	−.07°	−.19**	−.07°	−.04°	−.14*	.11°	.18**	.12*	.12*	.17**	1		
Autonomous motivation	3.77	0.71	.37	.63	.39	.43	.64	−.14*	−.36	−.35	−.48	−.51	−.19°	1	
Work engagement	4.42	1.08	.44	.49	.32	.41	.49	−.37	−.36	−.35	−.43	−.46	.01°	.62	

Note. All correlations are significant at the *p* < .001 level, except for: **p < .01; *p < .05; correlations marked with ° are nonsignificant and are all related with controlled motivation.

were each specified as one common factor, with the underlying three basic needs aggregated to form the higher-order constructs of needs satisfaction and needs frustration. The reflective-reflective approach was followed, indicating a reflective relationship between the items and the latent constructs and between the higher-order construct and the latent constructs (Hair, Sarstedt, Ringle, & Gudergan, 2018). More specifically, EL was connected to each of the four outcome measures via the higher-order constructs for needs satisfaction and needs frustration in one parallel mediation analysis. The bias-corrected and accelerated confidence intervals (95% BCa CI) were generated through bootstrapping with the following settings: 5,000 subsamples, no sign changes, complete bootstrapping, two-tailed, with a 95% significance level. The degrees of freedom (df) for reporting t values in PLS bootstrap is reported as the number of bootstrap samples (5,000) minus one (Henseler, Ringle, & Sinkovics, 2009) and apply to all t values mentioned below.

The outcomes of the analysis, as depicted in Table 2, show a partial mediation via needs satisfaction with autonomous motivation ($t = 5.72$, $p < .001$) and with work engagement ($t = 3.17$, $p < .001$) and no significant effects on amotivation and controlled motivation. The data supported hypothesis 1, which predicted need satisfaction mediates the relationship between engaging leadership and positive outcomes (i.e., work engagement and autonomous motivation). For the path via needs frustration, a partial mediation was found with amotivation ($t = 5.29$, $p < .001$) and controlled motivation ($t = 2.95$, $p < .001$), as predicted in hypothesis 2 (Frustration of basic needs mediates the relationship with adverse outcomes). Additionally, a significant path to work engagement was found ($t = 2.10$, $p = .004$), which was not predicted. Other paths were not significant.

SATISFACTION OF THE SEPARATE NEEDS OF AUTONOMY, COMPETENCE, AND RELATEDNESS

In the second analysis, the basic psychological needs were modeled separately through the three latent variables for autonomy, competence, and relatedness and were directly connected to the outcome measures. As presented in Table 3, the mediation analysis for the satisfaction of the needs of autonomy, competence,

Table 2 Mediation Analysis of the Common Factor Approach for Needs Satisfaction and Frustration

Engaging leadership	Direct effects	95% BCa CI		t	p-values	Spec. ind. effects	95% BCa CI		t	p-values	Mediation
		2.50%	97.50%				2.50%	97.50%			
Via needs satisfaction											
Amotivation	−0.11	−0.25	0.03	1.56	0.12	−0.05	−0.13	0.01	1.52	0.13	
Controlled	−0.08	−0.25	0.13	0.82	0.41	−0.04	−0.13	0.06	0.80	0.42	
Autonomous	0.58	0.43	0.70	8.38	0.00	0.28	0.19	0.38	5.72	0.00	Partial
Work engagement	0.28	0.12	0.44	3.45	0.00	0.14	0.06	0.23	3.17	0.00	Partial
Via needs frustration											
Amotivation	0.49	0.34	0.62	6.86	0.00	−0.23	−0.32	−0.15	5.29	0.00	Partial
Controlled	0.27	0.10	0.43	3.33	0.00	−0.13	−0.22	−0.05	2.95	0.00	Partial
Autonomous	−0.04	−0.18	0.10	0.60	0.55	0.02	−0.05	0.09	0.59	0.56	
Work engagement	−0.17	−0.32	−0.01	2.11	0.04	0.06	0.01	0.16	2.10	0.04	Partial

Note. 95% BCa CI, 95% bias-corrected and accelerated confidence interval; Spec. ind. effects, specific indirect effects; *t*, *t* distances; *p*-values (two-tailed).

and relatedness indicates a full mediation for the path from EL via autonomy satisfaction to autonomous motivation ($t = 5.63$, $p < .001$) and a partial mediation to work engagement ($t = 2.38$, $p = .02$). Hence, increases in autonomy satisfaction are associated with increases in positive outcomes, as predicted in hypothesis 1. Additionally, increases in autonomy satisfaction are associated with decreases in unfavorable outcomes, which was not expected: amotivation ($t = 2.40$, $p = .02$) and controlled motivation ($t = 2.54$, $p = .01$). Competence satisfaction mediated the relationship with autonomous motivation ($t = 2.34$, $p = .03$), whereas relatedness satisfaction did not play a significant role. The analysis showed that the three basic needs behave differently and vary in their significance and strength.

FRUSTRATION OF THE NEEDS OF AUTONOMY, COMPETENCE, AND RELATEDNESS

Hypothesis 2 predicted that the frustration of the basic needs for autonomy, competence, and relatedness would mediate the relationship between EL and the negative outcomes of amotivation and controlled motivation. The mediation analysis for needs frustration indicated a dominant role of relatedness frustration, with a full mediation for the paths to amotivation ($t = 3.19$, $p < .001$) and controlled motivation ($t = 2.76$, $p < .01$). The other significant mediating effect for the frustration constructs was via autonomy frustration to amotivation ($t = 2.79$, $p < .01$). The paths via competence frustration were not significant, and as hypothesized, all paths to positive outcomes were not significant (see Table 4).

TOTAL VARIANCE EXPLAINED AND EFFECT SIZES

Then, the total variance explained and the effect sizes of the separate needs in the model were checked (see Table 5). The R^2 value for autonomous motivation was .48; work engagement had a total variance explained of $R^2 = .34$; amotivation, $R^2 = .42$; controlled motivation, $R^2 = .13$. The low R^2 value for controlled motivation may be due to the internal consistency and reliability of the measure itself. The effect sizes were calculated following two distinct procedures. The outcomes of the first procedure ($f^2 = R^2 / 1 - R^2$) are depicted in Table 5, showing the effect of the model on the outcome vari-

Table 3 Mediation Analysis via Specific Indirect Effect of the Separate Needs: Satisfaction

Engaging leadership to	Direct effects	95% BCa CI 2.50%	95% BCa CI 97.50%	t	p-values	Via satisfaction of the needs for	Specific indirect effects	95% BCa CI 2.50%	95% BCa CI 97.50%	t	p-values	Mediation
Amotivation	−0.08	−0.21	0.04	1.20	0.23	Autonomy	−0.08	−0.14	−0.02	2.40	0.02	Full
						Competence	0.01	−0.04	0.07	0.35	0.73	
						Relatedness	0.01	−0.04	0.05	0.29	0.77	
Controlled	0.08	−0.05	0.20	1.17	0.24	Autonomy	−0.10	−0.19	−0.03	2.54	0.01	Full
						Competence	0.04	−0.03	0.11	1.11	0.27	
						Relatedness	0.03	−0.03	0.10	0.93	0.35	
Autonomous	0.04	−0.06	0.16	0.73	0.46	Autonomy	0.21	0.14	0.29	5.63	0.00	Full
						Competence	0.06	0.02	0.13	2.23	0.03	Full
						Relatedness	0.03	−0.02	0.08	1.15	0.25	
Work Engagement	0.21	0.10	0.32	3.73	0.00	Autonomy	0.07	0.02	0.14	2.38	0.02	Partial
						Competence	0.06	0.01	0.13	1.92	0.06	
						Relatedness	0.01	−0.03	0.06	0.62	0.53	

Note. 95% BCa CI, 95% bias-corrected and accelerated confidence interval; t, t distances, p-values (two-tailed).

Table 4 Mediation Analysis via Specific Indirect Effect of the Separate Needs: Frustration

Engaging leadership to	Direct effects	95% BCa CI		t	p-Values	Via frustration of the needs for	Specific indirect effects	95% BCa CI		t	p-Values	Mediation
		2.50%	97.50%					2.50%	97.50%			
Amotivation	−0.08	−0.21	0.04	1.20	0.23	Autonomy	−0.09	−0.17	−0.04	2.79	0.01	Full
						Competence	−0.03	−0.07	0.00	1.36	0.17	
						Relatedness	−0.13	−0.22	−0.06	3.19	0.00	Full
Controlled	0.08	−0.05	0.20	1.17	0.24	Autonomy	−0.02	−0.10	0.06	0.51	0.61	
						Competence	−0.02	−0.06	0.01	1.04	0.30	
						Relatedness	−0.11	−0.19	−0.03	2.76	0.01	Full
Autonomous	0.04	−0.06	0.16	0.73	0.46	Autonomy	0.03	−0.03	0.09	0.93	0.35	
						Competence	−0.01	−0.04	0.02	0.45	0.66	
						Relatedness	0.01	−0.05	0.08	0.25	0.81	
Work engagement	0.21	0.10	0.32	3.73	0.00	Autonomy	0.05	−0.00	0.11	1.81	0.07	
						Competence	0.03	0.00	0.07	1.50	0.13	
						Relatedness	−0.02	−0.08	0.04	0.56	0.58	

Note. 95% BCa CI, 95% bias-corrected and accelerated confidence interval; *t*, *t* distances, *p*-values (two-tailed).

ables; the table indicates the strongest effect on autonomous motivation ($f^2 = .92$) and amotivation ($f^2 = .72$) and a large effect size on work engagement ($f^2 = .52$).

Lastly, the effect sizes were calculated when one antecedent construct was omitted from the model by alternatingly excluding the specific antecedent constructs from the model one by one. The effect sizes were interpreted following Cohen (1988), with f^2 values of .02, .15, .and 35 indicating small, medium, and large effect sizes, respectively. Thus, there was a medium-large effect size for autonomy satisfaction in relation to autonomous motivation ($f^2 = .23$) and small effect sizes for autonomy satisfaction in relation to amotivation ($f^2 = .03$) and work engagement ($f^2 = .02$) and for relatedness frustration in relation to amotivation ($f^2 = .07$).

Discussion

The current study aimed to test the concept of EL and its effects on work motivation and engagement via the satisfaction and frustration of basic psychological needs. EL was strongly and significantly related to both the positive and adverse outcome measures of motivation and engagement. However, when need satisfaction and frustration both were incorporated into the structural model in a parallel mediation design, the direct correlations with the outcome measures were partly overridden by the basic need constructs resulting in partial mediation in support of the hypotheses. The common-factor variable for needs satisfaction partially mediated positive outcomes and that for need frustration mediated negative outcomes between leadership, motivation, and engagement. Additionally, needs frustration partially mediated the relationship with work engagement, which was not expected. Then, the three separate need satisfaction constructs, and the three separate need frustration constructs were combined into one structural path model (see Figure 1). Autonomy satisfaction was found to mediate between EL and positive outcomes in terms of work engagement (partial mediation) and autonomous motivation (full mediation), but also with less adverse consequences in terms of amotivation and controlled motivation (both full mediation). The latter result was unexpected and implies that leaders who promote autonomy satisfaction may address two issues simultaneously: positive outcomes are likely to increase while

Table 5 Total Variance Explained and Effect Size							
	R^2	β	SD	t	p-values	95% BCa CI		f^2
						2.50%	97.50%	
Amotivation	0.42	0.44	0.04	10.81	0.00	0.33	0.47	0.72
Controlled	0.13	0.16	0.04	3.42	0.00	0.06	0.18	0.15
Autonomous	0.48	0.50	0.05	10.52	0.00	0.37	0.55	0.92
Work Engagement	0.34	0.36	0.05	7.16	0.00	0.23	0.42	0.52

Note. 95% BCa CI, 95% bias-corrected and accelerated confidence interval; R^2, total variance explained; β, standardized path coefficients; SD, standard deviation; t, t distance; p-values (two-tailed); $f^2 = R^2 / 1 − R^2$.

negative consequences decrease. Relatedness frustration seemed significant in generating adverse outcomes (i.e., full mediation for both amotivation and controlled motivation). Autonomy frustration partially mediated the path to amotivation. When relatedness frustration levels drop, unfavorable outcomes decrease, but likely will not induce significant change in positive outcome measures.

SDT proposed that the satisfaction of all three innate basic psychological needs is necessary for human flourishing and sustainable well-being (Deci & Ryan, 2000) and that these needs should not be thwarted (Ryan & Deci, 2017). The balance between the three needs is said to contribute to psychological health and well-being, whereas more substantial variability between the satisfaction levels is associated with lower well-being (Sheldon & Niemiec, 2006); hence, psychological needs are measured in aggregate form rather than as six separate constructs. When needs are modeled as a higher-order construct, one implicitly assumes that all three needs behave similarly. However, the outcomes of the current study underscore the argument of Van den Broeck et al. (2016) not to consider the needs as interchangeable because the effects of the separate needs on the outcome measures indeed differed in strength and significance. Autonomy satisfaction was found to play a specific role because it predicted both positive and adverse outcomes. The analysis of effect sizes further supported the specific role of autonomy satisfaction; when another antecedent construct was excluded from the model, autonomy satisfaction demonstrated the most potent in-sample predictive power.

IMPLICATIONS FOR LEADERSHIP

A leader who recognizes the essential aspect of autonomy may very well promote a person's freedom and engagement while simultaneously offering a clear work context through, for example, presenting a compelling vision an employee can identify with and support or, more fundamentally, is invited to co-create. Such a leader will recognize autonomy as essential to the initiation and regulation of his or her employees' behavior. Through the leaders' autonomy support, employees may find ways to satisfy their needs for competence and relatedness, and, as Ryan and Deci (2017) posited, in many instances the satisfaction of the needs for relatedness and competence is dependent on the person's capacity to initiate action and self-organize (Ryan & Deci, 2017). Moreover, when employees feel autonomous, they are said to be more open in order to effectively cope with positive or negative events and consequently to be more resilient in the face of setbacks and bounce back more quickly after stressful experiences (Vansteenkiste & Ryan, 2013). Therefore, higher levels of autonomy satisfaction may help employees build stronger inner resources fostering higher well-being. A recent longitudinal study on needs satisfaction and frustration underscores the conclusion of the present study about the specific role of autonomy satisfaction (Cordeiro, Paixão, Lens, Lacante, & Luyckx, 2016).

Emerging management approaches, such as agile (Brosseau et al., 2019), sociocracy (Bockelbrink, Priest, & David, 2019) and holacracy (Robertson, 2015), further illustrate the transition from traditional command-and-control hierarchies to other, more autonomy supportive forms of leadership and organizing work, from work processes, to running meetings, to governance. The emerging approaches just described aim to align organizations and more specifically, the way organizations are structured operated and led, with a view on the development

needs of human beings (For a select group of theories and views on human development referenced earlier in the current study: Deci & Ryan, 2000; De Charms, 1968; Kegan, 1982; Laloux, 2014; Ryan & Deci, 2017). Agile, sociocracy and holacracy as management and leadership practices favor more participatory and inclusive forms of leadership (Ardichvili et al., 2016), and align with the tenets of both EL and SDT. The outcomes of the current study highlight the essential role of autonomy support and the need for leaders to pay attention to the essential role of personal causation and the internalization of extrinsic motives. Engaging leaders are likely to foster higher levels of motivation and engagement and, through autonomy support, also contribute to lower levels of adverse work outcomes: The knife of EL via autonomy satisfaction cuts both ways. Lessening need frustration, however beneficial, is not likely to motivate employees: less ill-being does not imply higher well-being. If, however, an engaging leader is able to promote need satisfaction, and particularly autonomy satisfaction, positive outcomes and healthy motivation increase while negative outcomes and unsustainable, unhealthy motivation decrease.

LIMITATIONS

The present study was unique in combining the concept of EL with both separate and combined need satisfaction constructs into one structural model. The study design simultaneously studied the behaviors of both the satisfaction and frustration of autonomy, relatedness, and competence in the EL concept. However, the study was cross-sectional, so any conclusions on causal relationships cannot be drawn. Moreover, the conclusions were based on data from three Dutch departments of industrial engineering organizations, which also limits the generalizability of the findings. Future studies should expand into other areas of business, such as finance, public services, education, and healthcare and should preferably be longitudinal over 3 or more time points.

Furthermore, in the structural model analysis, only three items of the work engagement measure were used, because the measurement model evaluation indicated that the three selected items fit the data best. Two of the three items overlapped with the ultra-short UWES-3

that was validated using large samples of five different countries (Finland, Japan, The Netherlands, Belgium/Flanders, and Spain; Schaufeli et al., 2019). Only the item for absorption ("I feel happy when I am working intensely") differed from the absorption item of the UWES-3 ("I am immersed in my work"). Not surprisingly, the Pearson correlation between the two 3-item engagement scales is high ($r = .87$, $p < .001$), indicating that they are virtually identical. Moreover, Schaufeli et al. (2019) found that the UWES-3 shared 86–92% of its variance with the 9-item version of the UWES, depending on the national sample.

The present study did not encompass previous studies on the effectiveness of autonomy-supportive leadership in organizations; a relatively small body of work within SDT focuses on particular aspects of leadership effectiveness (Su & Reeve, 2010). Additionally, one could examine relationships between EL, personality profiles and outcomes: for example, certain combinations of preferences in five-factor modeling may associate with levels of EL and with outcomes as has been demonstrated earlier for transformational leadership (c.f., Judge & Bono, 2000). Future EL studies should also investigate actual leadership interventions and integrate the conclusions of previous studies on work organizations and their relations to and relevance for EL. If they have longitudinal designs and cover different organizations, intervention studies are likely to contribute to the further development of EL as the first SDT-based leadership model.

The research on the role of need frustration, specified both as a common factor and as separate constructs, is relatively new and does not yet include many studies. Especially rare are studies exploring the role of separate needs, whereas studies shed more light on the specific effects of the frustration of basic needs in work environments.

Conclusion

The recently developed concept of EL positively associates with work motivation and engagement through needs satisfaction and autonomy satisfaction in particular because autonomy fosters positive outcomes and decreases adverse outcomes. While lower needs frustration levels may lead to less disadvantageous results,

lower ill-being does not lead to higher well-being. Additionally, basic needs should be considered separate entities because these needs have distinct dynamics and predictive power in the leadership model. The satisfaction of the composite, higher order construct for either need satisfaction or need frustration may leave out essential information about the strengths and impacts of key drivers of effective leadership; Autonomy satisfaction may prime individuals and intimate the realization of relatedness or competence.

Conflict of Interest

Lars van Tuin is an organizational consultant, coach, and researcher. The organizations from which the data for this study are drawn are clients of his. He is associated with these organizations through a supplier agreement. He did not have a financial interest in the subject matter or materials discussed in this manuscript.

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