Unravelling the black box of how leaders affect employee well-being:

The role of leadership, leader well-being and leader attentive communication

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English summary

In a time characterized by growing *uncertainty*, e.g. because of the influence of the COVID-19 pandemic, effective leadership is more important than ever. In addition, employee well-being has been named one of the critical drivers of business success. In this dissertation, we therefore answer the following overarching question: *Exactly how can leaders contribute to employee well-being?* In order to answer this question, we execute several theoretical and empirical studies, and we also develop new ways of investigating leader (communication) behavior itself.

In the first part of this dissertation, we look into *the main ways in which positive leadership styles influence employee work engagement.* In the first theoretical study, we argue why certain leader behaviors are shared across positive leadership styles, and we identify several *theory-driven processes* and pathways through which leaders can influence employee work engagement. In the second study, a *moderated meta-analysis*, we investigate the meta-correlation of positive leadership styles and work engagement, as well as provide an empirically-driven overview of categories of mediating and moderating mechanisms, to end up with an overarching research model.

In the second part of this dissertation, we look into *the role of leaders' own well-being*, for both their own leadership as well as for employee well-being. In the first study, we test a *moderated mediation* and find that 1) *mindfulness* is an antecedent of positive leadership (here: transformational leadership), 2) leaders' psychological need satisfaction mediates the relationship between mindfulness and transformational leadership and 3) neuroticism moderates the relationship between mindfulness and relatedness need satisfaction. In the second study, with *multilevel and multisource data,* we investigate the *trickle-down effect of leaders' psychological need satisfaction.* We find that psychological need satisfaction indeed trickles down to employees, mediated by (employee-rated) levels of LMX. We also find a direct positive association between leader competence and employee competence, as well as a negative one between leader autonomy and employee competence.

In the last part of this dissertation, we look into *how we can improve leader communication to increase employee well-being.* In the first study we develop a new construct and validate a new 10-item questionnaire for *leader attentive communication* (LAC)*,* i.e. an open-minded, attentive demeanor while in a conversation with an employee. We also find that psychological need satisfaction and Kahn's conditions for engagement mediate the relationship between LAC and work engagement. In the second study, we *devise and test a two-day training protocol* to improve leader communication. Despite an interference by the pandemic in the data-collection, we find small increases in employee-rated outcomes after the training. We also find that employee-rated LAC is related to employee well-being, and that this is mediated by both psychological need satisfaction and Kahn's conditions for engagement.

Dutch summary

In een tijd die gekenmerkt wordt door groeiende *onzekerheid*, die nog is toegenomen door de impact van de COVID-19 pandemie, is effectief leiderschap belangrijker dan ooit. Daarnaast is het welzijn van de werknemers één van de belangrijkste predictoren voor zakelijk succes. In dit proefschrift stellen we daarom de volgende overkoepelende vraag: *Hoe kunnen leiders bijdragen aan het welzijn van werknemers?* Om deze vraag te beantwoorden deden we verschillende theoretische en empirische studies en ontwikkelden we ook een nieuwe manier om communicatiegedrag van leiders te onderzoeken.

Eerst en vooral bekijken we *de belangrijkste manieren waarop positieve leiderschapsstijlen de bevlogenheid van werknemers beïnvloeden.* In het eerste theoretische onderzoek beargumenteren we dat verschillende positieve leiderschapsstijlen gemeenschappelijke gedragskenmerken vertonen en identificeren we *theorie-gedreven processen* waarlangs leiders de bevlogenheid kunnen beïnvloeden. In de tweede studie, een *gemodereerde meta-analyse*, onderzoeken we de meta-correlatie van positieve leiderschapsstijlen en bevlogenheid, en geven we een empirisch overzicht van mediërende en modererende mechanismen, om zo te komen tot een overkoepelend onderzoeksmodel.

Verder onderzoeken we het *welzijn van leiders* en de rol die dit speelt zowel in hun eigen leiderschap als de impact die het heeft op het welzijn van werknemers. In het eerste onderzoek testen we een *gemodereerde mediatie* en stellen we vast dat 1) *mindfulness* positief geassocieerd is met transformationeel leiderschap, 2) dat *psychologische behoeftebevrediging* van leiders de relatie tussen mindfulness en transformationeel leiderschap medieert en 3) dat *neuroticisme* een impact heeft op de relatie tussen mindfulness en de behoefte aan verbondenheid. In de tweede studie, onderzoeken we met *multilevel en multisource* data het *trickle-down effect* van psychologische behoeftebevrediging van leiders. We vinden dat dit 'doorsijpelt' naar medewerkers via Leader-Member Exchange. We vinden ook een direct positief verband tussen leiderscompetentie en werknemerscompetentie, evenals een negatief verband tussen leidersautonomie en werknemerscompetentie.

Tenslotte onderzoeken we *hoe we de communicatie van leiders kunnen verbeteren om het welzijn van werknemers te verhogen.* In het eerste onderzoek ontwikkelen we een vragenlijst voor *leader attentive communication* (LAC), i.e. een open en aandachtige houding tijdens een gesprek met een medewerker. In het tweede onderzoek ontwikkelen en testen we een *tweedaags trainingsprotocol* om de communicatie van leidinggevenden te verbeteren. Hoewel de data-collectie door de COVID -19 pandemie verstoord werd, vinden we een kleine verhoging in medewerkerswelzijn na de training voor leidinggevenden. We stellen ook vast dat er een positief verband is tussen en het welzijn van de medewerkers en dat deze relatie wordt gemedieerd door zowel psychological need satisfaction als door Kahn's condities voor bevlogenheid.

Non-academic one-pager

The tasks of leaders can be divided roughly into two categories: making decisions and communicating effectively with employees. In this dissertation, we focused mainly on the latter: how to communicate better with employees. The main question concerned *what leader (communication) behavior can impact employee well-being*. Improving well-being is not only relevant based on altruistic motives, but also - and perhaps mainly - because higher well-being is related to higher productivity. In terms of well-being, we focused specifically on improving work engagement.

As a first step, we examined the existing literature on positive leadership styles to determine which positive behaviors lead to higher work engagement. A *theoretical analysis* showed that there are five ways to promote employee work engagement: 1) one can offer more support and make fewer (stress-inducing) demands, 2) one can motivate employees by increasing the feeling of autonomy, connectedness or competence. Furthermore, a leader can also be engaged and in this way 3) be a role model, 4) stimulate positive exchanges with employees and 5) promote emotional contamination of engagement. In addition, we investigated which positive leadership style has the biggest effect on engagement. A *meta-analysis* - an large analysis of various empirical studies taken together - showed that there was no winner: all positive leadership styles are positively associated with engagement. However, we did find that several leaders behaviors were shared across these positive leadership styles, such as having a moral perspective, being a role model, focusing on the psychological needs of employees (autonomy, competence and connectedness) and developing positive relationships with employees.

Next, we investigated the *relevance of leader well-being* with regards to employee well-being. Our research shows that fulfilment of leader psychological needs is important in order to be able to adopt behaviors that correspond to positive leadership. Our first study showed that *mindfulness* can be a contributing factor that supports self-regulation. The second study showed that the fulfilment of psychological needs *trickles down* to employees: if managers score high on autonomy, competence and connectedness, employees' scores are higher too.

In the last part, we developed a *new communication concept* and a corresponding *questionnaire*. *Leader attentive communication* is defined as "an open-minded, attentive demeanor while in a conversation with an employee". Our research shows that this communication behavior is related to fulfills psychological needs of employees, which is also associated with higher employee work engagement. In addition, we developed and tested a *two-day communication training* for leaders. Our data-collection (on three different time points) with leaders and their employees, indicated some positive trends over time concerning satisfaction with leader communication, trust in leader, servant leadership, leader mindfulness in communication and burnout.

Niet-academische samenvatting

De taken van leidinggevenden kan je grofweg in twee categorieën indelen: beslissingen nemen en effectief communiceren met medewerkers. In dit doctoraat hebben we ons vooral gericht op dat laatste: beter communiceren met medewerkers. De hoofdvraag was hoe leidinggevenden zich het best kunnen gedragen als ze welzijn van hun medewerkers willen verhogen. Dat is niet alleen relevant vanuit altruïstische motieven, maar (vooral) ook omdat hoger welzijn gerelateerd is aan hogere productiviteit. Specifiek hebben we gefocust op het verbeteren van *bevlogenheid*.

Om te beginnen hebben we de bestaande literatuur rond positieve leiderschapsstijlen onderzocht om vast te stellen welke positieve gedragingen aan de basis liggen van bevlogenheid. Uit een theoretische analyse bleek dat er verschillende manieren zijn om bevlogenheid te bevorderen: 1) meer ondersteuning bieden en minder eisen stellen, 2) medewerkers motiveren door het gevoel van autonomie, verbondenheid of competentie te verhogen. Men kan ook zelf bevlogen zijn en daardoor 3) een rolmodel zijn, 4) positieve uitwisselingen met medewerkers stimuleren en 5) emotionele 'besmetting' van bevlogenheid bevorderen. Daarnaast onderzochten we welke leiderschapsstijl het meeste effect heeft op bevlogenheid. Uit een meta-analyse – een analyse van verschillende empirische studies bij elkaar – kwam er geen winnaar uit de bus: alle positieve leiderschapsstijlen bleken gerelateerd aan bevlogenheid. We vonden wel dat de diverse positieve leiderschapsstijlen gemeenschappelijke gedragskenmerken hebben: een moreel perspectief hebben, een rolmodel zijn, focussen op psychologische behoeften van medewerkers (autonomie, competentie en verbondenheid) en het ontwikkelen van een positieve relatie met medewerkers.

Vervolgens onderzochten we het belang van het welzijn van de leidinggevenden zelf. Uit ons onderzoek blijkt dat de vervulling van psychologische noden (autonomie, competentie en verbondenheid) belangrijk is voor positief leiderschap. Wij vonden ook dat mindfulness hiertoe kan bijdragen. Daarnaast bleek dat de vervulling van psychologische noden van leidinggevenden ook 'doorstroomt' naar medewerkers: hoge scores van leidinggevenden op autonomie, competentie en verbondenheid is positief geassocieerd met hoge scores bij hun medewerkers.

Tenslotte ontwikkelden we een nieuw communicatieconcept en een bijhorende vragenlijst: *leader attentive communication* is gedefinieerd als het aannemen van een open en aandachtige houding bij het communiceren met medewerkers. Dat is geassocieerd met psychologische behoeftebevrediging bij medewerkers, wat ook leidt tot meer bevlogenheid. Voor leidinggevenden ontwikkelden we ook een tweedaagse communicatietraining. Onze datavergaring (op drie verschillende tijdstippen), bij leiders en hun medewerkers, toonde enkele positieve trends aan met betrekking tot de tevredenheid met de communicatie van de leider, het vertrouwen in de leider, dienend leiderschap, mindfulness van de leider tijdens gesprekken en (lagere) burnout.

Research output

Overview

Total	A1	A2	B1	B2	First author
8	5	1	1	1	6

Under review

- Decuypere, A. & Schaufeli, W. (2021). Leadership and work engagement: A review and meta-analysis.

- Decuypere, A., Bauwens, R., Audenaert, M. & Decramer, A. (2021). The trickle-down effect of psychological need satisfaction: the role of LMX.

- Decuypere, A., Decramer, A., Shore, L., Pircher Verdorfer, A. & Audenaert, M. (2021). Leader Attentive Communication: A new communication concept, validation and scale development.

- Decuypere, A., Audenaert, M. & Decramer, A. (2021). Mindful leadership: A functional fad?.

International peer-reviewed publications (A1)

- Decuypere, A. & Schaufeli, W. (2020) Leadership and work engagement: Exploring explanatory mechanisms. *German Journal of Human Resource Management*, 34(1), 69-95. https://doi.org/10.1177/2397002219892197 IF = 1.548

- Janssen, E., Van Strydonck, I., Decuypere, A., Audenaert, M. & Decramer, A. (2020). How to foster nurses' well-being and performance in the face of work pressure? The role of mindfulness as personal resource. *Journal of Advanced Nursing*, *76*(12), 3495-3505. https://doi.org/10.1111/jan.14563. IF = 2.561

- Audenaert, M., George, B., Descamps, A.-M., Bauwens, R., <u>Decuypere, A.</u>, Ma, R. & Decramer, A. (2020) Empowering Leadership, Social Support and Job Crafting in Public Organizations: A Multilevel Study. *Public Personnel Management*, 49(3), 367-392 https://doi.org/10.1177/0091026019873681. IF = 2.155

- <u>Decuypere, A.</u>, Audenaert, M. & Decramer, A. (2019). When mindfulness interacts with neuroticism to enhance transformational leadership: the role of psychological need satisfaction. *Frontiers in Psychology*, 9, 1-18. https://www.frontiersin.org/articles/10.3389/fpsyg.2018.02588/full. IF = 2.067

- Prins, B.*, <u>Decuypere, A.</u>* & Van Damme, S. (2014). Effects of mindfulness and distraction on pain depend on individual differences in pain catastrophizing: An experimental study. *European Journal of Pain*, 18(9), 1307-1315. https://doi.org/10.1002/j.1532-2149.2014.491.x *both authors contributed equally; IF = 3.492

Dutch peer-reviewed publications (A2/VABB)

- <u>Decuypere, A.</u>, Audenaert, M. & Decramer, A. (2018). Mindfulness voor leidinggevenden: State of the art. *Tijdschrift voor HRM*, 4, 1-31. https://tijdschriftvoorhrm.nl/mindfulness-voor-leidinggevenden/

Book chapters (B2)

- <u>Decuypere A.</u>, Audenaert M., Decramer A. (2020) Leader Mindfulness: Well-Being Throughout the Organization. In: Dhiman S. (eds) *The Palgrave Handbook of Workplace Well-Being*. Palgrave Macmillan, Cham. https://link.springer.com/referenceworkentry/10.1007%2F978-3-030-02470-3_73-1#citeas

Books (B1)

- Prins, B. & <u>Decuypere, A.</u> (2013). Mindfulness is goed voor alles, en zeven andere mythes over mindfulness. Tielt: Lannoo Campus

National magazine (A3)

- <u>Decuypere, A</u>. (2017). Mindfulness in de begeleidingskundige praktijk: Feiten en mythen. *Tijdschrift voor Begeleidingskunde*, 2, 26-33.

Conference contributions (C3)

- <u>Decuypere A.</u>, Audenaert M., Decramer A. (2019). The trickle-down effect of psychological need satisfaction. Presented at the 11th Biannual International Conference of the Dutch HRM Network, Tilburg University, Tilburg, Netherlands.

- <u>Decuypere A.</u>, Audenaert M., Decramer A. (2019). Mindful leadership – a review. Presented at the 11th Biennial International Conference of the Dutch HRM Network, Tilburg, Netherlands.

- <u>Decuypere A.</u>, Audenaert M., Decramer A. (2019). Leader Attentive Communication – Towards a new questionnaire. Presented at the Workshop on Research Advances in Organizational Behavior and Human Resources Management, Université Dauphine-Paris, Paris, France.

- <u>Decuypere A.</u>, Audenaert M., Decramer A. (2018). When mindfulness leads to transformational leadership: the role of psychological need satisfaction. Presented at the XIth International Workshop on Human Resource Management, University of Seville, Seville, Spain.

- <u>Decuypere A</u>., Audenaert M., Decramer A. (2018). Leader Attentive Communication – Towards a new questionnaire. Presented at the International Conference on Mindfulness: Science from within, Vrije Universiteit, Amsterdam, Netherlands.

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- <u>Decuypere A.</u>, Audenaert M., Decramer A. (2017). Leader Attentive Communication – a new framework?. Presented at the 10th Biannua International Conference of the Dutch HRM Network, Radboud Universiteit Nijmegen, Nijmegen, Nederland

Popular press (V)

Belgian press

- <u>Decuypere, A.</u>, Audenaert, M., & Decramer, A. (2019). Mindfulness op het werk : de oplossing voor de burn-outepidemie? België: *Het Laatste Nieuws*.

- <u>Decuypere, A.</u> (2019). Hoe pas je mindfulness toe in de praktijk? Deze vijf aanbevelingen zetten je op weg. *Vacature België*: www.vacature.com.

Podcast

- Vleugels, W. (2020). Wat zegt de wetenschap over… persoon-omgeving fit en misfit. <u>Decuypere, A.</u> & Vancoillie, A. (hosts). *Klaar voor HR, de podcast die wetenschap en praktijk met elkaar verbindt.* Seizoen 1.

- Van Bockhaven, W. (2020). Wat zegt de wetenschap over… innovatie-ecosystemen, de moderne loopbaan en evidence-based tools. <u>Decuypere, A.</u> & Vancoillie, A. (hosts). *Klaar voor HR, de podcast die wetenschap en praktijk met elkaar verbindt.* Seizoen 1.

- Camps, J. (2019). Wat zeg de wetenschap over… leiderschap? <u>Decuypere, A.</u> & Vancoillie, A. (hosts). *Klaar voor HR, de podcast die wetenschap en praktijk met elkaar verbindt.* Seizoen 1.

- Van Waeyenberg, T. (2019). Wat zegt de wetenschap over… evaluaties en i-deals? <u>Decuypere, A.</u> & Vancoillie, A. (hosts). *Klaar voor HR, de podcast die wetenschap en praktijk met elkaar verbindt.* Seizoen 1.

- Bauwens, R. (2019. Wat zegt de wetenschap over… prestatie management in de non-profit? <u>Decuypere, A.</u> & Vancoillie, A. (hosts). *Klaar voor HR, de podcast die wetenschap en praktijk met elkaar verbindt.* Seizoen 1.

- Kyndt, E. (2019). Wat zegt de wetenschap over… leren en werken? <u>Decuypere, A.</u> & Vancoillie, A. (hosts). *Klaar voor HR, de podcast die wetenschap en praktijk met elkaar verbindt.* Seizoen 1.

- Desart, S. (2019) Wat zegt de wetenschap over… burn-out? <u>Decuypere, A.</u> & Vancoillie, A. (hosts). *Klaar voor HR, de podcast die wetenschap en praktijk met elkaar verbindt.* Seizoen 1.

- Van den Groenendaal, S. M. (2019). Wat zegt de wetenschap over… zelfstandigen zonder personeel (ZZP'ers)? <u>Decuypere, A.</u> & Vancoillie, A. (hosts). *Klaar voor HR, de podcast die wetenschap en praktijk met elkaar verbindt.* Seizoen 1.

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General introduction

Effective leadership is becoming increasingly important in this century and provides competitive advantage for firms, especially when facing increasing *uncertainty* (Ireland & Hitt, 1999). In 2020, this has become even more relevant than before because of the COVID-19 pandemic. In our own research (see last chapter), we found that employees responded to the pandemic in mainly two ways: (1) either they felt it had a rather positive influence on their work(life), since they were able to spend more time at home and experienced less work pressure or (2) they felt increasingly stressed and in need of support to adjust to the new working situation, which meant they also needed their leader to help them in this unprecedented transition.

Although these circumstances are new, research on leadership is not: in 1974 researchers already stated that there were "almost as many different definitions of leadership as there are persons who have defined it" (Riggio, 2019, p. 9; Stogdill, 1974). In addition, over the more than one hundred years of research on this topic, there have been many paradigm shifts (Antonakis & Day, 2017): In the beginning of the 20th century, the leadership field was dominated by a *trait school* that focused mostly on dispositional (personality) characteristics that define leaders. In the 1950s, this changed into a *behavioral school* that focused e.g. on the difference between consideration and initiating structure, that found inconclusive results, and lead to the *contingency school* of leadership where scholars included the effect of the context or situation. After that, there were evolutions toward a *relational school* of leadership that was born out of the vertical dyad linkage theory (and later Leader-Member Exchange theory). In the 70s and 80s there was more skepticism towards leadership studies, which birthed the *skeptics of leadership school* that criticized e.g. the validity of leadership questionnaires. The last leadership evolutions are shaped by the *information processing school*, that focuses on processes like matching personal characteristics with leaders and prototypical expectations of followers, and the *new leadership school*, in which several new (positive) leadership styles have been proposed (see below) (Antonakis & Day, 2017).

Influenced by this newfound optimism with regards to leadership (Alvesson, 2020), research has really boomed in the past few decades. This provided a stronger focus on 'people-skills' and vision provision rather than strategic management alone. For instance, the very popular *transformational leadership* style aims at transforming individual employees' mindsets toward achieving organizational goals (Bass & Avolio, 1990). Other 'positive' or 'upbeat' leadership styles have been developed and validated as well, e.g. *ethical leadership* with a stronger focus on normative behavior (Brown, Treviño, & Harrison, 2005), *servant leadership* with a focus on being altruistic as a leader and attuned to the needs and development of employees (Liden, Wayne, Liao, & Meuser, 2014), *authentic leadership* with a focus on being self-aware and authentic (Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2008) or *empowering leadership* with a focus on providing autonomy to employees

(Amundsen & Martinsen, 2014). Examples of other newly developed positive leadership styles are *shared or distributed leadership* (Carson, Tesluk, & Marrone, 2007), *humble leadership* (Walters & Diab, 2016) or *e-leadership* (Darics, 2020). Although these positive leadership styles each have their own focal points, comparative research also postulates evidence for a common ground (Decuypere & Schaufeli, 2020; Hoch, Bommer, Dulebohn, & Wu, 2018), which is why this dissertation project on leadership and well-being does not focus on one niche leadership style in specific.

Leadership is not only necessary to envision a firm's strategy or to decide on a HRM approach at the top of the organization, but also to provide a sense of security and direction for subordinates in every layer of the hierarchy (Moss, 2009). Even though leadership 'trickles down' the organization (Ruiz, Ruiz, & Martínez, 2011), and thus needs support from above, the immediate supervisor - due to his proximal presence and interaction with the employees - has a large impact on the day-to-day work environment, performance and job engagement of the employee (Wang, Law, Hackett, Wang, & Chen, 2005). Meta-analyses have shown that positive leadership styles from the immediate supervisor, such as transformational leadership and authentic leadership, as well as ethical and servant leadership, are related to several *behavioral* (e.g. job performance, OCB, ..), *attitudinal* (job satisfaction, commitment, ..) and *relational outcomes* (trust in the manager, LMX, ..) for employees (Banks, McCauley, Gardner, & Guler, 2016; Hoch et al., 2018).

Leaders also have a positive impact on the *objectively-measured productivity* in a workplace. This is for example illustrated by research that shows that replacing leaders in the lower 10% quality range (in terms of productivity) with one from the upper 10% quality range can increase a team's output by more than adding an additional team-member (to a nine-member team; Lazear, Shaw, & Stanton, 2015). In this study, employees assigned to higher quality leaders were also less likely to quit (Lazear et al., 2015). In addition, research has shown effects of positive leadership on firm performance (Peterson, Galvin, & Lange, 2012). Of course, productivity is not the only important leadership outcome. Research has shown that leadership is also related to various operationalizations of *employee well-being*, e.g. psychological well-being (Arnold, Turner, Barling, Kelloway, & Mckee, 2007) and reduced sickness absence (Kuoppala, Lamminpää, Liira, & Vainio, 2008). To this regard, scholars have suggested that leaders have the biggest impact on mental and emotional well-being if they are aware of exactly how they can make a difference and learn to respond well to issues, e.g. through training (Dimoff & Kelloway, 2019a, 2019b). However, there are many ways to do this, which leads us to the general dissertation topic:

What are some of the ways in which leaders can meaningfully ccontribute to employee well-being?

First, we zoom in on employee *work engagement,* a specific conceptualization of well-being, that can be defined as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli & Bakker, 2004, p. 295). Employee work engagement provides vital competitive advantage for organizations (Christian, Garza, & Slaughter, 2011), due to its association with higher returns for investors, increased operating income and organizational commitment of employees (Wiley, 2010), as well as a service climate, customer loyalty (Salanova, Agut, & Peiró, 2005) and increased productivity (Robertson & Cooper, 2011). Meta-analyses also demonstrate that employee work engagement is related to health, reduced turnover intentions and performance (Halbesleben, 2010)[1]. In sum: "employees who are more engaged with their work take less time off, stay with the organization for longer and are happier, more proactive and more productive" (Viljevac, Cooper-Thomas, & Saks, 2012, p. 3692). Regardless of the still unanswered questions on the topic, work engagement has been viewed as one of the most *critical drivers of business success* (Strom et al., 2014; Choi et al., 2015). Employee *disengagement*, however, is quite problematic: according to Gallup (2013) only 30% of the American fulltime workforce is actively engaged, and a full 20% are actively disengaged. Studies in the Belgian context show similar results (De Witte et al., 2013). The costs of employee disengagement have been shown to be e.g. low(er) productivity and turnover intentions (Harter et al., 2009). Luckily, *effective leadership* can change this. Several *longitudinal studies* have shown leadership to be a major factor influencing work engagement (see e.g. Biggs, Brough, & Barbour, 2014; Chughtai, Byrne, & Flood, 2014; Fletcher, 2016; Li & Liao, 2014; Mehmood, Nawab, & Hamstra, 2016).

However, it is not clear *exactly how positive leadership styles influence employee work engagement*: no general framework exists to understand the black box of explaining mechanisms with regards to their effect on engagement. Therefore, in the first part of this dissertation, we look at different (theoretical) frameworks that can explain this relationship. We answer the following questions: Do positive leadership styles influence work engagement through various pathways, or do these leaders all exhibit some underlying 'positive' leader behavior? Also, which positive leadership styles might be considered 'the best' for work engagement? How important is leadership for work engagement (i.e. how much variance does it explain)?

Next, we turn our attention toward *leader well-being*. Most leadership studies focus on the effects of a certain positive leadership style on employees and neglect the importance of the well-being of leaders themselves. However, leaders' well-being is of vital importance for their own

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[1] However, (meta-)correlation does not imply causation, so work engagement probably leads to better performance, but perhaps better performance also leads to higher work engagement (e.g. through higher competence need satisfaction) – to our knowledge this has not been tested yet.

motivation and capacity to lead well (Trépanier, Fernet, & Austin, 2012). When leaders' needs are satisfied, they are energized to perform behaviors that are more in accordance with positive leadership styles (Trépanier et al., 2012). Therefore, we are guided by the following questions: Is leader well-being indeed associated with leadership? Does leader well-being have an immediate impact on employee well-being? If so, how does that work?

In the last part of this dissertation, the focus is on *leader communication behavior*. It is relevant for several reasons: (1) leaders spend most of their time communicating with employees one way or another (Wajcman & Rose, 2011), (2) effective and skilled communication is crucial for leadership (Barge, 1994; Fairhurst & Connaughton, 2014; Neufeld et al., 2010; Riggio & Darioly, 2016) and (3) meta-analyses also point out the need to increase our understanding on how to develop a constructive relationship between leaders and employees (Dulebohn, Bommer, Liden, Brouer, & Ferris, 2012). Therefore, we look into how to investigate (and possibly even improve) leader communication, so leaders can develop better working relationships.

Taken together, in this dissertation we focus on how leaders can influence employee well-being. In each of the dissertation chapters we solve a little piece of this puzzle: we first focus on leadership and employee well-being, then on leader well-being, and last we focus on leader communication behavior, guided by the following overarching *research questions*:

1) *What are some of the main ways in which positive leadership styles influence employee work engagement? (chapter 1 & 2)*

2) *What may be the role of leaders' own well-being in leadership and employee well-being? (chapter 3 & 4)*

3) *And informed by the answers to those questions: How can we study and improve leader attentive communication to increase well-being? (chapter 5 & 6)*

Below, we expand on our the focus of this dissertation ("Why leadership", "Why well-being?"), after which we also introduce the guiding theoretical frameworks. Next, we elaborate on our research contributions. We end with a short summary of each dissertation chapter. Also see *Table 1* on the next page for a dissertation overview with regards to the research questions and corresponding samples, theoretical frameworks, methods and analysis and main results.

Table 1. Dissertation overview

Chapter	Sample(s)	Theoretical framework	Method/analyses	Main results
		Research question 1: What are some of the main ways in which positive leadership styles influence employee work engagement?		
1	Selection of (theoretical) studies	Self-Determination Theory Job Demands-Resources Theory Emotional contagion Social learning theory Social exchange theory	Deductive theoretical analysis	Some leader behavior is shared across positive leadership styles, i.e. role modeling behavior, morality, positive social exchanges and focusing on employee self-determination; We identify 3 processes (direct and indirect) and 5 pathways (practical, motivational, affective, cognitive and behavioral) through which leaders influence employee work engagement
2	86 empirical studies on leadership and work engagement	Transformational, authentic, empowering, ethical and servant leadership theory	Moderated meta-analysis Theoretical and empirical review	Meta-correlation = .47; Overlap in confidence/credibility intervals indicates an empirical common ground with regards to leadership styles' effect on work engagement; Research model based on the categories of mediators (i.e. psychological needs, trust, resources, organization-level) and moderators
		Research question 2: What may be the role of leaders' own well-being in leadership and employee well-being?		
3	Head nurses in elderly care homes (n = 277)	Self-Determination Theory Mindfulness theory Self-regulation theory Transformational leadership	Moderated mediation	Psychological need satisfaction mediates between mindfulness and transformational leadership; Neuroticism moderates between mindfulness and relatedness need satisfaction

Chapter	Sample(s)	Theoretical framework	Method/analyses	Main results
4	1036 head nurse-nurse dyads	Self-Determination Theory Social Exchange Theory LMX Theory	Multilevel analysis	Psychological need satisfaction trickles down; LMX mediates trickle-down effect; Competence need satisfaction is the only individual need that trickles down directly (without mediation)

Research question 3: How can we study and improve leader attentive communication to increase well-being?

Chapter	Sample(s)	Theoretical framework	Method/analyses	Main results
5	3 datasets (employment offices, various, schools); 1320 employees, 422 leaders,	Self-Determination Theory Kahn's psychological conditions for engagement	Questionnaire development Exploratory & confirmatory factor analysis Mediation analysis	Development of leader attentive communication (LAC) construct and 10-item questionnaire with 2 dimensions; LAC exerts its influence on work engagement through SDT and Kahn's conditions for engagement
6	2 groups 18 leaders 129 employees 3 time points	Self-Determination Theory Kahn's psychological conditions for engagement	Training development Longitudinal multilevel analysis	Positive trends over time in employee-rated leader(ship) constructs; Kahn's conditions for engagement mediated between LAC and both work engagement and burnout, psychological need satisfaction mediated between LAC and burn-out (not work engagement)

Why leadership?

Leadership is a popular topic, both as a scientific field (Antonakis & Day, 2017), as well as in the consulting world. When you type 'leadership' into Google, you get over 911 million results (around nine times more than 'well-being', a term that can be seen as more broad than leadership). The same goes for Google Scholar: 4.5 million search results for academic work on leadership, contrasted with 1.5 million results on well-being. Perhaps leadership is so popular because we still see leaders as rather heroic figures who can singlehandedly steer the organization in the right direction or lead the people towards victory. This is also called the 'heroic myth' of leadership (Haslam, Reicher, & Platow, 2018), the myth of the 'ideal leader' (Ciulla, 2016) or *heroic leadership bias* (see e.g. Alvesson, 2020). One of the dangers of this view is that leaders feel all too special (Ciulla, 2016) which encourages self-referential grandiosity (Heifetz & Linsky, 2017). Since leadership plays a part in a social context, underestimating the role of the employee boosts the role of the leader unnaturally (Haslam et al., 2018, p. 198), which feeds into to a *fundamental attribution error*, i.e. when the team does well, it is because of the leader, but when the team fails, it is because of the employees. In this heroic view on leadership, it is often forgotten that all sorts of *contextual factors*, like time, circumstances and follower characteristics, are very important for leadership (Bryman, Stephens, & Campo, 1996; Garretsen, Stoker, & Weber, 2020; Haslam et al., 2018; Stoker & Garretsen, 2018; Yukl, 2013). CEO success, for example, has been shown to be partially dependent upon *luck* and the current state of the economy (Stoker & Garretsen, 2018). Because of this dependency upon the larger economic landscape, organizations may overestimate the leaders' influence and hold them accountable for company numbers during economic downtime, which may make companies replace CEO's too soon and then adds to the list of (hiring) expenses. In order to counterbalance this effect, scholars argue that (1) CEO's should only be replaced quickly if they actually could have changed things and (2) it could be interesting to allow for more participation in company-wide decision making (Stoker & Garretsen, 2018). The key take-away, however, is that leadership success is largely dependent upon the context: the economic context, the company context, as well as on the specific characteristics of the employees one gets to work with. Sadly, research shows that employees often have bad perceptions with regards to the leadership in their organizations: less than 40% of employees think that their leader handles in the organization's interests, 78% of employees think that their leader will not admit having made a mistake, and only 33% of leaders are described as 'strong leaders' by their employees (Schermerhorn & Bachrach, 2017). This makes leadership development a top issue on organizational agendas (a topic that we return to in the last part of this dissertation).

Even if employees have positive perceptions about the leaders in their organization, ánd if there is a leader-environment *fit* that allows the leader to have positive influence, leadership is *only one of the antecedents* that impact employee well-being. *Job Demands-Resources Theory,* for example, posits that both job demands as well as job recourses may impact work engagement through a stress and motivational process, respectively (Demerouti, Nachreiner, Baker, & Schaufeli, 2001; Schaufeli & Bakker, 2010). Examples of job demands are work-family conflict or work overload, while examples of resources are social support, autonomy, feedback, organizational climate, self-efficacy and optimism, just to name a few (see e.g. Halbesleben, 2010). However, although there are many factors that may be improved to impact employee well-being, Gallup-based research has maintained that *employees don't quit companies, they quit bosses* (Buckingham & Coffman, 1999; Clifton & Harter, 2019; Gallup, 2015). Therefore, in order to study well-being, leadership is still a good place to start.

Towards a definition of leadership

Some people assume that there is a difference between leadership and management, where *management* can be seen as the execution of company principles that have been translated into standardized practices and *leadership* is seen as, well, leading or causing other to follow you (Birkinshaw, 2015). In this view, management is getting stuff done, preferably by the right people, and leadership is social influence: "*management is what you do and how you do it, and leadership is what you say and how you say it*" (Birkinshaw, 2015, p. 15). However, from a pragmatic point of view, it is important to realize that leaders both lead ánd manage: leaders and managers are usually not separate people within the organization. Moreover, leaders are often so time-consumed with operational management tasks, that there is little time left to actually 'lead' and e.g. develop a vision (Birkinshaw, 2015; Hurt & Dye, 2019). As a focus of this dissertation though, we will not look into the execution of management tasks, but rather take a dive deep into positive leadership styles and behaviors, as well as leader well-being. Below I will expand on what is generally meant with the term leadership (styles) within the academic world.

As was stressed in the introduction, there are *a lot* of definitions of leadership. Based on the idea that leadership is not something that a special breed of humans possesses, but rather is something that a leader does, in a specific context (Haslam et al., 2018), we arrive at a more *relational or system view* on leadership. This way, we can take into account the *complex interactions* of leaders and employees that occur within a system (Ciulla, 2016) and that are expressed via a myriad of overt and hidden, verbal and nonverbal interactions, which ultimate result in leadership effectiveness and a positive, collaborative relationship with employees (or not). An example of a leadership definition that falls into this relational or system view of leadership is:

"Leadership constitutes an influence relationship between two, or usually more, persons
who depend upon one another for the attainment of certain mutual goals within a group situation."
(Hollander & Julian, 1969; McCusker, Foti, & Abraham, 2019, p. 9).

Other scholars agree:
We can assert that without a shared sense of "us", neither leadership nor followership is possible.
Leadership is not a quality of leaders alone but rather of the relationship between leaders and followers."
(Haslam, 2018, p. 54).

This is not a new view on leadership. Almost 70 years ago, researchers already wrote: "Thus, the leadership function is analyzed and understood in terms of a *dynamic relationship*" (Knickerbocker, 1948; McCusker, Foti, & Abraham, 2019, p. 9), yet the meso level or dyadic view on leadership is still "the most neglected and poorly understood level of analysis in leadership research" (McCusker et al., 2019, p. 229; Yammarino & Gooty, 2017, p. 23). So, although scholars have urged to go *from I to we* in leadership (Haslam et al., 2018), research designs may have been lagging behind. In this dissertation, we aim to focus on this relational view (1) through theorizing, as well as (2) by focusing on the dyadic or meso level (see e.g. chapter 4) and (3) by examining leader attentive communication (something that only exists at the dyadic level).

In addition, scholars urge us to view leadership not as something that someone possesses (i.e. the hero myth or heroic leadership bias), but as something that someone does, in a specific context (Haslam et al., 2018). Therefore, we also aim to focus on *what leaders actually do*, rather than idealized versions of what we think leaders should be like. We work our way up to this focus by first examining what leader behavior may underlie several positive leadership styles, after which we end up with focusing on one category of behaviors in particular, i.e. leader *communication behavior*. In order to do this, we also need to take stock of what is wrong with leadership studies and leadership theory development as we know it.

Challenges in leadership studies

The goal in this section is to introduce some of the difficulties and challenges with regards to leadership research to illustrate the leadership lens through which this dissertation was written.

Positive leadership styles

The first part of this dissertation focuses on several 'positive leadership styles' and their effect on work engagement, as well as their overlap in terms of shared leader behavior (see chapter 1 and 2). With the general term 'positive leadership styles', we aim to lump together several leadership styles that have the *underlying assumption of positively influencing employee outcomes*. This general

term does resemble a tautology, since it has the intended effect in the 'definition' of the construct itself. This is one of the more pervasive problems in leadership research: often, positive leadership styles seem to be defined by their outcomes, rather than by clear leader behaviors or core processes (Alvesson & Einola, 2019; Mackenzie, 2003; van Knippenberg & Sitkin, 2013). In addition, positive leadership styles are often characterized by several dimensions within their conceptualization, however, usually not much theory is provided in terms of how these dimensions relate to one another, or how they would differ in terms of their impact on outcomes, see e.g. critiques on authentic and transformational leadership (Alvesson & Einola, 2019; van Knippenberg & Sitkin, 2013). In chapter one, we propose that these issues may mask some of the actual differences between positive leadership styles. Regardless, more work on theorizing needs to be done. In addition, these issues can be avoided altogether by *focusing on more narrow behavior*, e.g. on *foundational elements* of a certain leadership style (e.g. vision provision for transformational leadership; Stam, Van Knippenberg, & Wisse, 2010; Van Knippenberg & Stam, 2014) or on elements that may be *shared across leadership styles*. In the last part of the dissertation, we aim to address this issue by focusing on leader communication behavior.

Since the leadership field has been progressing so much, and several new leadership styles have been proposed in the last decades, some scholars are concerned about construct proliferation: i.e. *How different are these leadership styles?*. Several meta-analyses on positive leadership styles and behaviors indicate that there may be some underlying construct redundancy (Banks et al., 2016; Derue et al., 2011; Hoch et al., 2018; Rowold, Borgmann, & Diebig, 2015), which is why scholars also urge for more work on the integration of different leadership theories and on examining overlap between different positive leadership styles. For example, Rowold et al. (2015) found considerable overlap between transactional leadership, and laissez-faire as well as leader-member exchange. Hoch et al. (2018) found that servant, ethical and authentic leadership all correlate highly with transformational leadership (servant leadership was found to be the only non-redundant leadership concept). In addition, they found high correlations with Leader-Member Exchange (LMX): all these positive leadership styles correlate with positive social exchanges with employees. On top of that, research indicates that merely 'liking' the leader explains additional variance over leader-member exchange for several employee outcomes (Dulebohn, Wu, & Liao, 2017).

Therefore, in both chapter 1 and 2 of this thesis we propose that several positive leadership styles may share some overlap and look quite similar in terms of behavior. A theoretical analysis of for example transformational, authentic, empowering, ethical and servant leadership, show that they all share a common ground: they all include elements concerning (1) having a *moral perspective* as a leader, (2) *role modeling* behavior, (3) a focus on *follower self-determination* and (4) *positive social*

exchanges (see chapter 1 & 2). Our own meta-analysis also shows that there is an *empirical common ground* with regards to their effect on employee work engagement as well (see chapter 2). This supports the notion that actual behavior form leaders from different positive leadership styles may have some elements in common. Focusing on *more granular and potentially shared behavior* across positive leadership styles may be what helps move the leadership field forward, as well as improve advice to practitioners.

Unintended consequences

Besides the theoretical, definitional and more academic issues with regards to positive leadership styles, there are also some other *practical issues* that may arise from uncritically spreading positive leadership style ideas in the business world. First, as we discussed above with regards to the *heroic leadership bias*, current positive leadership styles encourage *self-referential grandiosity*, e.g. "I have an amazing transformational vision and now I am going to sell it to you" (Heifetz & Linsky, 2017). All the recently developed positive leadership styles more or less feed into this model, so much so that some scholars go as far to say that these "feel-good studies" on positive leadership styles constitute *"Prozac for practitioners"* (Alvesson & Einola, 2019, p. 392; Collinson, 2012).

Second, as these positive leadership styles are about the leader, therefore the economic, interpersonal or historical context is not taken into account. This means that there is a tendency to for these theories to be rather *ahistorical* and *acontextual,* i.e. there is "little to no respect for the soil in which it must take root" (Heifetz & Linsky, 2017, part one). Information on the business field (Stoker & Garretsen, 2018), as well information on the specific (interpersonal) history of a company, is crucial for leadership success (Haslam et al., 2018). Leaders can unearth this crucial information by *listening and paying attention*, e.g. to company stories (Badaracco, 2002; Day, Harrison, & Halpin, 2009; Rego et al., 2017; Walters & Diab, 2016).

A third unintended consequence may be that positive leadership ideas also encourage leaders to seek big, systematic change, which comes with some *inherent risks*, e.g. the risk of rushing to scale too quickly (Heifetz & Linsky, 2017) and the risk of discounting the incremental and perhaps rather mundane day-to-day leadership work in which the small gestures, small conversations and *small but repeated actions actually make a difference* (Marichal & Segers, 2015; also see part 3 of this dissertation on *leader attentive communication*).

So what now?

Of course these scholarly and more practical issues with leadership studies are not easily solved. Ideally, the field could focus more on leadership theorizing as well as on research that includes leadership (field) experiments (Eden, 2020; Gerpott, Lehmann-Willenbrock, & Voelpel, 2019; Johnson, 2009). In this dissertation, the research questions were better answered with survey-

research rather than actual lab experiments, but we keep these leadership issues in mind and aim to add to the literature by focusing on theorizing and addressing construct proliferation. We examine what leader behaviors may be shared across leadership styles (chapter 1, 2, 5, 6), and we also focus on leader communication behavior (chapter 5 & 6). In addition, we have developed new leadership tools (i.e. a questionnaire and training program) that can be used in future research (chapter 5 & 6). However, it is important to keep in mind that the studies from this dissertation only explore a little piece of the leader – employee well-being puzzle.

Leadership and well-being in this dissertation

In this dissertation, we focus on how leaders can impact employee well-being, so a sensible place to start is to make an inventory of what is already known on the topic. This mostly includes research that is based on positive leadership styles, rather than on more narrow leader behavior. Regardless of the criticism that we laid out above, this is the most prevailing leadership research on the topic. So, as a start to this dissertation, we first categorize theoretical models that explain the relationship (chapter 1), after which we meta-analytically analyze all the empirical studies that have investigated the link between positive leadership and employee well-being (i.e. work engagement; see chapter 2). We also criticize positive leadership styles (chapter 1) and investigate the potential shared factors within all these positive leadership styles both theoretically and empirically (see chapter 1 and 2). In the second part of the dissertation, we turn toward leader well-being (i.e. leader psychological need satisfaction) and investigate the relationship between leader well-being and leadership (yes, we did use a positive leadership style; chapter 3), as well as the trickle-down relationship between leader well-being and employee well-being (chapter 4). In the last part of this dissertation we finally focus on leader communication behavior and develop a questionnaire as well as a training protocol. Below we expand upon *why* we focus on well-being and *how* we investigate this, i.e. we introduce the theoretical frameworks that will reappear in (almost) every dissertation chapter, i.e. *Self-Determination Theory* (Deci & Ryan, 2008) and *Kahn's theory on engagement* (Kahn, 1990).

Why well-being?

Since ancient history, philosophers have been discussing how to live a good life. *Eudaimonia*, for example, is an old concept, that concerns living a good and fulfilling life, characterized by virtue and a pursuit of excellence, in accord with reason, so that happiness, vitality, thriving and general well-being are its byproducts (Ryan & Martela, 2016). In a sense, the academic pursuit of well-being studies in organizations are just an extension of what those ancient seekers were thinking about. This makes employee well-being crucial to investigate in and of itself, but it is also worthwhile because of its potential contribution to sustainable employment (Taneja, Sewell, & Odom, 2015;

Van Dam, Van Vuuren, & Kemps, 2017; Xu, Zhang, Yang, & Wu, 2020), and because of the numerous benefits for organizations, e.g. in terms of productivity and continuity. This way, focusing on well-being can be a *win-win for organizations*.

A note on our level of analysis

In this introductory chapter we zoomed in and out with regards to well-being. In this sense, well-being is seen as the general, overarching category. Within the broad frame of well-being, we mostly focus on (employee) work engagement and (leader and employee) psychological need satisfaction. Work engagement is often seen as an *outcome*, whereas psychological need satisfaction may be one of the *processes* that leads to work engagement (Van Den Broeck, Vansteenkiste, De Witte, & Lens, 2008). In chapters on employees, we often investigate both. In the chapters on leaders, we zoom in on leader psychological need satisfaction as a process, and use leadership (chapter 3) and employee psychological need satisfaction (chapter 4) as the outcomes.

<div align="center">

Why work engagement?

</div>

Work engagement is a very useful concept to measure well-being in organizations, as it is multi-faceted and very much focused on organizational life. It has also been researched extensively and the measures have been established in several studies (May, Gilson, & Harter, 2004; Schaufeli, Bakker, & Salanova, 2006; Schaufeli, Shimazu, Hakanen, Salanova, & De Witte, 2017a, 2017b; Schaufeli, Salanova, González-romá, & Bakker, 2002; Viljevac, Cooper-Thomas, & Saks, 2012). In addition, work engagement is not only relevant for employees, but also for the organizations employing those employees: it is a crucial driver for productivity and business success (Halbesleben, 2010; Strom et al., 2014; Choi et al., 2015). People who are engaged usually want to stay in the organization for longer, too (i.e. reduced turnover intentions and absenteeism; Harter et al., 2009; Halbesleben, 2010), which reduces the incidence all kinds of continuity and financial problems as well. In sum, work engagement is crucial in organizations (Clifton & Harter, 2019; Gallup, 2015).

Definitions

The oldest (academic) conceptualization of engagement at work has been developed by *Kahn (1990).* He defined personal engagement as "the harnessing of organization members' selves to their work roles; in work engagement, people employ and express themselves physically, cognitively, and emotionally during role performances." (Kahn, 1990; p. 694). According to this theory, employees become physically involved, cognitively vigilant and empathically connected to others through their work. In this view, work engagement can be seen as a motivational concept: when employees are engaged, they actively allocate personal resources towards their tasks (Christian et al., 2011). In later work, Kahn (1992) differentiated engagement from *psychological presence*, i.e. "being fully there" or the state that occurs when "people feel and are attentive,

connected, integrated, and focused in their role performance" (Kahn, 1992, p. 322). In this sense, psychological presence, a mental state, can be seen as a precursor of *engagement as behavior*, i.e. driving energy in one's work role (Schaufeli & Bakker, 2010).

Several scholars got inspired by Kahn's work on engagement and developed their own theoretical perspectives. For example, *Rothbard* (2001) defined engagement as a motivational construct with two dimensions that include *attention*, i.e. "the cognitive availability and the amount of time one spends thinking about a role" and *absorption*, i.e. "the intensity of one's focus on a role" (Rothbard, 2001, p. 656). Other authors built on Kahn's work as well and defined engagement as "the investment of an individual's complete self into a role" (Rich, Lepine, & Crawford, 2010, p. 617). *May, Gilson and Harter* based themselves on Kahn's theory and proposed that engagement has three dimensions: *physical engagement* can be described as energy to perform the job, *emotional engagement* refers to being emotionally connected to their job and *cognitive engagement* means that one is fully absorbed by their task (May et al., 2004).

Macey & Schneider (2008), on the other hand, make a distinction between *psychological state engagement*, i.e. feelings of energy, absorption, *behavioral engagement*, i.e. extra-role behavior and *trait engagement*, i.e. positive views of life and work. In the rest of the dissertation we will refer to what Macey & Schneider (2008) call psychological state engagement, but we will use the more popular term "work engagement" (see below and e.g. Schaufeli et al., 2006).

Maslach and Leiter (1997) viewed engagement as the direct opposite of burnout. In their view, engagement is characterized by energy, involvement, and efficacy. As it is measured by reversing scores on the Maslach Burnout Inventory (MBI; Maslach, Jackson & Leiter, 1996), it entails low scores on exhaustion and cynicism, as well as high scores on professional efficacy (Schaufeli, Maslach, & Marek, 2017). So contrary to employees who suffer from burnout, engaged employees have a positive, i.e. energetic and effective, connection with their work and they view it as challenging, rather than stressful or demanding (Schaufeli & Bakker, 2010).

The most widely used conceptualization of work engagement is from *Schaufeli and Bakker* (2004). In this view, work engagement is an independent, distinct concept that is negatively related to burnout (Schaufeli & Bakker, 2010, p. 13). It has been defined as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication and absorption" (Schaufeli et al., 2002, p. 74). It is not a momentary, specific emotional state, but rather it is seen as a "more persistent and pervasive affective-cognitive state" (Schaufeli & Bakker, 2010, p. 13). *Vigor* indicates that one has high energy and mental resilience, as well as a willingness to invest effort and a persistence in the face of difficulties. *Dedication* relates to feelings of enthusiasm, inspiration, pride, challenge and a sense of significance with regards to work. *Absorption* has to do with being fully

concentrated and happily engrossed in work, so that time passes quickly and one actually has difficulties with detaching (Schaufeli & Bakker, 2010; Schaufeli et al., 2006).

Employee engagement or work engagement?

There are several definitions of engagement and both "employee engagement" and "work engagement" have been used interchangeable, but scholars have proposed that work engagement is more specific, since it "refers to the relationship of the employee with his or her work, whereas employee engagement may also include the relationship with the organization" (Schaufeli & Bakker, 2010, p. 10). When the relationship with the organization is included, the distinction between work engagement and more traditional concepts such as organizational commitment may get blurred, therefore, in this dissertation, we use "work engagement" and we base ourselves on the most widely used operationalization and measurement, i.e. from Schaufeli and Bakker (2004; 2010). However, in some dissertation chapters we do include Kahn's theory on employee engagement and his conceptualization of psychological meaningfulness, availability and safety as necessary conditions for what he calls "personal engagement" (see below).

<center>**Theoretical frameworks**</center>

There are several theories that can explain exactly how leaders may increase their employees' work engagement (see chapter 1). In this view, work engagement is seen as a specific *employee-level outcome*. In this dissertation, *Self-Determination Theory (SDT)* is our primary theoretical lens (see chapter 1, 2, 3, 4, 5, 6). Self-Determination Theory revolves around *psychological need satisfaction*, which can be seen as *a process* through which work engagement (and other outcomes) can be achieved. In the leader chapters (chapter 3 and 4), we focus on psychological need satisfaction. In addition, *Kahn's theory on employee engagement* makes an appearance in several dissertation chapters as well (see chapter 1, 2, 5, 6). Below we discuss both of these theoretical frameworks in more detail.

Self-Determination Theory

Self-Determination Theory (SDT) is a theory of human motivation. As a starting point, SDT holds a positive view on human development and postulates that "humans are active, *growth-oriented organisms* who are naturally inclined toward integration of their psychic elements into a unified sense of self and integration of themselves into larger social structures" (Deci & Ryan, 2000, p. 229). Therefore, the set point of SDT is growth-oriented activity: the theory assumes that we are naturally inclined to act on inner and outer environments, engage in activities that are interesting and move towards (inter)personal coherence. Furthermore, SDT does not focus on the motivating power of goals as such, but rather it has maintained that "a full understanding, not only of goal-directed behavior, but also of psychological development and well-being, cannot be achieved

without *addressing the needs* that give goals their psychological potence and that influence which regulatory processes direct people's goal pursuits" (Deci & Ryan, 2000, p. 228). Deci and Ryan (2000) go on to define needs as "innate psychological nutriments that are essential for ongoing psychological growth, integrity, and well-being" (p. 229) and therefore represent the most effective way to function (Deci & Ryan, 2000).

As such, three fundamental needs were identified, i.e. the need for *autonomy, competence and relatedness* (Deci & Ryan, 2008). These needs are considered to be innate, universal and fundamental, much like biological needs such as food and water (Deci & Ryan, 2000a), they – all three of them – are seen as essential for individuals' *optimal functioning, growth and well-being* (Van Den Broeck, Vansteenkiste, De Witte, Soenens, & Lens, 2010). According to SDT, the degree to which people are able to satisfy their basic psychological needs as they pursue and attain goals is critically important. Optimal development and well-being can be expected under conditions that support need satisfaction, whereas the thwarting of basic psychological need satisfaction leads to degradation or ill-being. In this sense, work environments (and individual differences) that facilitate the satisfaction of these basic psychological needs lead to *intrinsically motivated behavior (i.e. doing things that are fun or interesting) as well as the integration and internalization of extrinsic motivations (i.e. doing things that are important)* and thus facilitates well-being. Circumstances and characteristics that hinder psychological need satisfaction are related to poor motivation, performance, and well-being (Deci & Ryan, 2000).

Differences in psychological need satisfaction can lead to a score on a continuum from *controlled regulation* of motivation to more *autonomous or self-directed motivation*: "Controlled regulation involves feeling pressured, coerced, or seduced into action, whereas autonomous regulation involves doing what one finds interesting or important and would be inclined to do more freely." (Moller, Deci, & Ryan, 2006, p. 1025). So, whereas previous theories make an antagonistic differentiation between intrinsic and extrinsic motivation, SDT posits that extrinsically motivated behaviors can vary in the degree to which they are self-determined (i.e. autonomous) or controlled. Internalization, then, is the active process in which individuals attempt to transform societal norms or requests into personally endorsed values. In doing so, they become more integrated, both intrapsychically, but also socially (Deci & Ryan, 2000). When values remain external or are only internalized partially, there is *external regulation* (i.e. based on rewards or punishment), *introjected regulation* (i.e. consequences are administered by individuals themselves, like pride or shame) and *identified regulation* (i.e. based on recognizing the underlying value of a behavior, but still rather instrumental) and these represent less than fully self-determined behavior. Extrinsically motivated behavior can also be fully self-determined, i.e. *integrated*, when it is recognized as important or

valuable ánd integrated with other aspects of the self. This way, there is a spectrum from controlled to autonomous motivation, where introjected regulation is the most controlled, and identified and intrinsic motivation represent the most autonomous (or self-directed) forms of motivation. SDT posits that when people experience reasonable need satisfaction, they will not behave specifically to further satisfy these needs, but rather, they will be doing what they find interesting (intrinsic motivation) or important (integration of extrinsic regulation).

Autonomy need satisfaction represents "individuals' inherent desire to feel volitional and to experience a sense of choice and psychological freedom when carrying out an activity" (Van Den Broeck, Vansteenkiste, De Witte, Soenens, & Lens, 2010, p. 981) or, put differently, to "experiencing choice and feeling like the initiator of one's own actions" (Baard, Deci, & Ryan, 2004, p. 2046). Interestingly, other theories have posited that self-regulation, self-control and making multiple choices throughout the day is draining and results in "ego-depletion" (Baumeister, Bratslavsky, Muraven, & Tice, 1998), whereas SDT nuances this view and proposes that only a controlled regulation, and thus controlled choice (for external reasons) depletes energy. This can be contrasted with *autonomous choice*, which should result in *more vitality* and well-being. This has been confirmed in experimental research, where the authors explain that "many authors have defined choice exclusively in terms of selection among options while ignoring the subjective experience of choice" (Moller, Deci, & Ryan, 2006, p. 1035). Autonomy in SDT is also different from conceptualizations of autonomy that are held in organizational psychology: it can be equated with decision latitude and control over skill utilization, and thus as a task characteristic, but in SDT, it is seen as a *subjective experience*, and so employees can also experience autonomy when they voluntarily depend on others for feedback or follow requests (Van Den Broeck et al., 2010).

Competence need satisfaction can be defined as "individuals' *inherent desire* to feel effective in interacting with the environment" (Van Den Broeck et al., 2010, p. 981). It can also be defined as "succeeding at optimally challenging tasks and attaining desirable outcomes" (Baard et al., 2004, p. 2046). Note the difference in definitions here: the first one speaks about *feeling* effective, and the second one about *being* effective. As the theory concerns psychological needs and thus *feelings* of autonomy, competence and relatedness (Deci & Ryan, 2008, p. 183), and the measure include self-reported *perceptions*, it is more likely, however, that competence psychological need satisfaction concerns the *feeling of being effective or competent,* rather than necessarily also *being* competent, as actually succeeding and being competent is more than just one's own perception. This also means that competence need satisfaction must be inversely related to levels of imposter syndrome, i.e. "a pattern of behavior wherein people (even those with adequate external evidence of success) doubt their abilities and have a persistent fear of being exposed as a fraud" (Mullangi & Jagsi, 2019, p.

322; see also Bothello & Roulet, 2019, for an account of imposter syndrome in academia). Research does show an impact of feedback on competence need satisfaction, indicating the importance of *felt competence* (Deci & Ryan, 2000).

Relatedness need satisfaction concerns an "individuals' inherent propensity to feel connected to others, that is, to be a member of a group, to love and care and be loved and cared for" (Van Den Broeck et al., 2010, p. 982), or can be described as "establishing a sense of mutual respect and reliance with others" (Baard et al., 2004, p. 2046). With regards to intrinsic motivation, relatedness need satisfaction can be seen as a more distal, yet still important, element. When people are intrinsically motivated, they engage freely (autonomy) in activities that are perceived as interesting, that provide novelty as well as optimal challenge (competence). In this sense, a secure relational base or social support appears to provide more of a needed backdrop, rather than a proximal necessity (Deci & Ryan, 2000).

Ancient philosophy in a modern coat?

In a way, SDT shares parallels with ancient ways of thinking about well-being or living well. *Epicurus*, for example, pinpointed three elements that were necessary for living a happy life: friendship, freedom and reflection (de Botton, 2000; Konstan, 2018). These three elements resonate closely with relatedness, autonomy and competence. *Aristotle's view on eudaimonia*, and his ethical theory at large, can also be connected to SDT: both theories aim at identifying elements of human experience that are in accordance with human nature and connected with human thriving (Ryan & Martela, 2016). SDT explains that these elements are (1) pursuing intrinsic goals, e.g. developing community, working on personal growth, (2) regulating behavior autonomously and (3) living a reflective, conscious, mindful life. These qualities of life – or *telos*, i.e. the good that every living being naturally strives to actualize – lead to experiencing a greater sense of autonomy, competence and connectedness. Psychological need fulfilment can thus be seen as a sign of the ability to create a life yielding the basic nutrients required by human nature (Deci & Ryan, 2000b; Ryan & Martela, 2016). In sum, this is how we *thrive in an eudaimonic sense*.

Kahn's theory on engagement

Kahn (1990) explained *personal engagement* as "the harnessing of organization members' selves to their work roles; in work engagement, people employ and express themselves *physically, cognitively, and emotionally* during role performances." (Kahn, 1990; p. 694). As in SDT, Kahn's theory can be seen as a motivational theory, and personal engagement can be seen as a motivational concept: when employees are engaged, they actively allocate personal resources towards their tasks (Christian et al., 2011). According to Kahn (1990), *three psychological conditions* are necessary for engagement; i.e. psychological meaningfulness, psychological availability and psychological safety.

Psychological meaningfulness can be defined as "a feeling that one is receiving *a return on investment* of one's self in a currency of physical, cognitive, or emotional energy" (p. 703-704). This has to do with feeling worthwhile, useful, and valuable. According to Kahn (1990), both interpersonal and professional elements contribute to psychological meaningfulness. *Task characteristics* can contribute to meaningfulness through task variety, autonomy, creativity, skill utilization. *Role characteristics* can contribute to meaningfulness through formal position, identity, fit with self-image, status and influence; and the nature of the *work interactions* can also contribute to a sense of meaningfulness, e.g. through creating a feeling of dignity, self-appreciation, and a sense of value.

Psychological availability can be defined as "the sense of having the physical, emotional, or psychological resources to personally engage at a particular moment" (p. 714). According to Kahn (1990) there are *four types of distractions* from being available for your work. There can be (1) a lack of *physical energy*, which has to do with physical resources, or (2) a lack of *emotional energy*. One can suffer from (3) *insecurity*, i.e. based on a lack of self-confidence, self-consciousness, or an ambivalence regarding the fit with the organization and its purpose, or (4) *outside life* can distract from being available for work (being too preoccupied). Psychological availability might not be easy to influence as a leader, since mostly non-work-related variables influence psychological availability.

Psychological safety can be defined as "being able to show and employ one's self without fear of negative consequences to self-image, status, or career" (p. 708). Therefore, psychological safety is related to being able to trust in that no harm will come from engagement oneself in the workplace. According to Kahn (1990) there are many influencing factors for psychological safety. It can be related to *situations* (e.g. predictable, consistent and clear), interpersonal relations (e.g. supportive, flexible and open), *group dynamics*, *management style* (e.g. supportive, resilient, consistent, showing trust and competence), and *organizational norms* (i.e. clarity with regards to norms as well as the relevance of boundaries).

Are both theories connected?

There are some parallels with regards to both SDT and Kahn's theory of personal engagement, not only in the number of needs or conditions that have been identified, but also in their content. Psychological meaningfulness can be connected with two psychological needs from SDT: autonomy and relatedness. When there is autonomy in task characteristics, they fulfill the condition for meaningfulness according to Kahn (1990), in addition, when social relationships at work are fulfilling, the condition for psychological meaningfulness is nurtured as well. Psychological availability can be connected to the need of competence: when there is a lack of resources to perform a task, outcomes will be poor and the need for competence will be thwarted

as well. In addition, Kahn (1990) sees insecurity as an important contributing factor for psychological availability, which can be seen as related to competence need satisfaction ('feeling effective') as well. Last, psychological safety can be associated with the need for relatedness: good, supportive and open interpersonal relationships are necessary for the condition of psychological safety as well as for relatedness need satisfaction. In sum, both theories share some overlap with regards to their conceptualization. Both theories are extremely useful for the topic of this dissertation: SDT explains well-being in general, whereas Kahn, from the beginning, focused more on work engagement as an outcome. In addition, there are many empirical studies connecting both psychological needs as well as psychological conditions to work engagement (see chapter 2).

Self-Determination Theory and Kahn's conditions for engagement in this dissertation

In this dissertation, we view work engagement as a specific *employee-level outcome* of interest. *Self-Determination Theory (SDT)* is used as our primary theoretical lens (see chapter 1, 2, 3, 4, 5, 6): it explains the *process* of how psychological needs lead to work engagement. *Kahn's theory on personal engagement* makes an appearance as theoretical foundation in several dissertation chapters as well (see chapter 1, 2, 5, 6). In the first two chapters of this dissertation, we investigate the theoretical and empirical relationship between positive leadership (styles) and employee work engagement. In the second section of this dissertation we focus on leaders. Since we were interested in the *process* of how mindfulness and psychological need satisfaction interact to increase positive leadership (chapter 3), as well as the *trickle-down process* from leaders to employees (chapter 4), we focused on psychological needs here, rather than their outcome (i.e. work engagement). In the last part of the dissertation, we look more into communication behavior (chapter 5 and 6), so we take psychological need satisfaction and Kahn's conditions for personal engagement into account as processes, and investigate whether they are associated with work engagement.

Contributions

Leadership is a popular topic, both as a scientific field (Antonakis & Day, 2017), as well as in the consulting world, which makes it imperative that scientists devote time to (1) researching the topic well, as well as (2) to disseminating the information, so that policy makers and HR-directors have the information they need. Ideally, this would lead to an (organizational) world characterized by *evidence-based management* (Lawler, 2007). In order to achieve this goal, this dissertation attempts to make several academic and practical contributions. By writing for both academic journals, as well as for practitioner-oriented journals and evidence-based books (e.g. on mindfulness and on well-being), we aim to reach HR professionals as well.

Scientific contributions

This dissertation makes several scientific *contributions to the leadership and well-being research field*, theoretically as well as empirically. First of all, we address *construct proliferation* with regards to positive leadership styles and indicate that they may share overlap in terms of their translation into leader behavior on the work floor (chapter 1 & 2).

Second, we *review* all theoretical constructs that may explain the leadership – engagement relationship (chapter 1), as well as *integrate* them into testable research models (chapter 1 & 2). In chapter two, specifically, we conduct an empirically-based inductive and deductive review that leads into a meta-analysis and empirically-based *research models*.

Third, we integrate several theoretical models to investigate empirical phenomena. In chapter three, for example, we integrate theory on mindfulness, with a self-regulatory perspective. We combined this with an approach that used psychological need satisfaction of leaders as an *antecedent* to understand the emergence of positive leadership behavior. In chapter four, we integrate a trickle-down paradigm with SDT and LMX-theory.

Fourth, even though we investigated employee outcomes, we did not neglect the importance of leader self-regulation and self-care (chapter 3) or leader psychological need satisfaction (chapter 4), which renders a more complete picture of how leaders can be effective and increase employee well-being.

Fifth, we developed a new leadership construct that focuses on *narrow leader communication behavior* through the lens of leader attention (see chapter 5). This opens up the possibility to do new research on leader attention during communication.

Finally, we also developed and pilot-tested a leader training protocol. Theoretically, this adds to the literature since it is a practical integration of several research streams. Future research can build on this pilot protocol. Empirically, testing a training protocol adds to the literature in terms of knowledge concerning leadership interventions and outcomes.

Practical contributions

Based on the research in this dissertation, we also make several practical contributions that hopefully help HR-managers to develop policies or help leaders to be more effective.

In the first part of this dissertation, we made an *overview* of all the ways in which leaders can influence employees' well-being, based on both theory as well as empirical studies that can inform practitioners on all the (theoretical) views there are on how to achieve results as a leader. We also answered the question: "Which positive leadership style is most effective"? As it turns out, all positive leadership styles influence work engagement equally, or at least, based on our study (chapter 2), we cannot say that one style is more effective than the other. However, we did identify

some of the shared behaviors that may underlie each of these positive leadership styles that may influence the (positive) leadership – engagement relationship that was found. So, as a positive message here, we can conclude that we found a bunch of ways in which leaders can influence well-being, and in the first two chapters of this dissertation these ways are summed up in an easy-to-follow overview and model. These overviews can provide leaders with practical ways in which they improve their leadership style (also see 'practical recommendations' in the general discussion at the end of the dissertation).

In the second part of this dissertation, we focused more on leaders' well-being. Specifically, in chapter three, we found support for the hypothesized role that mindfulness and leader psychological need satisfaction play with regards to being able to adhere to behaviors consistent with a positive leadership style. We also found a moderating effect of neuroticism and indicated that emotional reactivity does not have to have a negative impact on the relationships that are formed with employees, as long as it is combined with high scores on mindfulness. In addition, we show the importance of self-care of leaders in terms of psychological need satisfaction: in chapter 4 we show that there is a direct and indirect trickle-down effect, especially when it comes to competence need satisfaction. This translates to policy advice: when leaders (or their organizations) are able to take care of their own autonomy, competence and relatedness, this can have a direct impact on employee well-being in terms of psychological need satisfaction as well.

In the third part of this dissertation we zoomed in on leader communication behavior. We developed a new questionnaire that can help take stock of how attentive leaders are during conversations with their employees (chapter 5). We also developed and tested a training protocol to increase communicative awareness and abilities of leaders (chapter 6).

Dissertation summary

The first two chapters of this dissertation investigate the relationship between (positive-leadership styles and employee work engagement. The second two chapters focus on the role of leaders' own well-being, both for their leadership as well as for their employees' well-being. The last two chapters zoom in on leader (attentive) communication behavior and their effect on employee well-being.

Chapter 1

In chapter one, we use a theoretical analysis of the literature to propose that positive leadership styles translate into smaller leader behaviors on the work floor that influence employee work engagement through a number of shared pathways. We used a deductive approach and reviewed several established theoretical frameworks, as well as up-to-date empirical work to develop a general framework. We introduce a model with three processes (a direct process and two

indirect processes) and five pathways: i.e. practical, motivational, affective, cognitive and behavioral. This parsimonious research models integrates several theoretical viewpoints and underscores the joint mechanisms with regards to the effect of positive leadership styles on work engagement specifically. It constitutes the base for the future work in this thesis.

Chapter 2

In chapter two, we explore the leadership-engagement nexus further by performing a moderated meta-analysis and a review of explaining mechanisms. In doing so, we have found that transformational, authentic, empowering, ethical and servant leadership are all positively related to work engagement, and they all share overlap in their confidence and credibility intervals, which means they may result in the same effect on work engagement. The general meta-correlation was .47. Our theoretical analysis also revealed a common ground between these positive leadership styles, i.e. having a moral perspective as a leader, role modeling behavior, a focus on follower self-determination and positive social exchanges with employees. In addition, the comparison of the studies in the sample indicated that several categories of mediators had a clear and well-established impact on work engagement, i.e. psychological needs, trust, resources and organizational level variables. Psychological needs was found to be the biggest mediator category, which inspired the following studies in this thesis.

Chapter 3

In chapter three, we delve into how to improve leader well-being, and the impact of leader well-being on (self-reported) leadership. We chose transformational leadership for this study as it is one of the most popular leadership styles. Although much is understood of transformational leadership, less research investigates its antecedents. In this paper we have found that (1) mindfulness is an antecedent of transformational leadership (2) psychological need satisfaction mediates the relationship between mindfulness and transformational leadership and (3) neuroticism interacts with mindfulness, making this a moderated mediation. Specifically, we have found that the association between mindfulness and relatedness need satisfaction is positive: when neuroticism is high, mindfulness has the largest impact. Therefore, neuroticism is a boundary condition for the indirect effect of mindfulness on transformational leadership through relatedness need satisfaction. This papers shows the significance of leaders' own well-being for their ability to score high on positive leadership.

Chapter 4

In chapter four, we investigate whether leaders' own well-being also has a direct influence on employees' well-being. Specifically, we investigate whether psychological need satisfaction from leaders trickles down to psychological need satisfaction from employees. As a mediating

mechanism we examined LMX quality, from the viewpoint of both leaders and employees. Results from 1036 nurse-head nurse dyads have indicated that employee-rated LMX mediates the trickle-down effect of psychological need satisfaction. Additional exploratory analyses with regards to the direct trickle-down effects of individual leader needs indicates that leader competence need satisfaction is the only psychological need that trickles down directly. This study highlights the importance of (1) leaders' psychological need satisfaction and (2) employee perceptions of the relationship quality for employee psychological need satisfaction.

Chapter 5

The previous chapters indicated the importance of psychological need satisfaction as well as the importance of developing a good LMX-quality relationship for (employee and leader) well-being. Since leaders spend the majority of their time communicating with employees (Wajcman & Rose, 2011), we direct our attention in chapter 5 to leader communication: How do leaders behave when they communicate in a way that enhances well-being? Good communication skills are implicitly assumed in many positive leadership styles, but they are rarely investigated behaviorally. Therefore, in this chapter, we have developed and validated a new questionnaire to look at leader communication from a behavioral lens. The new concept *leader attentive communication* (LAC), has been defined as "an open-minded, attentive demeanor while in a conversation with an employee". Instead of focusing on the content or form of the communication, we propose to study the general and attention-based communication skills of the leader from the viewpoint of the employee. We have found that LAC has two dimensions: general attention and attention paid to nonverbal cues. We have also shown that leader attentive communication enhances employee well-being through psychological need satisfaction and Kahn's conditions for engagement.

Chapter 6

Finally, in chapter six, we discuss the development of a training protocol to increase leader communication. We pilot tested this protocol in two groups of leaders from the government sector and we used a longitudinal data-collection with both leaders and their employees to assess the effects of the training. Unfortunately, the COVID-19 pandemic interfered with the data-collection for this study. Although we did find some small increases in relevant constructs after the training, it is impossible to untangle the worldly context from our findings in this chapter. Nonetheless, we tested a training protocol, we received very favorable feedback on it from the participants and we will be able to use and test this training protocol more extensively in the future, so overall we consider this to be a successful pilot project.

On the next page, see *Figure 1*, there is a schematic overview of the dissertation research.

Figure 1. Schematic overview of dissertation research
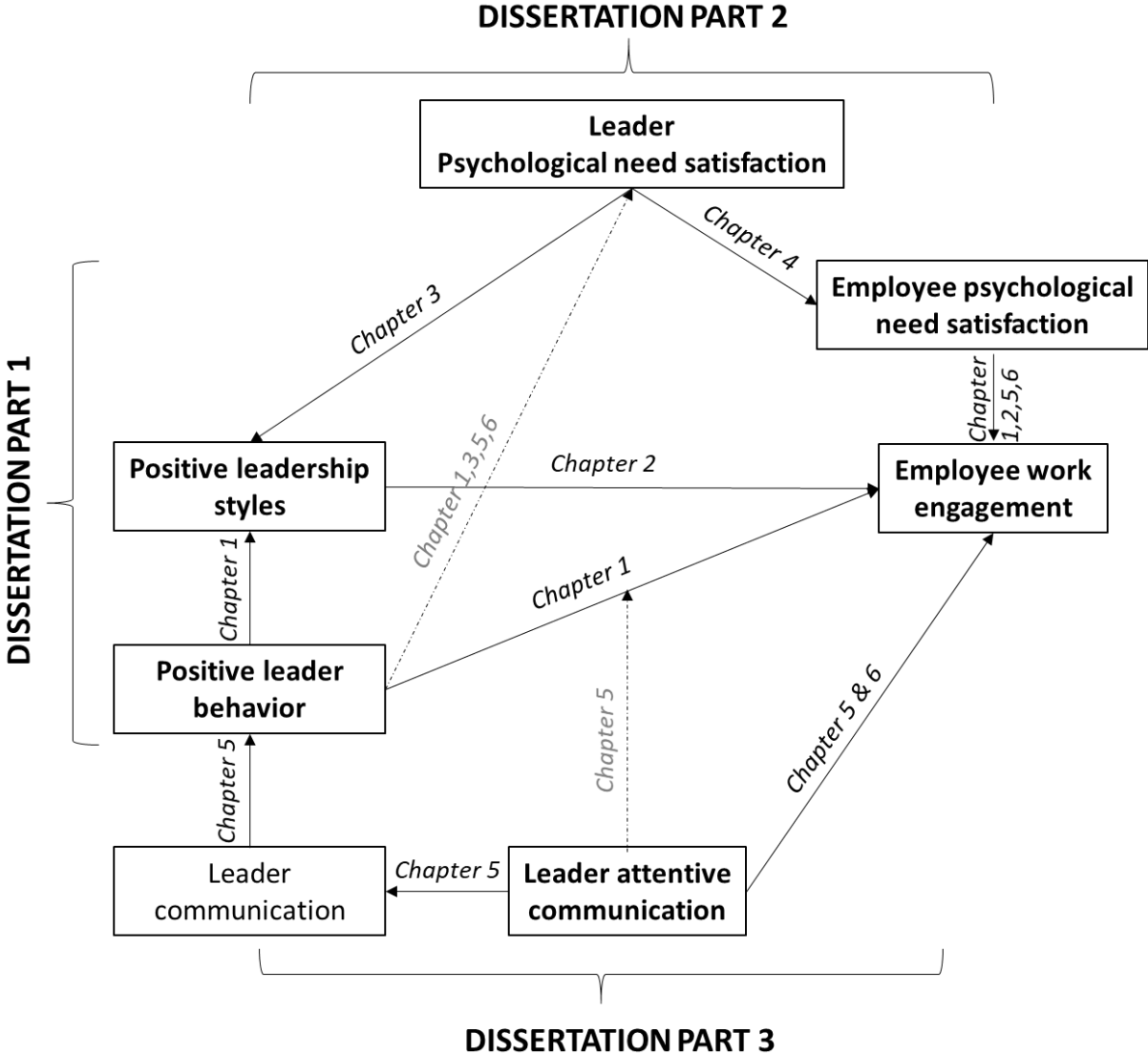
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PART 1:

ON LEADERSHIP AND WORK ENGAGEMENT

Chapter 1

Leadership and work engagement:
Exploring explanatory mechanisms

Construct proliferation in the leadership field raises questions concerning parsimony and whether we should focus on joint mechanisms of leadership styles, rather than the differences between them. In this theoretical research article, we propose that positive leadership styles translate into similar leader behaviors on the work floor that influence employee work engagement through a number of shared pathways. We take a deductive approach and review several established theories as well as relevant up-to-date empirical work from a birds-eye view to generate a general framework. We introduce a model with three processes (one direct process and two indirect processes) and five pathways (practical, motivational, affective, cognitive and behavioral). With regard to the indirect processes, we propose that work characteristics (material pathway) and psychological need satisfaction (intrapersonal motivational pathway) mediate the relationship between positive leadership styles and engagement. Regarding the direct interpersonal process, we propose that leaders directly influence employee engagement through three pathways: emotional contagion (affective interpersonal pathway), social exchange (cognitive interpersonal pathway) and role modeling (behavioral interpersonal pathway). Our parsimonious research model furthers the integration of different theoretical viewpoints as well as underscores joint mechanisms with regards to the effect of positive leadership styles. Practically speaking, this paper also provides insight into which processes leaders can work on to stimulate employee work engagement through progressive policies and work practices.

Introduction

Leaders provide a competitive advantage for firms (Ireland & Hitt, 1999). As a consequence, organizations invest in leadership courses based on the idea that it will help leaders to increase the productivity of their employees (Athanasopoulou & Dopson, 2018; Gottfredson & Aguinis, 2017). Within these developments, there is more and more room for discussions concerning employee well-being, and specifically work engagement, as this is also related to interesting firm outcomes. For example, work engagement is associated with employee health and turnover intentions (Halbesleben, 2010), a service climate and customer loyalty (Salanova, Agut, & Peiró 2005), organizational commitment (Schaufeli & Bakker, 2004), taking personal initiative and extra-role behavior (Bakker, Demerouti, & Verbeke, 2004; Salanova & Schaufeli, 2008), as well as employee performance (Halbesleben, 2010; Xanthopoulou et al., 2007; Robertson and Cooper, 2011). This shows that employee well-being and productivity can go hand in hand. Put more strongly: work engagement might be a critical driver of business success (Strom, Sears & Kelly, 2014; Choi, Tran & Park, 2015). The most agreed-upon conceptualization of work engagement indicates that it is a construct with three dimensions, including a behavioral-energetic component (i.e. vigor), an emotional component (i.e. dedication) and a cognitive component (i.e. absorption) (see Schaufeli & Bakker, 2010, for an overview). Leaders can influence employee work engagement through changing work conditions, but also directly through inspiring, connecting and

strengthening their employees (Schaufeli, 2015). In addition, several positive leadership styles have been linked to employee work engagement in longitudinal studies (Chughtai, Byrne & Flood, 2014; Mehmood, Nawab & Hamstra, 2016; Fletcher, 2016; Li and Liao, 2014; Biggs, Brough & Barbour, 2014).

Of these positive leadership styles, transformational leadership is the most popular and well-researched leadership style to date (see Gardner, Lowe, Moss, Mahoney & Cognliser, 2010). It finds its theoretical basis in the full range model of leadership – which also includes transactional and laissez-faire leadership - and is comprised of four behavioral dimensions, i.e. idealized influence, intellectual stimulation, inspirational motivation and individualized consideration (Avolio, Bass & Jung, 1999). Another leadership concept is charismatic leadership, which is based on transformational leadership. Charismatic leaders install a sense of purpose, which can lead to followers being energized and followers identifying with the leaders' vision (Avolio et al., 1999). Furthermore, authentic leadership is also based on research on transformational leadership, and differentiates between "pseudo" transformational leaders and authentic leaders (Bass & Steidlmeier, 1999; Avolio, Walumbwa & Weber, 2009). Authentic leadership has four dimensions, i.e. self-awareness, balanced processing of information, relational transparency towards followers, and internalized moral perspective (Neider & Schriesheim, 2011). Recently, instrumental leadership was introduced as an addition to the full range model of leadership (Antonakis & House, 2014). This leadership style focuses on leader behaviors related to environmental and outcome monitoring, formation and implementation of strategy, and path-goal facilitation of employees (Antonakis & House, 2014; Bormann & Rowold, 2018).

Several other leadership concepts have been developed as well, such as ethical leadership, that focuses on normative behavior (Brown, Treviño & Harrison, 2005), servant leadership with a focus on the needs of others (Liden et al., 2014), and empowering leadership with a focus on employee empowerment (Tuckey, Bakker & Dollard 2012). Most recently, concepts like humble leadership (Walters & Diab, 2016), benevolent leadership (Cenkci & Özçelik, 2015) and engaging leadership (Schaufeli, 2015) have surfaced. In other words, a host of positive leadership styles emerged that include benevolent leadership behaviors that are all supposed to foster employee motivation, performance and well-being.

This rapid growth of proposed positive leadership styles also leads scholars to urge for an integration and an investigation of construct redundancy in leadership constructs (Yukl, 2002; Derue, Nahrgang, Wellman & Humphrey, 2011; Rowold, Borgmann & Diebig, 2015). Moreover, positive leadership styles may not be so different after all (see e.g. Gottfredson & Aguinis, 2017,

Bormann & Rowold, 2018; Rowold & Borgmann, 2013), which makes synthesis even more important.

Despite several attempts to develop theoretical models on leadership and employee outcomes in the leadership literature (see "Theoretical models on leadership and employee outcomes" below), no integrated process model of *multiple positive leadership styles* (and the translation of these styles into specific leader behavior) with regards to their *shared effect* on employee *work engagement,* based on *theory*, exists. Yet, meta-analyses with several positive leadership styles and leader behaviors indicate that there may be some construct redundancy (Hoch, Bommer, Dulebohn & Wu, 2018; Banks, McCauley, Gardner & Guler, 2016; Banks, Gooty, Ross, Williams & Harrington, 2018; Derue et al., 2011; Rowold et al., 2015). In addition, several positive leadership styles have relatively large correlations with work engagement (Hoch et al., 2018; Banks et al., 2016), which indicates the possibility of shared or common ground with regards to their effect on employee work engagement. Indeed, scholars have argued that what is missing in the leadership field is "a detailed description of well-established theories that would help to clarify the processes underlying leadership constructs" (Bormann & Rowold, 2018; p. 154). With this paper, we intend to do just that: to provide insight into the shared pathways that underlie different leadership constructs that propose to have a positive influence on employees. Instead of focusing on explaining general underlying processes aimed at different employee outcomes, we aim to focus specifically on employee work engagement. The reasons are both practical as well as theoretical: (1) a specific outcome helps to identify relevant theoretical work, (2) employee work engagement has been related to multiple positive outcomes for employees ánd their organizations: it is related to positive health consequences for employees (Halbesleben 2010), as well as higher productivity (Halbesleben, 2010; Xanthopoulou et al., 2007; Robertson & Cooper, 2011) and financial gains for companies (Wiley, 2010), which makes it a highly relevant and practical construct, (3) there are several theoretical models explaining work engagement from different angles that can and should be considered together and (4) connections between positive leadership styles and employee work engagement have only recently been theorized (see e.g. Schaufeli, 2015; Carasco-Saul, Kim & Kim, 2015). We aim to build on this work.

This leads us to the purpose of our study. We aim to identify some of the underlying or *joint mechanisms* of positive leadership styles with regards to their possible effect on employee work engagement. We wish to distill exactly *how* leaders characterized by positive leadership styles influence their followers' work engagement. We will start with proposing that these leaders engage in *similar behaviors* when it comes to stimulating employee work engagement. Then we will elaborate on the possible pathways through which these shared behaviors might operate. To achieve this

aim, we will first discuss research on leadership construct redundancy and overlap, after which we conduct a *deductive analysis* based on theoretical insights from the HRM-field. We will bring several theoretical views together, to establish a general framework that identifies multiple pathways through which leaders - characterized by different positive leadership styles, yet perhaps similar behaviors - can influence their employees' work engagement. In addition, we will formulate research propositions to guide future research.

The aim of this study is twofold: (1) we address construct proliferation with regards to positive leadership styles and therefore indicate that they may share overlap in terms of their translation into leader behavior on the work floor and (2) we propose an advanced mediation model of leadership and its effect on employee work engagement. Therefore, we contribute to the field in several ways, both theoretical as well as practical. First of all, we bring together several rich theoretical perspectives that have been studied individually, yet not combined. Second, this review may serve as an introduction to theoretical underpinnings with regards to work engagement. Third, we ensure parsimony in the field by identifying joint mechanisms with regards to positive leadership styles and their practical translation into leader behavior when it comes to stimulating employee work engagement. Fourth, and practically speaking, our research model shows several pathways through which leaders may influence employee work engagement. Last, our overview also highlights the role of *leader work engagement*. This information can help practitioners develop a clear view on which actions can be easily taken with regards to the engagement levels of leaders and their employees.

Theoretical models on leadership and employee outcomes

There are a couple (meta-analytic) studies that focused on bringing several pathways between leadership and employee outcomes together in one framework. For example, two meta-analytic studies investigated the effect of leadership on employee *performance* and focused on multiple mediation pathways. Ng (2017) investigated one leadership style, i.e. transformational leadership, and empirically tested several theory-driven mechanisms that influence employee performance: affective, motivational, identification, social exchange and justice enhancement mechanisms. Gottfredson and Aguinis (2017) investigated several *leader behaviors* related to transactional and transformational leadership and tested underlying mechanisms with regards to performance. One of their findings was the importance of Leader-Member Exchange (LMX).

Yukl (2012) also focused on leader behaviors with regards to employee performance and developed a hierarchical taxonomy with four meta-categories, i.e. task-oriented, relations-oriented, change-oriented and external. An earlier version of this model (Yukl, 2002) was tested with a series of meta-analytic structural equation models, which showed that multiple leadership behaviors (i.e.

transformational, transactional, consideration, initiating structure and laissez-faire leadership) can indeed be explained by three meta-categories of leadership, i.e. relation-, task-, and change-oriented (Borgmann, Rowold & Bormann, 2016).

A third theoretical study also focused on leader behavior and identified several pathways on different organizational levels (i.e. an individual/dyadic level, a team/organizational level and an environmental/work system level) that lead to employee *health* (Wegge, Shemla & Haslam, 2014): (1) person-focused action, (2) system-focused action, (3) moderating action, (4) climate control and identity management and (5) modeling.

Fourth, Derue et al. (2011) propose a detailed model that explains how leader traits and behaviors influence leader effectiveness. First, they describe two general processes through which leader traits and characteristics (i.e. demographics, task competence and interpersonal attributes) influence leadership effectiveness directly, i.e. through attribution processes and identification processes. Second, the authors propose that leader traits and characteristics influence four (mediating) categories of leader behaviors that then lead to leadership effectiveness, i.e. task-oriented, relational-oriented (including servant leadership), change-oriented (including transformational and charismatic) and passive leadership. With our review we focus in detail on explaining the last step in their model, i.e. the relationship between leader(ship) behavior and a specific "leadership effectiveness outcome", i.e. employee work engagement.

Last, concentrating on leadership *styles* ánd employee work engagement, Carasco-Saul et al. (2015) established a framework with regards to the effect of a couple of positive leadership styles on employee work engagement. They made a distinction between the possible explanatory mechanisms for transformational leadership on the one hand, and authentic, charismatic and ethical leadership on the other hand. According to their model, transformational leaders provide vision, emotional support and recognition for contributions. They seem to engage their followers most when they boost their optimism, responsibility, meaningfulness and innovative behavior. Engagement decreases when the transformational leaders' perception of the follower's characteristics seems to be less favorable than the self-evaluation of the follower. Authentic, charismatic and ethical leaders are theorized to stimulate engagement through role clarification, the organizational culture, empowerment, identification with the supervisor and psychological ownership (Carasco-Saul et al., 2015).

Despite this previous work on leadership and employee outcomes, no *integrated* theoretical mediation model of positive leadership *styles or related behaviors* and their *shared effect* on employee *work engagement* exists. We will aim to bridge this gap and thereby support future research in this area. Below we will elaborate on our predictor "positive leader behavior" and why we propose that

the overarching positive leadership styles are perhaps more similar than usually posited in the literature. This is also why we propose that positive leader behaviors shared across different leadership styles may result in increases in employee work engagement through similar mechanisms.

Positive leadership styles

In the introduction we spoke of several 'positive leadership styles'. Despite giving examples, i.e. transformational, authentic, ethical, empowering leadership, this remains somewhat vague, which is typical for the leadership field. With the term "positive leadership styles" our goal is to lump together all the "leadership styles" that have been developed with the underlying assumption that they *positively* influence employee outcomes. This is in line with research concerning the "model of positive orientation" of organizations, who are supposed to be "positive in five main elements of its configuration", i.e. "leadership, culture, strategy, structure and human resources (Zbierowski & Góra, 2014, p. 86).

We are fully aware that "positive leadership" resembles a tautology by having the intended effect in the name of the construct, which is in fact a pervasive problem in the leadership field (Alvensson & Einola, 2019; Mackenzie, 2003). In fact, most positive leadership styles seem to have problems with their construct operationalization, since they are defined by their outcomes rather than clear leader behaviors or core processes (van Knippenberg & Sitkin, 2013). In addition, these so-called positive leadership styles feed into the hero myth of leadership (Yukl, 1999), that some scholars have even named "prozac for practitioners" (Alvensson & Einola, 2019, p. 392; Collinson, 2012). Even though these are important issues that the leadership field needs to contend with, at least the *intended* positive outcomes of the positive leadership styles clearly distinguish them from "negative" leadership styles, e.g. abusive or destructive leadership (Schyns et al. 2019). Since we aim to propose mechanisms of all leadership styles that are supposed to have positive effects on employee well-being, this big categorization between "good" proposed outcomes and "negative" proposed outcomes may be enough of a distinction for the purpose of this paper.

As a foundation of this research paper, we propose that all these so-called different positive leadership styles are actually quite similar in terms of behavior when it comes to their effect on employee work engagement, especially when one investigates theoretical underpinnings, meta-analytical research on redundancy and research on the actual leader behavior on the work floor (see 'overlap between positive leadership styles' below).

Overlap between positive leadership styles

Theoretical indications of overlap. Although positive leadership styles each have their own specific focus, theoretical comparative research also suggests a common ground between several

popular positive leadership styles, i.e. transformational, servant, authentic and ethical leadership. These popular positive leadership styles seem to have elements in common based on their theoretical basis: e.g. a moral perspective from the leader, role modeling behavior, supporting employee self-determination and positive employee exchanges in their respective founding theories. (Gregory Stone, Russell and Patterson, 2004; Walumbwa et al., 2008; Avolio and Gardner, 2005; Brown and Treviño, 2006).

Relatedly, Rowold and Borgmann (2013) examined the convergent and discriminant validity of transformational and transactional leadership, consideration and initiating structure, and LMX. Different perspectives were taking into account (follower and self-ratings), yet "all leadership constructs were to some degree convergent" (p. 34). More specifically, one (theoretically) shared aspect of these leadership styles may be an active leader-led process of interaction with respective followers. In later research, Bormann and Rowold (2018) reviewed several positive leadership styles in order to assess construct proliferation. They focused on initiating structure, consideration and transformational, transactional, laissez-faire, ethical, charismatic, servant, authentic and instrumental leadership and conclude that "leadership research does indeed suffer from proliferation" (p. 155).

We propose that it is likely that other positive leadership styles have elements in common as well, especially when these positive leadership styles are translated to leader behavior on the work floor (see "leader behavior" below).

Conceptual overlap and other issues. Besides overlap and the possibility of construct redundancy, there are a number of conceptual issues with regards to positive leadership styles as well. Van Knippenberg and Sitkin (2013) e.g. elaborated on problems with regards to charismatic-transformational leadership, yet we believe that many of the issues raised apply to a number of (or maybe all?) positive leadership styles. First of all, the authors propose that leadership style construct names (e.g. transformational, ethical, authentic leadership) seem to confound the concept with its intended effects. Second, almost all positive leadership styles include several dimensions within their conceptualization, yet theoretical foundations does not seem to indicate how these dimensions relate to one another, or how they distinctly influence processes or outcomes. Third, empirical research suggests a disconnect between leadership theories proposing certain dimensional structures of leadership styles and the measurements of these styles on the work floor (see e.g. van Knippenberg & Sitkin, 2013). Similar concerns have recently been uttered with regards to authentic leadership (see e.g. Alvensson & Einola, 2019) and may be indicative of pervasive problems concerning definitions and identifying essential core processes of different leadership styles. These problems may mask some of the actual differences between positive leadership styles.

Some scholars have been working on solutions with regards to these problems. For example, some leadership research focuses on contextual elements of leadership, which avoids falling into the hero-myth trap (Yukl, 1999; Alvensson & Einola, 2019). These scholars e.g. study environmental factors like uncertainty (de Sousa and van Dierendonck, 2014) or the role of followership (Uhl-Bien, Riggio, Lowe & Carsten, 2014; Crossman & Crossman, 2011; Blom & Alvesson, 2015; Stam, van Knippenberg & Wisse, 2010a). Other research focuses more on foundational elements of e.g. transformational leadership (i.e. vision provision) and aims at clearing up some of the conceptual confusion (see e.g. van Knippenberg & Stam, 2014; Stam, van Knippenberg & Wisse, 2010a, 2010b). In addition, scholars have attempted to rectify the measurement-issues by developing a scale that allows for respondents to indicate too little versus too much of a certain behavior. This allows for the exploration of curvilinear effects and boundary conditions for certain leader traits and behaviors (Vergauwe, Wille, Hofmans, Kaiser & De Fruyt, 2017). Although this research will certainly help us the field move forward, quantitative work on the current state of affairs in leadership research also indicates a large amount of overlap between different positive leadership styles (see below).

Quantitative indications of overlap. Besides theoretical considerations, quantitative meta-analytic studies on positive leadership styles seem to indicate some construct redundancy or overlap. For instance, DeRue et al. (2011) showed that transformational leadership "has a significant relational component to it and overlaps conceptually and empirically with both initiating structure and consideration" (p. 38). Another meta-analytic study also included transactional leadership, laissez-faire as well as leader-member exchange came to the same conclusion: there is considerable overlap between these leadership constructs (Rowold et al., 2015). A recent meta-analysis investigated more leadership styles and found that ethical, authentic and servant leadership all correlate highly with transformational leadership (Hoch et al., 2018). Furthermore, this study points out that servant leadership is the only non-redundant concept that does not overlap with transformational leadership. The authors conclude that the utility of authentic and ethical leadership is low, except when analyses are using specific outcomes, such as affective commitment or trust for authentic leadership, and deviance and job satisfaction with regards to ethical leadership (Hoch et al., 2018). Additionally, the authors found high correlations between these four positive leadership styles and LMX, illustrating that they are all related to leader's positive social exchange with employees. This is confirmed in a large study from Gottfredson and Aguinis (2017) that focused on employee performance. In this paper, the authors analyzed several meta-analyses using MASEM, a method that combines meta-analysis and structural equation modeling. They found that several leader behaviors lead to employee performance with leader-member exchange as the most dominant

mediator category. Another meta-analysis confirms that authentic leadership is highly related to transformational leadership, which suggests construct redundancy as well (Banks et al., 2016). In later research, Banks et al. (2018) utilized meta-analytic correlations to investigate leader behaviors in several categories (i.e. task-oriented, passive, relational, inspirational, values-based and moral behaviors). They found high correlations between the different leadership behaviors, as well as high correlations between values-based and moral behaviors with traditional outcome variables (e.g. LMX). Their results show the prevalence of construct redundancy within the leadership domain, as well as the possibility of endogeneity bias contaminating correlations between leadership variables and popular outcomes.

Leader behavior. Furthermore, we propose that *all* positive leadership styles, even those not researched, share considerable overlap when translated to the behavioral and practical domain. More specifically, we posit that "good" leaders characterized by one or the another "positive leadership style", behave quite similarly on the work floor. Research e.g. indicates that simple behavior such as merely listening, has positive effects on psychological safety (Castro et al., 2018), which is, of course, related to work engagement (Kahn, 1990). Especially communication behaviors are likely shared across all leaders characterized by one or the other leadership style, since research indicates that leaders spend most of their time communicating (in)directly with employees (Wajcman and Rose, 2011). Indeed, leadership scholars have posited before that leadership is mainly a relational endeavor (Uhl-Bien, 2006). Specific leader behaviors aimed at improving the relationship quality with employees through communication are probably shared across all leaders who score high on one or the other leadership style. In addition, research shows that merely "liking" the leader is important, and even explains additional variance over leader-member exchange, for several employee outcomes (Dulebohn, Wu & Liao, 2017). In a similar vein, researchers showed that interpersonal affect may indeed be a potential bias in followers' leadership ratings (Rowold & Borgmann, 2014). We propose that very simple leader behaviors (e.g. related to communication) are probably shared over all positive leadership styles. Consequently, the effects these leaders have on employee engagement may run more or less through the same general mechanisms we propose in this review.

Taken together, it seems that – despite theoretical differences – (theoretical and empirical) research indicates that several positive leadership styles may show considerable overlap with regards to their translation into actual leader behavior, their effects, but also with regards to mediating constructs associated with work engagement. Therefore, the current paper sets out to propose an overarching research model, aimed at identifying shared underlying mechanisms, specifically focused on employee work engagement as an outcome. In essence, we propose that

leaders who have an engaged work force behave more alike than different and with this research paper we dive into the possible pathways in which these leaders influence the work engagement levels of their work force.

Leadership and engagement

Positive leadership styles have been related to various indicators of employee well-being such as employee work engagement, which can be defined as a "persistent and pervasive affective-cognitive state that is not focused on any particular object, event, individual, or behavior" (Schaufeli & Bakker, 2004, p. 295). Based on the most widely used conceptualization of work engagement (Schaufeli & Bakker, 2010), it is characterized by vigor, dedication, and absorption (Schaufeli & Bakker, 2004). Vigor is related to high energy levels and mental resilience, dedication is described as a sense of significance, inspiration, pride and enthusiasm. Absorption, lastly, is characterized by being happily engrossed in the work, which can be seen as a pervasive flow state (Csikzentmihalyi, 1990).

However, there are also other conceptualizations of work engagement, one of which can be found in Kahn's work (Kahn, 1990). He defined *personal engagement* as "the harnessing of organization members' selves to their work roles", in addition, he explains that "in work engagement, people employ and express themselves physically, cognitively, and emotionally during role performances" (Kahn, 1990, p. 694). Based on this theory work engagement is a motivational concept, since employees allocate personal resources to their work tasks (Christian, Garza, & Slaughter 2011). According to Kahn (1990) personal (work) engagement means that employees are (1) physically involved, (2) cognitively vigilant and (3) empathically connected to other people on the work floor. Some scholars worked on this conceptualization and propose therefore that work engagement has three dimensions: a physical, cognitive and emotional component (May, Gilson, & Harter 2004).

Macey & Schneider (2008), on the other hand, view engagement more broadly (Schaufeli & Bakker, 2010) and make a distinction between psychological state engagement, behavioral engagement and trait engagement (Macey & Schneider, 2008). Psychological state engagement is more related to the concept of work engagement described above, whereas behavioral engagement is more related to extra-role behavior and trait engagement has to do with positive views of life and work.

Several longitudinal studies have shown that different positive leadership styles act as an antecedent of work engagement, e.g. ethical leadership (Chughtai, Byrne, & Flood, 2014), authentic leadership (Mehmood, Nawab, & Hamstra, 2016) and transformational leadership (Salanova, Lorente, Chambel & Martínez, 2011). Moreover, positive leadership styles have been shown to not

only enhance employees' engagement directly, but also indirectly through increasing job resources and decreasing job demands (Schaufeli & Bakker, 2004; Schaufeli, 2015).

In the following section we will bring together several theoretical developments in the field of HRM and organizational behavior that can explain exactly how leaders characterized by different positive leadership styles may influence employee work engagement. Based on these theoretical developments, we will propose an overarching research model based on two processes: an *indirect effect* through proposed shared mediators, and *a direct effect* from leader work engagement to employee work engagement. These effects can be qualified through five different pathways: a *material pathway* (through work characteristics: Job Demands-Resources Theory), a *motivational* pathway (based on Self-Determination Theory, SDT), a *behavioral* pathway (based on Social Learning Theory, SLT), a *cognitive* pathway (based on Social Exchange Theory, SET), and an *affective* pathway (through emotional contagion).

Theoretical considerations

First, we base ourselves on the Job Demands –Resources Theory (JD-R; Demerouti, Bakker, Nachreiner & Schaufeli, 2001) to substantiate the material pathway. In the JD-R Model, two categories of work characteristics combine to have an effect on work engagement; i.e. job demands and job resources. A positive balance with regards to job resources may then lead to increased work engagement.

Second, Self-Determination Theory (SDT; Deci & Ryan, 2008) emphasizes the importance of psychological need satisfaction. It states that three psychological needs, i.e. autonomy, relatedness and competence, are important for the development of autonomous, intrinsic motivation at work, which influences work engagement as well. This constitutes the motivational pathway.

Third, Social Learning Theory (SLT; Bandura, 1986) is the theoretical rationale for the behavioral pathway. SLT proposes that leaders influence employees through behavioral modeling (i.e., vicarious learning). This is why leader behavior (and leader engagement) might play a role in employee engagement as well.

Fourth, according to Social Exchange Theory (SET; Shore, Tetrick, Lynch, & Barksdale, 2006), there is an exchange relationship between the (immediate) supervisor and the employee. They constitute an interdepended dyad in which for instance favors and support are reciprocated.

Fifth, emotional contagion is the basis for the affective pathway between positive leadership styles and engagement. Therefore we posit that positive experiences at work, including the experience of work engagement, may be contagious in the work place.

In order to further explore the relationship between positive leadership styles and engagement, we will introduce a research model based on these five pathways (see *Figure 1*). In essence, we argue that a leader can have a direct and an indirect impact on employee's work engagement.. Two *indirect mechanisms* can be distinguished: (1) a material pathway in which the influence leaders have on work characteristics is recognized (i.e. Job Demands-Job Resources Model); (2) a motivational pathway that constitutes of *intrapersonal processes* based on psychological need satisfaction (i.e. SDT) and psychological conditions for personal engagement (Kahn, 1990). Furthermore, we propose that leaders influence employee engagement *directly* by: (3) a cognitive pathway concerning SET; (4) a behavioral pathway involving SLT and; (5) an affective pathway through emotional contagion. A summary of these proposed pathways with regards to their categorization and theoretical underpinnings can be found in *Table 1*. Below we elaborate on each pathway separately.

Table 1. Research proposition summary

Proposition	Pathway	Influence	Source of change	Theoretical origins	Authors
1	*Material*	Indirect	Organizational	JD-R model	*Demerouti et al. (2001)*
2	*Motivational*	Indirect	Intrapersonal	SDT Psychological conditions	*Deci and Ryan (2008) Kahn (1990)*
3	*Affective*	Direct	Interpersonal	Emotional contagion	*Hatfield et al. (1994)*
4	*Behavioral*	Direct	Interpersonal	Social learning theory	*Bandura (1977)*
5	*Cognitive*	Direct	Interpersonal	Social exchange theory	*Shore et al. (2006)*

Job Demands-Resources Model: influencing work engagement through work characteristics

The job demands-resources (JD-R) model describes two broad categories of work characteristics: job demands and job resources. Job demands are "aspects of the job that require sustained physical or mental effort and are therefore associated with certain physiological and psychological costs" (Demerouti, Bakker, Nachreiner & Schaufeli, 2001, p. 501), while job resources are "aspects of the job that may do any of the following: (a) be functional in achieving work goals; (b) reduce job demands and the associated physiological and psychological costs; (c) stimulate personal growth and development" (Demerouti et al., 2001, p. 501). These two categories of work characteristics spark two processes at work: a stress process in which excessive demands and lack of resources may lead to burn-out, and a motivational process in which an abundance of job resources (regardless of the amount of job demands) may lead to work engagement.

A lot of research has been performed on the JD-R model, for an overview see Taris and Schaufeli (2016). Based on the JD-R model, leadership has traditionally been seen as a job resource, where it has been classified as supervisor support (see e.g. van Gelderen & Bik, 2016). Although it can also be argued that leadership should be regarded as an independent element in the JD-R model, since leaders may actually alter job demands and resources: one of the tasks of (team) leaders is to allocate job demands and resources to their employees in such a way that their motivation, health and productivity is ensured. Leadership therefore has "the effect of optimizing working conditions for engagement" (Tuckey, Bakker & Dollard, 2012; p.15), not only through reducing the workload, but particularly by "strengthening the positive effect of a work context in which both cognitive demands and cognitive resources were high" (Tuckey, Bakker & Dollard, 2012; p.15). Engaging leadership has indeed been proposed as yet another positive leadership style (Schaufeli et al., 2015). This study suggests that engaging leadership, that consists of inspiring, strengthening and connecting followers, has an indirect influence on engagement through increasing job resources and decreasing job demands. Unfortunately this study used a cross-sectional design, which precludes the identification of any causal direction. However, based on JD-R theory, we do propose:

> *Research proposition 1: Leaders influence work engagement indirectly through diminishing job demands and enhancing job resources*

Intrapersonal process: psychological need satisfaction

As explained above, SDT focuses on the importance of psychological need satisfaction (Deci & Ryan, 2008). Autonomy is defined as "experiencing a sense of volition and psychological freedom" when carrying out an activity (Van Den Broeck, Vansteenkiste, De Witte, Soenens & Lens, 2010; p. 981), while relatedness refers to being connected to others, i.e. "feeling loved and cared for" (Van Den Broeck et al., 2010; p. 981). Competence can finally be described as 'succeeding at optimally challenging tasks and attaining desirable outcomes' (Baard, Deci & Ryan, 2004, p. 2046) or 'feeling effective' (Van Den Broeck et al., 2010, p. 981). Need satisfaction is a relevant construct in the context of the relationship between positive leadership styles and engagement, since it is related to engagement (e.g. Schreurs, van Emmerik, Van den Broeck & Guenter, 2014; Van Den Broeck, Vansteenkiste & De Witte, 2008): the satisfaction of employee's basic psychological needs fosters an affective-motivational state of work engagement.

Moreover, several studies confirm that need satisfaction mediates the relationship between positive leadership and work engagement. First, competence and relatedness need satisfaction mediated the relationship between transformational leadership and work engagement (Kovjanic

Shuh & Jonas, 2013), while psychological need satisfaction (as a composite construct) mediated the effect of servant leadership on engagement (van Dierendonck, Stam, Boersma, de Windt & Alkema, 2014). Furthermore, transformational leadership was related to more need fulfillment, especially when followers were high in need for leadership (Breevaart, Bakker, Demerouti, Sleebos & Maduro, 2014). We propose that this mechanism might be shared across several positive leadership styles.

Kahn's theory on engagement

The relevance of SDT for employee engagement can also be illustrated by Kahn's (1990) theory. According to Kahn (1990), three psychological conditions are important in order to achieve personal engagement, i.e. psychological meaningfulness, availability and safety on the work floor. *Psychological meaningfulness* is defined as "a feeling that one is receiving a return on investments of one's self in a currency of physical, cognitive, or emotional energy" (p. 703-704). This is experienced when employees feel worthwhile, useful, and valuable. According to Kahn (1990), both interpersonal and professional elements contribute to psychological meaningfulness, which can be enhanced through task characteristics (e.g. task variety, autonomy, creativity, skill utilization), role characteristics (i.e. formal position, identity, fit with self-image, status and influence), and the nature of work interactions (e.g. feeling of dignity, self-appreciation, and a sense of value). Psychological meaningfulness resembles two psychological needs from SDT: to the need for autonomy and the need for relatedness. The former includes meaningful task characteristics and the latter meaningful social relationships. When leaders foster meaningfulness (and satisfy the need for autonomy and relatedness), they are likely to enhance engagement. This is illustrated by research that found that psychological meaningfulness (Aryee, Walumbwa, Zhou & Hartnell, 2012) and perceptions of meaning in work (Ghadi, Fernando & Caputi, 2013) mediate the relationship between positive leadership styles (i.e. transformational leadership) and work engagement.

Psychological availability is defined as "the sense of having the physical, emotional, or psychological resources to personally engage at a particular moment" (p. 714). According to Kahn (1990) there are four types of distractions from being available for your work; a lack of physical energy (physical resources) or emotional energy (emotional resources), insecurity (based on a lack of self-confidence, self-consciousness, and an ambivalence regarding the fit with the organization and its purpose), and outside life (being too preoccupied). Conceptually, psychological availability is related to the need of competence, that is, succeeding at optimally challenging tasks and attaining desirable outcomes (Baard et al., 2004) and feeling effective (Van Den Broeck et al. 2010). This psychological condition might not be easy to influence by a leader, since other non-work-related variables influence psychological availability. However, leaders may create a resourceful and

stimulating work environment. Furthermore, leaders may enhance levels of self-efficacy of their followers, i.e. "the belief in one's capabilities to organize and execute courses of action required in managing prospective situations." (Bandura, 1997, p. 2), which, in fact, may be seen as self-perceived competence. Research does indicate that self-efficacy mediates the relationship between leadership and engagement (Salanova, Lorente, Chambel & Martínez, 2011; Tripiana & Llorens, 2015).

Finally, *psychological safety* is defined by Kahn (1990) as being "able to show and employ one's self without fear of negative consequences to self-image, status, or career" (p. 708). Other scholars define psychological safety in terms of feeling safe to engage in interpersonal risk taking (Edmondson, 1999). According to Kahn (1990) trust in that no harm will come from engaging oneself in the workplace is related to situations (e.g. predictable, consistent and clear), interpersonal relations (e.g. supportive, flexible and open), group dynamics, management style (e.g. supportive, resilient, consistent, showing trust and competence), and organizational norms (i.e. clear norms and boundaries). This psychological condition is associated with the need for relatedness, which refers to "the human striving for close and intimate relationships and the desire to achieve a sense of communion and belongingness" (Van den Broeck, Vansteenkiste, De Witte & Lens, 2008, p. 280), in that good (safe) interpersonal relations characterized by support and openness will enhance both psychological safety and the need for relatedness at work. Psychological safety is also related to supportive supervisor relations (May, Gilson & Harter, 2004). Edmondson (1999) hypothesized that such supportive behavior might also enhance self-determination (and thus the need of relatedness) of employees at work: "Supervisors who foster a supportive work environment typically display concern for employees' needs and feelings, provide positive feedback and encourage them to voice their concerns, develop new skills and solve work-related problems" (May, Gilson & Harter, 2004, p. 16; Deci & Ryan, 1987).

Conclusion. Kahn's theory of personal engagement overlaps with SDT and illustrates its importance for the development of work engagement. Moreover, Kahn's theory addresses specific work characteristics that can be influenced by the leader to order to enhance engagement, which is also in line with our (more general) first research proposition. SDT, however, is more suited for our research model (see below) since it has been widely researched and empirically validated as such (i.e. psychological need satisfaction) with regards to its relationship with engagement (see e.g. Schreurs, van Emmerik, Van den Broeck & Guenter, 2014; Van Den Broeck, Vansteenkiste &De Witte, 2008).

Research proposition 2: Psychological need satisfaction mediates the relationship between positive leadership styles and engagement

Direct pathways from leader behavior to employee work engagement

In addition to the indirect processes (see above), we propose direct interpersonal processes between leader and employee that influence employee work engagement as well. These three proposed direct pathways are supported by theoretical work on emotional contagion (affective pathway), role modeling (behavioral pathway) and social exchange (cognitive pathway). For some of these pathways, we will also illustrate the importance of leader work engagement for employee work engagement.

The importance of leader work engagement

In some views, engagement may be seen as a part of leadership, which is the case in e.g. engaging leadership (Schaufeli, 2015). However, we also posit that leadership and leader engagement positively influence each other.

First, we propose that leadership positively influences leader work engagement. Leaders who feel effective in their positive leadership skills satisfy their need for competence. This way, succeeding in the leaders' task may increase the leaders' psychological need satisfaction (Baard et al., 2004; Van Den Broeck et al., 2010). In a similar vein, positive leader-employee relationships may satisfy the leaders' need for relatedness (Van Den Broeck et al., 2010) and the decision-making latitude that leaders generally experience may satisfy their need for autonomy. Psychological need satisfaction has been related to work engagement (Baard et al., 2004; Van Den Broeck et al., 2010). In addition, previous research has indicated that leader psychological need satisfaction is associated with the enactment of positive leadership styles (Trépanier, Fernet & Austin, 2012; Decuypere, Audenaert & Decramer, 2019). In these cross-sectional studies, leader psychological need satisfaction is seen as an antecedent of positive leadership styles, yet cross-sectional data do not imply causality, so the relationship between leadership, leader psychological need satisfaction, and the resulting leader work engagement may also work the other way aorund.

Second, we also propose the opposite, i.e. that leader work engagement may lead to higher scores on positive leadership styles as well. In this sense, we argue that high levels of vigor, dedication and absorption also represent a leaders' personal resources (see JD-R theory), which whill provide the leader with higher energy levels and the mental resilience necessary to score high on different positive leadership styles and behave positively towards the employee in a way that increases their work engagement.

In sum, we prosit that leader work engagement, positive leadership styles and leader behavior influence each other through a positive feedback loop. Therefore, we take the liberty to propose that leader work engagement influences some of the direct proposses from positive leader behavior explained below. Practically speaking, leaders may be able to influence both the *direct* and *indirect* processes in our research model by either working on their own engagement or through positive leader behavior. We elaborate on the different direct processes and the possible role of leader work engagement below.

A direct affective pathway

Emotional contagion is defined as "the tendency to automatically mimic and synchronize facial expressions, vocalizations, postures, and movements with those of another person and, consequently, to converge emotionally" (Hatfield, Cacioppo & Rapson, 1994, p. 5). This definition addresses the 'infectiousness' by mimicry and synchrony of e.g. positive emotions in the workplace (Frederickson, 2003). Emotional contagion also augments the influence of the 'mimicker' and increases how liked one is (Guéguen & Martin, 2009; Tee, 2015). It is related to perceptions of closeness (Stel & Vonk, 2010) and also satisfies the need for relatedness, which is associated to work engagement (Deci & Ryan, 2000). The idea of bottom-up, automatic contagion processes is also supported by neurological research. Specifically, the mirror neuron system and parts of the default mode network seem to support the notion of automatic emotion appraisal and emotional contagion (Arizmendi, 2011; Boyatzis, 2015; Tee, 2015). The mirror neuron network allows mimicry, and the social aspects of the DMN allow for picking up the moods and feelings of others (Boyatzis, 2015). Emotional contagion particularly occurs when people are observing each other and social norms are being developed, e.g. in a company (Boyatzis, 2015). Since a leader is in a position of high visibility, emotional contagion might be stronger as compared with the effect of a 'regular' employee.

Hence, we propose that leader behavior infused with positive leader emotions, e.g. as a consequence of leader work engagement, leader psychological need satisfaction (Deci & Ryan, 2000) or positive interactions with employees (Gooty et al., 2019), is contagious and influences employee work engagement directly.

Research proposition 3: Leaders influence follower work engagement directly through emotional contagion

A direct behavioral pathway

According to social learning theory, role modeling is important to explain the direct influence of positive leader behavior on follower's engagement. Role modeling is defined as "a cognitive process in which individuals actively observe, adapt, and reject attributes of multiple role models" (Gibson, 2004; p.136). This is important in organizations since role modeling can be helpful in learning new tasks and skills, but it can also be useful for increasing normative behavior and ethical conduct (Bandura, 1977). Therefore, it is not surprising that transformational leadership (Avolio, Bass & Jung 1999) and ethical leadership have been described in terms of (ethical) role models (Brown & Treviño 2014). It can be theorized that engaged leaders, if they are seen as role models, may influence and guide the behavior of their followers. Leaders can thus be a role model for employees' work engagement when they showcase their vigor, absorption and dedication themselves. It is for this reason that engagement may trickle down the organization, just as leadership itself does (Ruiz, Ruiz & Martínez 2011).

Research proposition 4: Leaders influence follower work engagement directly through role modeling

A direct cognitive pathway

According to Social Exchange Theory, the exchange relationship between supervisor and employee is maintained through a state of interdependence where there is an expectation of reciprocation of favors, work or support (Shore et al. 2006). Organizational commitment and perceived organizational support can be seen as indicators of the social exchange quality (Colquitt et al., 2013). Additionally mutual loyalty, affective commitment and strong (personal) identification are important in the leader-follower exchange relationship (Tse, Huang & Lam 2013). A high-quality relationship, especially when perceived so by both parties (Matta, Scott, Koopman & Conlon, 2015), is related to employee engagement (Breevaart, Bakker, Demerouti & van den Heuvel, 2015). To take this a step further, it can be hypothesized that the exchange relationship between leader and employee will enhance the possible effect of leader engagement on employee engagement. Specifically, we propose that if a leader is highly engaged and fully immersed in his/her role, followers might feel (unconsciously) obliged reciprocate with equally strong vigor, dedication and absorption.

Related to social exchange theory, positioned more in the field of leadership, is leader-member exchange (LMX) theory (Gerstner & Day, 1997), which specifically stresses the importance of the quality of the dyadic leader-employee relationship. It posits that leaders develop different exchange relationships with employees, which possible influences the exchange of

attention, favors and resources. Practically speaking, LMX has mostly been measured as an interpretation of followers of the quality of the relationship (Scandura & Graen, 1984; Dulebohn et al., 2012; Gottfredson & Aguinis, 2017). LMX has been related to employee work engagement in various studies (Breevaart et al., 2015; De Villiers & Stander, 2011; Bezuijen et al., 2010). When the leader-member exchange relationship is perceived as positive, there are positive effects with regards to employee behavior. Therefore we posit there is an important, cognitive pathway concerning the leadership-engagement relationship, that has to do with the level of social exchange. See *Figure 1* for a visualization of the different research propositions in a research model.

Research proposition 5: Leaders influence follower work engagement directly through social exchange

Figure 1. Research model
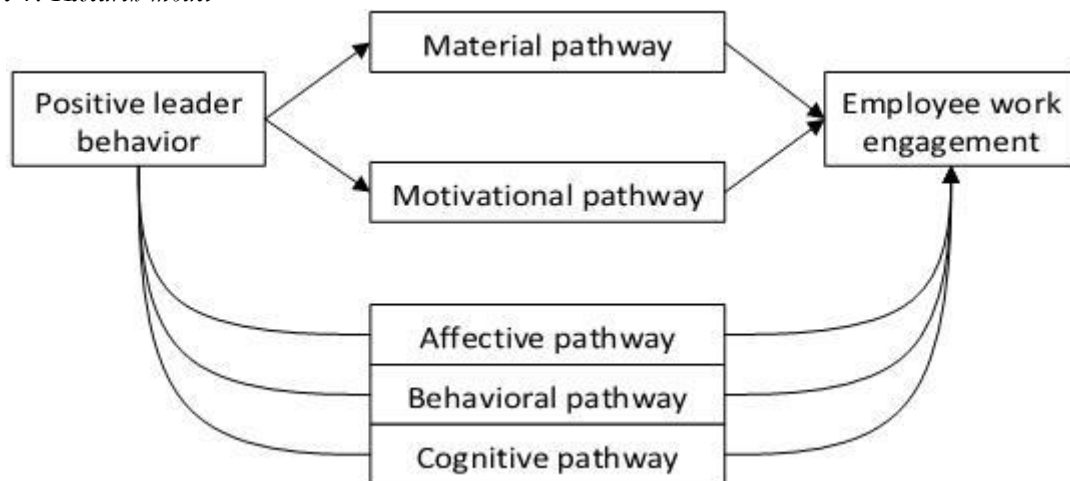
Five pathways influence employee work engagement. First, there are two indirect, mediating, pathways: (1) the material pathway (an indirect process concerning work characteristics) based on Job-Demands Resources Theory and (2) the motivational pathway (an indirect interpersonal process concerning psychological need satisfaction) based on Self-Determination Theory. Second, we propose three direct pathways: (3) the affective pathway (a direct process through emotional contagion), (4) a behavioral pathway (a direct process through social learning) and (5) a cognitive pathway (a direct process through social exchange).

Discussion

In this conceptual paper, we set out to develop an overarching research model based on a deductive, theoretical approach, to explain the relationship between positive leadership styles and employee work engagement. Meta-analyses show that there is a common ground between several positive leadership styles (Hoch et al., 2018). This is why the processes laid out here might be shared across positive leadership styles such as transformational leadership, authentic leadership, servant leadership and ethical leadership. Our main proposition upon which we built our research

model therefore states that different (positive) leadership styles differ substantially less from each other than is generally assumed. It evokes memories of the clinical debate that was held about differences between various therapeutic approaches, in which the common 'non-specifics' ultimately turned out to be more important than the claimed differences (see e.g. Chatoor & Kurpnick, 2001). These non-specifics had to do with the therapeutic alliance and therapist competence. Perhaps there is something similar going on here in which the similarities between the various leadership styles outweigh their differences, especially when they are translated to leader behavior on the work floor. Maybe there is something like leadership 'non-specifics', i.e. the general importance of the leader-employee relationship and leader competence, that explain some of the shared effects we proposed. In essence, in this paper, we argue that leaders who have an engaged work force behave more alike than different.

Based on theoretical and empirical arguments we then posit that a relationship exists between positive leader behavior and leader's own engagement on the one hand and follower's engagement on the other hand. We propose that there are two indirect and three direct processes leading to employee engagement. First, we propose that work characteristics (material pathway) and psychological need satisfaction (intrapersonal, motivational pathway) mediate the relationship between positive leader behavior and follower engagement, based on the JD-R model and SDT, respectively. Second, we propose a direct interpersonal effect from leader's own work engagement on follower engagement through emotional contagion (affective pathway), role modeling (behavioral pathway) and social exchange (cognitive pathway). Third, we propose that positive leadership styles and leader engagement influence in each other, which shows the importance of a leaders' well-being in this context as well.

Although the research model was developed based on the premises of a common ground between several positive leadership styles, we do acknowledge that there are (theoretical) differences between several leadership styles. Scholars have also provided arguments and evidence against construct proliferation (see e.g Bormann & Rowold, 2018). Different positive leadership styles might therefore influence the proposed processes in the research model more or less, depending on the focus of the leadership style.

For example, the moral (ethical) character of ethical leadership, might exert its influence on employee engagement through primarily enhancing the psychological safety component of need satisfaction (Edmondson, 1999), based on fair treatment of every follower (van Knippenberg, De Cremer & van Knippenberg 2007). Empowering leadership, on the contrary, focuses more on enabling employees (De Klerk & Stander, 2014), which might exert its influence through the satisfaction of the need for autonomy and competence. Authentic leadership e.g. is concerned with

expressing one's true self in the workplace (Kernis & Goldman, 2006), which may enhance the need for relatedness more. All these specific positive leadership styles have different focal points which may influence employee engagement differently, albeit, for example, still through one overarching mechanism, i.e. the motivational process based on psychological need satisfaction and psychological conditions necessary for engagement.

Instrumental leadership (Antonakis & House, 2014; Rowold, Diebig & Heinitz, 2017), on the other hand, may influence employee engagement more through the material pathway, i.e. through fostering work resources. This may make the influence through other pathways less salient, however, not necessarily absent. In the case of instrumental leadership, leaders characterized mostly by this style may also influence employee work engagement through the motivation pathway and more specifically through satisfying the need for autonomy (through granting freedom) or competence (through providing training and everything else employees need to perform).

In sum, with this research paper, we proposed that even though each leadership style still has a specific focus, their impact on employee work engagement may still run through various of the proposed pathways.

Limitations and future research

Antecedents of positive leader behavior. It can be argued that several possible antecedents of positive leader behavior were not considered in our research model, e.g. leader life orientation, optimism and resilience (Zbierowski & Góra 2014) or behavioral integrity (Milton 2015). Research on transformational leadership also shows that agreeableness, emotional recognition and positive affect might also play a role in positive leader behavior (Rubin, Munz, and Bommer 2005), whereas research in ethical leadership showed the importance of agreeableness and conscientiousness (Walumbwa & Schaubroeck, 2009). Finally, research on leader emergence theorized that leader domain competence, fluid intelligence, willingness to serve, credibility and goal attainment might play an important role as well (Norton, Ueltschy Murfield & Baucus 2014).

Team level constructs. Team engagement has not been incorporated in our research model for reasons concerning simplicity as well. However, it can be argued that the processes of emotional contagion (emotional level), social exchange (cognitive level) and role modeling (behavioral level) also take place at the team level (Bakker, Van Emmerik & Euwema 2006), and possible even trickles down the organization like leadership does (Ruiz, Ruiz & Martínez 2011). Totterdell (2000) explained, for example, that collective moods can be developed based on shared events or mood convergence, which can then lead to team burnout or team engagement (Bakker et al., 2006).

Mediating mechanisms. Furthermore, it is possible that there might be other mediating mechanisms, e.g. trust (Engelbrecht, Heine & Mehembe, 2017) that partly explain the leadership-engagement relationship. Our research model, however, sets out to provide an overarching framework, based on theory, to explain how various positive leadership styles might influence engagement through similar mechanisms. This will further our understanding of what positive leadership styles share with regards to their effect on employee engagement. Therefore, we propose that future research validates the various pathways proposed in our research model, particularly the mediating role of psychological need satisfaction, and the direct effects of leader engagement on follower engagement.

Boundary conditions It is highly probable that multiple boundary conditions influence the leadership-engagement relationship at several levels within the organization, i.e. the organizational context, the interpersonal context and the intrapersonal context for both leaders and employees. For instance, with regards to the *organizational context*, research has already indicated that e.g. HRM consistency (Li, Sanders & Frenkel, 2012) or citizenship pressure (Horn et al. 2015) may play an important role. In this category, one can also classify group or team-level constructs, such as team diversity or team climate (van Knippenberg & Sitkin, 2013). Research has shown, for example, that group job satisfaction moderates the relationship between ethical leadership and employee work engagement (Qin et al. 2014). With regards to the *interpersonal context*, the level of leader-member exchange (Uhl-Bien, 2006) or the attitude towards each other, as e.g. exemplified in leader hostility towards employees (Liang et al., 2016) may influence the leadership-engagement relationship. Furthermore, when there is more leader-follower social capital (i.e. goal congruence and social interaction), servant leadership has been shown to lead to higher employee work engagement (De Clercq et al. 2014). The *intrapersonal context* concerns the personal context for both the leader and the employee, which again, influences leadership or the leadership-engagement relationship. For example, leader stress levels as well as mindfulness levels influence leadership (Harms et al., 2017; Decuypere, Audenaert & Decramer, 2019). With regards to the interpersonal employee context, research has shown e.g. that when followers are intrinsically motivated, authentic leadership leads to more engagement (Shu, 2015). Or when there are more positive follower characteristics (i.e. independent thinking, willingness to take risks, active learning, innovative), transformational leadership leads to more engagement (Zhu, Avolio & Walumbwa 2009). In addition, how much the employee 'likes' the leader (Dulebohn, Wu & Liao, 2017) may influence the impact of leadership on engagement as well.

Multiple moderating variables on different levels (i.e. organizational, interpersonal and intrapersonal levels) might therefore influence the leadership-engagement nexus in various ways.

Even the quality, or the timing or leader behavior, may be an important contingency factor with regards to employee outcomes (Yukl, 2012). However, to our knowledge, there has not been any single contingency factor that has been thoroughly accounted for theoretically. Future research could and should focus more on identifying and theorizing on boundary conditions in leadership research.

Practical implications

Our research model implies that leaders may impact follower work engagement in various ways. First, engagement may be enhanced indirectly through altering job demands and job resources as well as through elevating psychological need satisfaction of employees, which can be achieved by developing interventions aimed at increasing autonomy, competence and relatedness. Second, leaders may want to augment their own levels of engagement, since this may impact their leadership, as well as follower engagement through emotional contagion, role modeling and social exchange processes.

Final note

To conclude, we hope that the research model and future research propositions can add to the understanding of how leaders may influence follower engagement. The focus on the influence of positive leader behavior and leader's own engagement, may also help broaden our knowledge and help support leadership development initiatives.

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Chapter 2

Exploring the leadership-engagement nexus:
a moderated meta-analysis and review of explaining mechanisms

This study reviews and quantifies the value of several well-established leadership styles with regards to their effect on employee work engagement. We took both a deductive and inductive approach to perform a quantitative and qualitative review (k = 86). Our moderated meta-analysis indicates that transformational, authentic, empowering, ethical, and servant leadership all share overlap in confidence and credibility intervals; they may thus result in the same effect on work engagement (general r = .47). Theoretical analysis indicated a common ground within these positive leadership styles, i.e. having a moral perspective as a leader, role modeling behavior, a focus on follower self-determination and positive social exchanges with employees. We also identified mediators that had a clear and well-established impact on work engagement: psychological needs, trust, resources and organizational level variables. Taken together, a completely new and integrative research model is presented to facilitate future research and to support practitioners to improve leadership.

Introduction

Since today's organizational environment is characterized by continuous change and renewal (Mendes & Stander, 2011), leadership is becoming increasingly important. In a volatile, uncertain, complex and ambiguous world (Rodriguez & Rodriguez, 2015), leaders need to inspire, strengthen and connect their followers (Schaufeli, 2015). This will reduce burnout and increase work engagement in organizations (Schaufeli, 2015; e.g. Perko, Kinnunen, Tolvanen, & Feldt, 2016). Good, visionary leaders provide competitive advantage, especially when firms are facing increasing uncertainty (Ireland & Hitt, 1999). Leadership is not only important to envision a firm's strategy or to decide on a HRM approach at the top of the organization, but also to provide a sense of security and direction for subordinates in every layer of the hierarchy (Moss, 2009). Even though leadership 'trickles down' the organization (Ruiz, 2011), the immediate supervisor - due to his or her proximal presence and interaction with followers - has a large impact on the day-to-day work environment, performance and work engagement of employees (Wang, 2005). This is also shown in Gallup's work that popularized the idea that employees join companies, but leave bosses. This further underscores the importance of focusing on the leadership of the immediate supervisor for work engagement and long-term organizational success (Buckingham & Coffman, 1999; Clifton & Harter, 2019). Arguably, it is the leaders' responsibility to ensure that conditions are being provided for employees to thrive (Schaufeli, 2015).

Furthermore, engaged employees provide a vital competitive advantage for organizations (Christian, Garza, & Slaughter, 2011), due to the association of work engagement with financial gains for the firm and organizational commitment of employees (Wiley, 2010), as well as a service climate, customer loyalty (Salanova, Agut & Peiró, 2005), and productivity (Robertson & Cooper, 2011). A large meta-analysis demonstrates that engagement is also related to health, turnover

intentions, and performance (Halbesleben, 2010). In sum, work engagement has been viewed as one of the most critical drivers of business success (Strom et al., 2014; Choi et al., 2015). Yet, although 'positive' leadership styles (Decuypere & Schaufeli, 2020), e.g. transformational, authentic, servant, ethical and empowering leadership, have been linked to engagement in multiple (longitudinal) studies (see e.g. Chughtai et al., 2014; Mehmood et al., 2016; Fletcher, 2016; Li & Liao, 2014; Biggs et al., 2014), no general framework exists to understand the black box of explaining mechanisms with regards to their effect on engagement.

The development of positive leadership concepts is a fairly recent phenomenon and has been developing the past 30 years. For instance, the very popular transformational leadership style aims at transforming individual employees' mindsets toward achieving organizational goals (Bass & Avolio, 1990). Other positive (as opposed to abusive; Barnes et al., 2013) leadership styles, have been developed and validated as well, e.g. with a stronger focus on normative behavior (i.e. ethical leadership; Brown, Treviño, & Harrison, 2005), on being altruistic as a leader and attuned to the needs and development of employees (i.e. servant leadership; Liden, Wayne, Liao, & Meuser, 2014), on being self-aware and authentic (i.e. authentic leadership; Avolio, Wernsing & Gardner, 2017), or on empowering employees (Zhang & Bartol, 2010). Examples of other newly developed positive leadership styles are e.g. shared or distributed leadership (Carson, Tesluk, & Marrone, 2007), benevolent leadership (Cenkci & Özçelik, 2015) or humble leadership (Walters & Diab, 2016).

As a response to this rapid growth of proposed leadership styles, there are calls for an integrative view on leadership (Yukl, 2002), for an integration across leadership styles (Derue et al., 2011) and for an investigation of overlap between leadership styles (Rowold, Borgmann & Diebig, 2015). This is important to ensure parsimony and make sure that adequate guidelines can be developed for leadership interventions in organizations willing to work evidence-based with their leaders. In addition, a synthesis of the field is also important since several positive leadership styles may not be so different after all with regards to leader behaviors and their effects on performance and well-being (Gottfredson & Aguinis, 2017; Decuypere & Schaufeli, 2020). Therefore, the purpose of this research is to identify the joint mechanisms of positive leadership styles with regards to their effect on work engagement. We want to examine exactly *how* leaders characterized by different – yet behaviorally not so distinct – leadership styles exert their influence on employee engagement and *whether* we can bring joint mechanisms together in an overarching research model. To arrive at this ambitious aim, we examine the field both *deductively* (i.e. based on theory) as well as *inductively*, i.e. through a quantitative (i.e. meta-analysis) as well as a qualitative (mediator/moderator analysis) review of the studies on positive leadership styles and engagement. Our primary aim is to synthesize this research field by developing a general framework.

In order to achieve this goal, first, we start we our deductive approach by comparing the theoretical underpinnings of positive leadership styles to identify joint mechanisms. Second, we start our inductive approach with quantitative analyses; we conduct a meta-analysis to establish the magnitude of the association of positive leadership styles in general, and for each of the leadership styles separately. Next, we investigate whether the leadership styles in our meta-analysis exert the *same* influence on engagement through a moderation with leadership style and an investigation of confidence and credibility intervals. We also perform additional moderated meta-analyses with study characteristics. Then we continue our inductive approach in a qualitative manner by systematically analyzing the moderators and mediators found in the studies of the meta-analysis. Based on this information we develop future research propositions and build an overarching framework to understand the underpinnings of the (positive) leadership-engagement relationship.

By bringing these approaches together, we provide a comprehensive deductive and inductive, quantitative and qualitative review of the up-to-date information with regards to leadership and engagement.

Positive leadership styles

We understand positive leadership styles as those leadership styles aimed to have a positive impact on employees (Decuypere & Schaufeli, 2020), as opposed to abusive leadership styles, which have shown to be detrimental for e.g. employee creativity and well-being (Sarwar, Shaukat & Fakhri, 2016). In the following section we will introduce five popular and well-researched positive leadership styles that are also analyzed in our meta-analysis and reviewed in the qualitative section.

Transformational leadership is the most popular positive leadership style that has been developed in the past several decades. It focuses on four behavioral dimensions: idealized influence (i.e. leader charisma), intellectual stimulation (i.e. stimulating creativity and innovation), inspirational motivation (i.e. vision provision) and individualized consideration (i.e. considering individual differences) (Avolio et al., 1999). Therefore, transformational leaders can be described as envisioning a future, acting as a role model, setting performance standards, showing determination and confidence, and being able to transform interactions from "pure self-interest to having interest for others" (Kopperud et al., 2014, p.3).

Authentic leadership emerged in response of transformational leadership, since scholars suggested differences between authentic and "pseudo" transformational leaders (Bass & Steidlmeier, 1999; Avolio et al., 2009). It has been defined as having four components, namely self-awareness (of the leader), balanced processing (i.e. analyzing relevant information before making a decision), relational transparency (i.e. presenting true feelings and thoughts to followers) and internalized moral perspective (i.e. self-regulation based on moral standards and values) (Avolio,

Wernsing, & Gardner, 2018). Kernis and Goldman (2006) define authenticity as "the unobstructed operation of one's true, or core, self in one's daily enterprise" (p. 294), which seems to be related to positive employee outcomes such as work engagement (Leroy, Anseel, Dimitrova & Sels, 2013).

Servant leadership is characterized by personal integrity and serving others (Liden, Wayne, Zhao & Henderson, 2008). It is based on the idea that the leader should primarily focus on the needs of others, and can be described as an altruistic calling where the focus is on the personal growth of the followers (Greenleaf, 1977; Van Dierendonck et al., 2014). Liden et al. identified seven dimensions of servant leadership, i.e. emotional healing (i.e. showing sensitivity to others' concerns), creating value for the community (i.e. a genuine concern for helping), conceptual skills (to effectively support and assist others), empowering (i.e. being encouraging and facilitating), helping subordinates grow and succeed (i.e. genuine concern for others' careers and providing support and mentoring), putting subordinates first (through actions and words) and behaving ethically (i.e. open, fair, honest). According to van Dierendonck and Nuijten (2011) servant leadership is comprised of eight dimensions; empowerment (i.e. enabling people and encouraging personal development, accountability (i.e. holding people accountable for performance they can control), standing back (i.e. gives priority to the interest of others first and to give credit to others), humility (i.e. the ability to put one's own accomplishments and talents in a proper perspective), authenticity (i.e. expressing oneself in ways that are consistent with inner thoughts and feelings), courage (i.e. daring to take risks and trying out new approaches), forgiveness (i.e. when confronted with offenses, arguments, and mistakes) and stewardship (i.e. to take responsibility for the larger institution). In their research, all dimension, except forgiveness showed significant correlations with work engagement (van Dierendonck & Nuijten, 2011).

In **ethical leadership**, normative behavior from the leader is emphasized. Brown et al. (2005) defined ethical leadership as "the demonstration of normatively appropriate conduct through personal and interpersonal relationships, and the promotion of such conduct to followers through two-way communication, reinforcement, and decision-making" (p. 120). Ethical leaders are considered to be honest and trustworthy. Brown and Treviño (2006) state that ethical leaders distinguish themselves from transformational leaders through emphasizing ethical standards (i.e. being a moral person) and moral management. This moral management can be seen as more transactional, i.e. "calling attention to the use of communication and the reward system to send signals about what is important and guide behavior" (Treviño et al., 2003, p. 34).

Empowering leadership is another emerging leadership style that stems from principles based on positive psychology, where there is a focus on enabling employees, rather than enforcing authority (Klerk & Stander, 2014). According to Konczak et al. (2000) there are six dimensions of

leader empowering behavior: delegation of authority, accountability for outcomes, self-directed decision-making, information sharing, skills development and coaching for innovative performance. In sum, the empowering leader emphasizes the importance encouraging and enabling followers to lead themselves (Albrecht & Andreetta, 2011; Nel et al., 2015).

See *Table 1* for an overview of the different positive leadership styles and their components on the next page.

Work engagement

Several conceptualizations and operationalizations of work engagement exist. The most popular and widely used conceptualization is that of Schaufeli and Bakker (2004), i.e. engagement is "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (p.295). Vigor is characterized by high levels of energy and mental resilience while working, by the willingness to invest effort in one's work, and through persistence in the face of difficulties. Dedication is characterized by a sense of significance, enthusiasm, inspiration, pride, and a feeling challenge by the task at hand. Lastly, absorption, means being fully concentrated and happily engrossed in one's work, in such a way that time passes quickly and one has difficulties with detaching oneself from work (Schaufeli & Bakker, 2004; Schaufeli, Bakker & Salanova, 2006; Schaufeli & Bakker, 2010).

An older and slightly different conceptualization can be found in Kahn's theory on engagement (Kahn, 1990). He explains personal engagement as "the harnessing of organization members' selves to their work roles; in work engagement, people employ and express themselves physically, cognitively, and emotionally during role performances." (Kahn, 1990; p. 694). According to this theory, employees become physically involved, cognitively vigilant and empathically connected to others through their work. Work engagement can thus be seen as a motivational concept whereby employees actively allocate personal resources towards their tasks (Christian et al., 2011). The conceptualization of May, Gilson, & Harter (2004) is based on the theory of Kahn (1990) and comprises three dimensions; the physical component can be described as energy to perform the job, the emotional component refers to "putting one's heart into one's job" (Babcock-Roberson & Strickland, 2010, p.316) and the last component, cognitive work engagement, means that one is fully absorbed by their task.

Table 1 Positive leadership styles and their components.

Leadership style	**Transformational leadership**	**Authentic leadership**	**Servant leadership**	**Ethical leadership**	**Empowering leadership**
Components	Idealized influence	Self-awareness	Empowerment	Moral person	Delegation of authority
	Intellectual stimulation	Balanced processing	Accountability	Moral manager	Accountability for outcomes
	Inspirational motivation	Relational transparency	Standing back		Self-directed decision-making
	Individualized consideration	Internalized moral perspective	Humility		Information sharing
			Authenticity		Skills development
			Courage		Coaching for innovative performance
			Forgiveness		
			Stewardship		

Building on Kahn's work, Rich, Lepine & Crawford (2010) define engagement as "the investment of an individual's complete self into a role" (p. 617), which is more broad than the more popular definition from Schaufeli and colleagues (e.g. 2006).

Macey & Schneider (2008), on the other hand, use a broad definition of engagement (Schaufeli & Bakker, 2010). They make a distinction between psychological state engagement (i.e. feelings of energy, absorption), behavioral engagement (i.e. extra-role behavior) and trait engagement (i.e. positive views of life and work). This may help ensure a precision in the definition and conceptualization of employee engagement. In the rest of this article we will refer to what Macey & Schneider (2008) call psychological state engagement, but we will use the more popular term "work engagement" (see e.g. Schaufeli et al., 2006) for clarity as this seems to be the more popular and accepted term and definition.

Leadership and engagement: theoretical explanations

Five theoretical explanations for the relationship between positive leadership styles and engagement have been proposed. First, according to Kahn (1990) employee engagement is achieved through fostering three psychological conditions that leaders can impact directly, i.e. psychological meaningfulness, safety and availability. *Psychological meaningfulness* refers to a feeling of 'return on investment' when someone employs personal energy into their work. It can be enhanced when the leader alters task characteristics (e.g. challenging, varied, creative and autonomous), role characteristics (i.e. do organization members like or dislike the identities and hierarchical stances it requires), and work interactions (e.g. with dignity and a sense of worthwhileness, employing personal and professional elements). *Psychological safety* can be described as the feeling to be "able to show and employ one's self without fear of negative consequences to self-image, status, or career" (p. 708). Trust in that no harm will come from engagement was related to situations (e.g. predictable, consistent and clear), interpersonal relations (e.g. supportive, flexible and open, lower power differences), group dynamics (e.g. voice and hierarchy), the specific management style (supportive, resilient, clarifying, giving autonomy), and clear organizational norms (Kahn, 1990). *Psychological availability* refers to "the sense of having the physical, emotional, or psychological resources to personally engage at a particular moment" (p. 714). According to Kahn (1990) there are four types of distractions from being available for your work; a lack of physical energy or emotional energy, insecurity (based on a lack of self-confidence, self-consciousness, and an ambivalence regarding the fit with the organization and its purpose) and outside life (being too preoccupied). Thus, when a leader provides meaningful work, makes sure there is psychological

safety, provides resources that enhance energy and builds up levels of confidence of an employee, engagement will increase.

Second, Self-Determination Theory (SDT; Deci & Ryan, 2008) posits the importance of psychological needs, which can be influenced by the leader as well. It states that *autonomy*, i.e. volition and (psychological) freedom, *relatedness*, i.e. being connected to others, and *competence*, i.e. feeling effective, are important to reach an autonomous, intrinsic motivation. This has been related to engagement as well (Van Den Broeck et al., 2008). So when a leader focuses on (1) empowering employees (autonomy), (2) enhancing relationships on the work floor (relatedness) and (3) providing training and feedback to increase levels of competence, work engagement will improve. Engaging leadership also bases itself on psychological need satisfaction (Schaufeli, 2015) and states that who inspire, strengthen and connect followers enhance work engagement.

Third, Social Learning Theory posits that leaders can influence positive organizational behavior (e.g. engagement) through behavioral modeling (Bandura, 1986; Hoch et al., 2018). In this sense, when leaders are engaged themselves, they may serve as role models from which employees may want to emulate the engaged behavior. Moreover, this process can also be unconscious/emotional, since research on the cross-over of burnout and engagement has shown that engagement is also contagious among group members (Bakker, Van Emmerik & Euwema, 2006).

Fourth, according to Social Exchange Theory (SET; Shore et al., 2006; Blau, 1964), the exchange relationship between supervisor and employee is maintained through a state of interdependence where there is an expectation of reciprocation of favors, work or support. This means that trust may be a key concept in linking leadership with engagement (Engelbrecht et al., 2015). Indeed, several empirical studies show that leaders might enhance wellbeing through *building trusting* relationships (Wang & Hsieh, 2013; Chughtai, Byrne, & Flood, 2014; Stander, De Beer, & Stander, 2015).

Fifth, the Job-Demands, Job-Resources theory indicates that both job demands and job resources contribute to work engagement through both a stress process, in which excessive demands have a negative impact, and a motivational process, in which job resources foster work engagement (Schaufeli et al., 2004). Since leaders have the capacity to influence job demands and resources, they may *indirectly* influence work engagement as well (Schaufeli et al., 2015).

Deductive analysis: the core of positive leader behavior

Empirical basis. Empirical (meta-analytic) research indicates that a deductive, theoretical, analysis of shared mechanisms is warranted. More specifically, there are two meta-analyses (with fewer styles and studies than this one) indicating that work engagement is associated with authentic

leadership (k = 11, ϱ = .37 or .41 depending on the analysis; Banks, McCauley, Gardner & Guler, 2016) and with servant leadership (k = 4, ϱ = .52), ethical leadership (k = 6, ϱ = .39), authentic leadership (k = 6, ϱ = .47) and transformational leadership (k = 14, ϱ = .48; Hoch, Bommer, Dulebohn & Wu, 2018). In addition, relevant for our deductive analysis, these two meta-analyses showed a high association between several positive leadership styles, i.e. between authentic leadership and transformational leadership (ϱ = .72; Banks et al., 2016) as well as between ethical, authentic, servant and transformational leadership (ϱ = .69 -.75, Hoch et al., 2018). This indicates a common ground, or construct redundancy, between several positive leadership styles, which is also echoed in meta-analytic research concerning leader behaviors (Banks, Gooty, Ross, Williams & Harrington, 2018).

With regards to theoretical overlap, Banks et al. (2016) point out that the (theoretical) similarities between authentic and transformational leadership are leader self-awareness, positive modeling, follower self-determination, positive social exchanges, supportive and ethical organizational context. Hoch et al., (2018) describe that ethical behavior, social learning, moral development, and extra-role behavior are similarities between similarities between ethical, authentic, servant and transformational leadership.

Based on these considerations, our first step in developing an overarching research model is to investigate the theoretical underpinnings of these positive leadership styles to see whether it is possible to deduce the existence of some shared underlying processes (see *Table 2*). The notion of a common ground is also supported by Rowold et al. (2015) stating that "in general, meaningful similarities exist because each leadership construct was developed for the same purposes, namely, to account for leaders' behaviors at work and to explain variance in followers' criteria like motivation or commitment." (p.142).

Theoretical comparisons. Several more elaborate comparative research studies also postulated evidence for a common ground between positive leadership styles (see *Table 2*), which propose that shared leader behaviors are concerned with having a *moral perspective, role modeling behavior, supporting self-determination, and positive exchanges with employees*.

First, Gregory Stone et al. (2004) wrote that transformational and servant leadership share a focus on influence, vision, trust, respect or credibility, risk-sharing or delegation, integrity and role modeling. They concluded that "the theories are probably most similar in their emphasis upon individualized consideration and appreciation of followers" (p. 6). These are relevant behaviors for engagement: vision e.g. might enhance followers' meaningfulness of work, satisficing psychological needs and therefore enhancing engagement (Kahn, 1992).

Second, according to Walumbwa et al. (2008) having an internalized moral perspective (authentic leadership) and being a "moral person" (ethical leadership), were the main shared components. Being a "moral manager" (ethical leadership), was less important in authentic and transformational leadership. Furthermore, "idealized influence" (transformational leadership), was somewhat less pronounced in authentic leadership. Hence, it can be concluded that these four shared attributes are all associated with being a 'moral' person or being a 'moral role model' as a leader. This is also the case for the facet idealized influence (derived from transformational leadership), which can be described as: "role models for followers to emulate; can be counted on to do the right thing; and display high standards of ethical and moral conduct" (Avolio, 1999, p. 43; Walumbwa et al., 2008).

Third, Avolio and Gardner (2005) compared servant with transformational leadership based on the components of the authentic leadership development theory. A positive moral perspective, leader self-awareness (of values, cognitions and emotions), positive role-modeling, self-determination, and follower self-awareness of values were all shared focal points. Follower development through supporting self-determination and enhancing follower self-awareness of values (Avolio & Gardner, 2005) can be related to a fundamentally motivational process, where need satisfaction leads to an autonomous motivation (Deci & Ryan, 2002) as well as to work engagement (e.g. van Dierendonck et al., 2014).

Last, Brown & Treviño (2006) point out that concern for others (i.e. altruism), ethical decision-making, a sense of integrity and role modeling were shared leadership attributes between transformational, authentic and ethical leadership.

See *Table 2* on the next page for an overview of shared leadership attributes based on theoretical comparisons.

Empowering leadership. To the best of our knowledge, empowering leadership has not been thoroughly compared with other positive leadership styles. Gregory Stone (2004, p. 6) mentioned that "empowering followers" was emphasized in both transformational and servant leadership, indicating overlap between the leadership behaviors in these styles. Empowering leadership can also be related to authentic and transformational leadership since they focus on the development of employees through fostering follower self-determination (Banks et al., 2016). This is also a focal point on servant, transformational and authentic leadership (Avolio & Gardner, 2005).

Table 2. Shared leadership attributes.

Authors (year)	Leadership attributes based on theory	Transformational leadership	Servant leadership	Authentic leadership	Ethical leadership
Gregory Stone et al. (2004)	Influence	X	X		
	Vision	X	X		
	Trust	X	X		
	Respect or credibility	X	X		
	Risk-sharing or delegation	X	X		
	Integrity	X	X		
	Role modeling	X	X		
Walumbwa et al., (2008)	**Internalized moral perspective** (authentic leadership)	X		X	X
	Moral person (ethical leadership)	X		X	X
	Moral manager (ethical leadership)	*x*		*x*	X
	Idealized influence (transformational leadership)	X		*x*	X
Avolio & Gardner (2005)	**Positive moral perspective**	X	X	X	
	Leader self-awareness of **values**, cognitions and emotions	X	X	X	
	Leader authentic behavior	*x*	X	X	
	Positive role modeling	X	X	X	
	Personal and social identification	X	*x*	X	
	Supporting self-determination	X	X	X	
	Positive social exchanges	X	*x*	X	
	Follower self-awareness of values	X	X	X	
	Follower internalized self-regulation	X	*x*	X	
Brown & Treviño (2006)	Concern for others (altruism)	X		X	X
	Ethical decision-making	X		X	X
	Integrity	X		X	X
	Role modeling	X		X	X

Table 2. Shared leadership attributes between different leadership styles based on theoretical comparisons. Between brackets; original theory on which the comparison was based, 'X' = focal point in the theory, small 'x' = discussion of the attribute in a theory. Gregory Stone et al. (2004) compared transformational and servant leadership, Walumbwa et al. (2008) and Brown & Treviño (2006) compared transformational, authentic and ethical leadership, Avolio & Gardner (2005) compared transformational, servant and authentic leadership.

Shared themes. A first recurring theme in the theoretical comparisons of the four positive leadership styles (i.e. servant, ethical, authentic and transformational leadership) seems to be the focus on a *moral perspective* and *role modeling behavior* (see *Table 2*). This view is echoed by Avolio and Gardner (2005) who posit that authentic leadership, and the focus on morality, is a root concept or precursor to other forms of positive leadership. Role modeling through an internalized perspective and through being a moral person (Walumbwa et al., 2008; Gregory Stone et al., 2004) enhances the capacity of a leader to be an example for future employee behavior. The central role of moral development is also substantiated in the work of Day, Harrison & Halpin (2009, see chapter 6 "Moral development"). In this work, the authors elaborate that the moral and ethical development of leader is important since (1) every leader needs to be able to make ethical decisions, (2) leaders are role models whose behavior are emulated by followers and (3) leaders shape the organizational climate. This explanation also indicates that a moral development and role modeling behavior seem to be intertwined. In addition, the authors found that moral reasoning and development is emphasized in different leadership styles, including transformational, ethical, servant and authentic leadership (Day, Harrison & Halpin, 2009). Recent meta-analytic research supports this view and shows that moral and values-based leader behaviors are emphasized in different leadership styles, i.e. authentic, charismatic, ethical and servant leadership. In addition, these behaviors show strong correlations to critical employee outcomes (e.g. performance, OCB and turnover intentions; Banks, Gooty, Ross, Williams & Harrington, 2018). Other conceptual work on the moral content that undergirds positive leadership styles, takes this even a step further and argues that even though ethical, authentic and servant leadership styles share a focus on morality, each of these styles also have "a unique and even contrasting answer to the question: "What is moral?"" (Lemoine, Hartnell, and Leroy, 2019, p. 149): the authors propose that servant leadership focuses more on consequentialism and reciprocity, ethical leadership focuses more on standard of behavior and deontology, and authentic leadership focuses more on moral autonomy and virtue ethics. However, the relevance of morality remains core to these leadership styles and their effectiveness.

A second recurring theme is the importance of *positive social exchanges*, or LMX for different leadership styles. This was shown in the theoretical comparison from Avolio & Gardner (2005) concerning the overlap between transformational, servant and ethical leadership (see *Table 2*). Several (meta-analytic) studies back up this theoretical claim. First, a meta-analysis that viewed LMX as a leadership style, found meaningful correlations with e.g. transformational leadership (Rowold et al., 2015). Second, a theory-based meta-analytic study by Ng (2017) also highlighted the critical role of LMX in supporting leadership to exert its effects. Third, a recent meta-analysis points

out high correlations between these four positive leadership styles and LMX (ϱ =.65-.71; see Hoch et al., 2018), showing that they are all related to positive social exchanges with employees. Fourth, recent research utilizing a combination of meta-analysis and structural equation modeling (i.e. MASEM) identified leader-member exchange as the most dominant mediator category in the leadership-performance relationship (Gottfredson & Aguinis, 2017). Fifth, research on leader behaviors also finds these high correlations between values-based and moral behavior models with critical outcomes like LMX (Banks et al., 2018). The authors posit the possibility of contamination of leadership constructs with other variables like LMX. In any case, both theoretical and empirical research seem to indicate a strong relationship and perhaps overlap between positive leadership styles and LMX.

Last, if we take into account the newly developed empowering leadership and its relationship with other leadership styles, the development of employee self-determination may be shared across positive leadership styles as well (Banks et al., 2016; Avolio & Gardner, 2005).

In sum, these theoretical and empirical findings show that there is evidence for overlap in each of the investigated leadership styles. Some of these shared leader behaviors are concerned with having a moral perspective, modeling behavior, supporting self-determination and positive exchanges with employees. Based on the theoretical overlap between positive leadership styles, we hypothesize that they are all associated with work engagement and potentially even share overlap with regards to their effect on engagement:

> *Hypothesis 1: The positive leadership styles in our study are all positively associated with work engagement*

Leadership and engagement: shared mechanisms

In addition to the shared effect on engagement, positive leadership styles may also work through the same mediating and moderating mechanisms. In this regard, Carasco-Saul, Kim & Kim (2015) established a general framework with regards to the effect of a couple of positive leadership styles on engagement. They make a distinction between the possible explanatory mechanisms for transformational leadership on the one hand, and authentic, charismatic and ethical leadership on the other hand. According to their model, transformational leaders provide vision, emotional support and recognition for contributions. They engage their followers most when they boost their optimism, responsibility, meaningfulness and innovative behavior. Engagement decreases when the transformational leaders' perception of the follower's characteristics seems to be less favorable than the self-evaluation of the follower. Authentic, charismatic and ethical leaders stimulate

engagement through role clarification, the organizational culture, empowerment, identification with the supervisor and psychological ownership (Carasco-Saul et al., 2015). We aim to build on this research by conducting a systematic search of studies investigating moderating and mediating mechanisms with regards to our five positive leadership styles. This leads to two more hypotheses:

> *Hypothesis 2: There are shared moderating mechanisms in the relationship between positive leadership styles and engagement*
> *Hypothesis 3: There are shared mediating mechanisms in the relationship between positive leadership styles and engagement*

Method

Literature search

Three comprehensive literature searches were conducted at different time points (2014, 2016, 2018) in all relevant scholarly computerized databases including *Web of Science, EBSCO business premier, PsychInfo, Google Scholar, ABI/INFORM* and *SocINDEX*. Different combinations of key words were used (for the title and abstract), including the terms *leader, manager, supervisor* and *work engagement* as well as *employee engagement*. The following sequence of key words was entered in the most search engines: (Leader* OR manage* OR supervis*) AND ("work engagement" OR "employee engagement"). In addition, reference lists of relevant or highly cited (review) articles (e.g. Carasco-Saul, Kim, & Kim, 2015; Shuck & Herd, 2012; Banks et al., 2016; Hoch et al., 2018) and books (e.g. Day, 2014) were scanned in order to identify additional articles.

A three-step screening strategy was used. First, the resulting articles in the search engine were scanned on titles and – if relevant – abstracts as well. Second, the full articles were investigated. Last, when articles did not provide adequate quantitative data, authors were consulted. Scholars that researched leadership and engagement as a focal question in their studies were contacted to ask for more studies. This process was repeated three times to ensure a higher number of studies in each leadership category. Therefore, in the third step of stage 2 and 3, doubles were also omitted. A summary table of the main characteristics of the articles can be consulted in the appendix. The articles that were used in the meta-analysis are indicated with an asterisk in the references.

See *Figure 1* on the next page for a flow chart with details of the search and selection process.

Figure 1. Flow chart
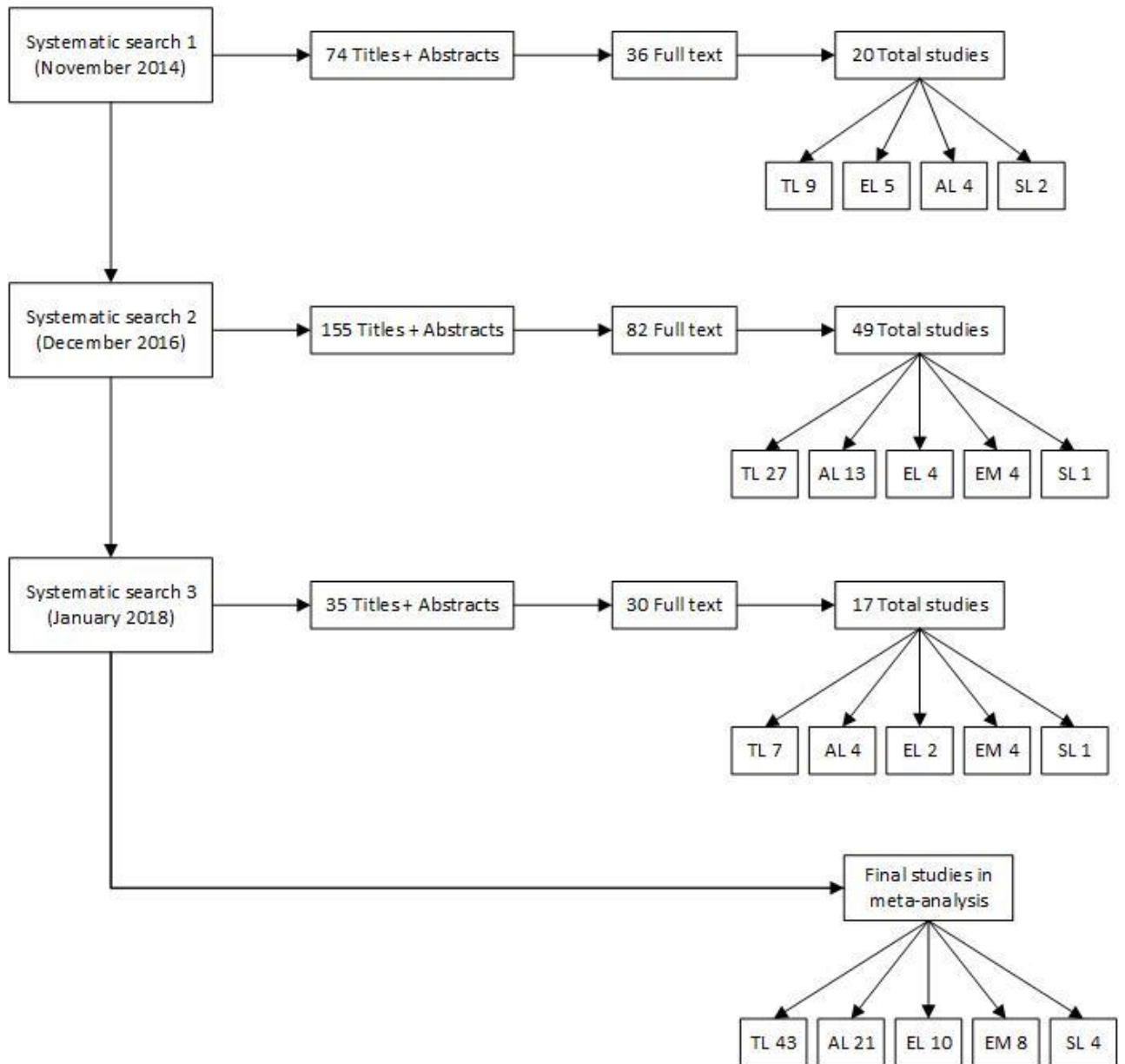
Flow chart of the search process in three stages. Tl = Transformational leadership; AL = Authentic leadership; EL = Ethical leadership; EM = Empowering leadership; Sl = Servant leadership

Inclusion criteria

We included articles that were published in scientific, peer-reviewed journals to make sure the quality of data and analysis were adequate; articles also had to contain validated measures of leadership and engagement. These articles were coded for leadership style, leadership and work engagement measures, Cronbach's alpha of these measures, Country, number of observations, industry, country and the effect size, i.e. the correlation between leadership and work engagement.

We excluded studies that examined a very specific type of leadership, e.g. benevolent leadership (Cenkci & Özçelik, 2015), leader identity entrepreneurship (Steffens et al., 2014), and humble leadership (Walters & Diab, 2016), since there was not enough empirical research to warrant a separate category in the meta-analysis. We excluded research on Leader-Member Exchange, since this cannot truly be categorized as a leadership style: rather it's an exchange mechanism that can be shared across leadership styles (see 'Shared themes' above; Gottfredson, Wright & Heaphy, 2020; Decuypere & Schaufeli, 2020). Hansen, Byrne, & Kiersch (2014) studied interpersonal leadership, but used a transformational leadership questionnaire, so we retained that study. We also excluded articles when there was a secondary analysis of a previously included article in our database (e.g. Bamford et al., 2013), when the authors could not provide the necessary information (e.g. *r*), when state rather than trait engagement was measured (e.g. through diary studies, Breevaart et al., 2016), when work engagement or the perception of leadership was measured at the team level (Steffens et al., 2014; Tuckey et al., 2012) or when there was a time lag in the measurement of leadership or engagement (because of the lack of comparability). In *Table 3* (see below) we summarized the results from diary and (quasi) longitudinal studies.

Sample independence. Three articles in our dataset provided information regarding two leadership styles, based on the same sample. We decided that only one result would be included, to ensure sample independence (Schmidt & Hunter, 2014). We chose the results from leadership style with the smallest amount of studies in our meta-analysis; this meant servant leadership from van Dierendonck et al. (2014) and authentic leadership from Černe et al. (2014).

See *Table 3* on the next page for an overview of longitudinal results concerning the relationship between positive leadership styles and work engagement.

Table 3. Longitudinal studies with positive leadership styles included in the meta-analysis.

Authors	Leadership style	Time frame	*n*	Results
Ling et al. (2017)	Servant Authentic	T1 SL & AL T2 (3 months) engagement	1132	SL: r = .39 AL: r = .07 (ns)
Chughtai et al. (2014)	Ethical	T1 ethical leadership T2 (4 weeks) engagement	216	r = .30
Mehmood et al. (2016)	Authentic	T1 authentic leadership T2 (2 weeks) engagement	376	r = .17
Perko et al. (2016)	Authentic Transformational	T1 AL & TL T2 (14 months) vigor	262	AL: r = .22 TL: r = .20
Lam et al. (2016)	Ethical	T1 ethical leadership T2 (5 months) engagement	306	r = .21
Courtright et al. (2014)*	Transformational (multisource)	T2 (3 months) engagement T3 (1 week) TL	631	r = .18
Breevaart, Bakker, Hetland et al. (2014)	Transformational	34 days (daily diary study)	61	r = .19
Breevaart et al. (2016)	Transformational	5 weeks (weekly diary study)	57	r = .41
Breevaart & Bakker (2017)	Transformational	2 workweeks (daily diary study)	271	r = .09

*Table 3. SL = servant leadership, EL = ethical leadership, AL = authentic leadership, TL = transformational leadership;(ns) = nonsignificant, vigor = core dimension of engagement; *Multisource: 153 leaders rated their own engagement and 784 subordinates rated TL.*

Analyses

The metafor package for R was used to conduct the meta-analysis (Viechtbauer, 2010). We chose the Pearson *r* correlation as our effect size, since it was reported in most articles and can be recommended as a good effect size measure (Rosenthal & DiMatteo, 2001). When articles only reported correlations with subscales of the leadership or engagement questionnaire, we calculated averages. This may lead to an *underestimation* of the true correlation, since the compound construct correlation with a criterion is often larger than an average of the constituent constructs (Newman, Harrison, Carpenter & Rariden, 2016). We followed the meta-analysis method from Hunter and Schmidt (2004). In order to perform a 'bare bones meta-analysis' with the metafor package, we followed three steps: (1) we used an adjusted method for the calculation of the sampling variances, (2) we used the sample sizes as weights and (3) we used the Hunter and Schmidt estimator for heterogeneity. In addition, we corrected for attenuation through taking into account the reliabilities of the individual studies (Schmidt & Hunter, 2014). When they were not provided, we used an average for the specific measure (see Appendix). To check the normality assumption of the random-effects model, we investigated a Quantile-Quantile (q-q) plot, which indicated that a correction for the assumption of a normal distribution was not necessary.

Heterogeneity. The Cochran's Q-test (Cochran, 1954) investigates whether the variability in the observed correlations is larger than would be expected based on the sample variability. A significant test thus suggests that the outcomes are heterogeneous (Viechtbauer, 2010) due to methodological diversity or the influence of other moderators. We also used this test to determine whether some study characteristics were moderators: we tested for the influence of the industry, western vs non-western samples and whether the UWES was used to measured engagement or not. To assess the effect of industry, the studies were divided into 9 categories. To test the other effects, we used dummy coding. In order to investigate hypothesis 2, we also tested whether leadership style moderated the total effect on work engagement.

Confidence and credibility intervals. We provide both the 95% confidence interval and 80% credibility interval around the estimated true population correlation.

The *confidence interval* provides an indication of the precision with which the correlation has been estimated (Viechtbauer, 2007). It can be interpreted in this way: if you were to calculated the estimate of the population correlation multiple times, the true mean will be between the upper and lower bound of the interval 95% of the cases; we can be 95% *confident* of the CI estimates. Put differently, the distribution of obtained effect sizes is very unlikely (5%) to fall outside the range specified in the confidence interval. We then evaluate the significance of the correlation estimate by examining whether the associated confidence interval includes 0 or not.

The *credibility interval* is a bayesian statistic which is associated with the (posterior) distribution of the population parameter since (population) parameters are treated as random variables. The underlying assumption is that the true population mean of the correlation can take on a range of values. The interval indicates where 80% of the true effects are expected to fall (Viechtbauer, 2010), i.e. 80% of the time the true population correlations fall within the range specified in the interval. Since it is a prediction, the outcome is therefore 80% *credible.* In addition, when this interval is large or includes zero, there might be moderators influencing the relationship (Whitener, 1990). With regards to a positive correlation, an 80% credibility interval excluding zero indicates that more than 90% of the individual correlations are greater than zero, since 10% lie beyond the upper bound of the interval (Judge & Piccolo, 2004).

According to Judge and Piccolo (2004) "confidence intervals estimate variability in the mean correlation, whereas credibility intervals estimate variability in the individual correlations across the studies." (p.758). The intervals also provide information with regards to the comparison of the correlation coefficients: if the intervals do not overlap, it suggests that the subgroups (i.e. the different positive leadership styles) are independent; when they do overlap it suggests that they might result in the same effects on engagement, with a likelihood of 95 and 80 percent, respectively (Schmidt & Hunter, 2014).

Publication bias. According to Rothstein, Sutton & Borenstein (2006, p. 1) "publication bias is the term for what occurs whenever the research that appears in the published literature is systematically unrepresentative of the population of completed studies". It is based on the assumption that articles are usually only accepted when results are statistically significant. Therefore, a meta-analysis may overestimate the effect size in the true population. To investigate publication bias, we calculated the *fail-safe N* (Rosenthal, 1979), which results in a metric that shows how many non-significant studies would have to be included in the analysis to change the results to non-significant (0.05 by default). However, the failsafe N is not an optimal means to establish publication bias (see e.g. Banks et al., 2015), so we opted for an additional publication bias metric, i.e. the funnel plot and trim and fill analysis.

The funnel plot is a graphical representation of the individual effect sizes and standard errors. All meta-analytic analysis reported in the current study were carried out using a method based on the funnel plot: i.e. the non-parametric (rank-based) trim and fill algorithm developed by Duval and Tweedie (Duval & Tweedie, 2000a; Duval & Tweedie, 2000b). This is a data augmentation technique that uses the funnel plot to reduce the effect of publication bias; it estimates the missing studies based on the suppression of the most extreme results on one side of the funnel plot and then augments the observed data with the goal of making the funnel plot more symmetric, after

which it recomputes the estimates (Viechtbauer, 2010). In *Table 4*, the ρ indicates the corrected correlation based on this method.

<div align="center">**Results**</div>

General characteristics of studies

The total amount of studies in the meta-analysis ($k = 86$) came from samples from 30 different countries. The studies were conducted in both Western (US, Canada, Western-Europe; 48%) and non-Western countries (52%). The total sample also comprised a variety of industries and jobs. We divided them in 9 categories: education (12.8%), IT/consulting (4.6%), nursing/hospitals (11.6%), hospitality/service industry (9.3%), finance/banking (10.4%), manufacturing/chemical (6.9%), logistics/maintenance (4.6%) and police/fire fighters (2.3%). Most studies investigated various industries or jobs in the same sample (37.2%). This shows the heterogeneity of the final sample, which supports the generalizability. More details can be found in appendix.

Leadership questionnaires

With regards to transformational leadership ($k = 43$), the most frequently used questionnaire (62.8%) was the Multifactor Leadership Questionnaire (MLQ) from Bass and Avolio (1995). With regards to ethical leadership ($k = 10$), all but one of the studies used the Ethical Leadership Scale from Brown et al. (2005). Servant leadership ($k = 4$) was measured with three different questionnaires, of which the Servant Leadership Scale (van Dierendonck & Nuijten, 2011) was used twice. Authentic leadership ($k = 21$) was mostly measured (76%) with the Authentic Leadership Questionnaire (ALQ; Walumbwa et al., 2008). Lastly, empowering leadership ($k = 8$) was measured three times with both the Leader Empowering Behavior Questionnaire (LEBQ; Konczak et al., 2000) and the Leader Behavior Questionnaire (Pearce & Sims, 2002). The other two studies used the questionnaire from Ahearne et al. (2005).

Engagement questionnaires

Most of the studies (73; 84.9%) used some version of the Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2006), the majority (50; 68%) chose the nine-item version. The Work Engagement Scale from Rich et al. (2010) was administered four times. The engagement scale from Saks et al. (2006) was used twice, as well as the DDI E3 (as used in Popli & Rizvi, 2015). Three studies used questionnaires from Gallup: the Gallup Workplace Audit (Harter et al., 2002) and Gallup Q12 Employee Engagement Questionnaire (Buckingham & Coffham, 1999), as used by Sahu & Kumar (2018). Other engagement scales that were used only once included a Work Engagement Scale from Rothmann (2010) and 18 items from (Towers Watson, 2010).

General results of the meta-analysis

Table 4 displays the main results of the meta-analysis. According to the classification of Cohen (1992) the general correlation between leadership and engagement can be qualified as medium ($r = .47$, $p < .001$). Other scholars argue that the cut-off values presented by Cohen (1992) may be overestimates for magnitudes of relationships: a more empirical approach for classifying effect sizes shows that the correlations found in our study are rather large (Bosco, Aguinis, Singh, Field, & Pierce, 2015). In addition, according to Hemphill (2003) the associations found in the meta-analysis are rather strong in comparison with other meta-analytic psychology research. Regardless, 22.09 % of the variance in work engagement can be explained by the positive leadership styles in the sample. See *Figure 2* on the next page for the forest plot with a distribution of effect sizes of each study.

We also performed meta-analyses on each separate positive leadership style. All of them showed significant medium to large correlations with work engagement (see *Table 4*). The variance explained ranged from 9.61% (empowering leadership) to 31.36% (ethical leadership). With regards to publication bias, the fail-safe N indicated that a rather large number of other study results (i.e. 254 154 for the total effect) would be necessary to make the outcomes of the meta-analysis non-significant. Furthermore, the results for most analyses remained the same with or without the trim and fill method (Duval & Tweedie, 2000a; Duval & Tweedie, 2000b). Only for the servant leadership ($k = 4$) the correlation was lessened, and for empowering leadership ($k = 8$) the correlation was augmented. These results may be due to the smaller sample sizes. The results for each subgroup of leadership styles have overlapping credibility and confidence intervals, suggesting that they may have the same effect on work engagement. This is support for hypothesis 1. In addition, a combination of the Q-test and some of the (wider) credibility intervals indicate that there might be significant heterogeneity or variation between the studies, which indicates the necessity of a moderation analysis. See *Table 4* (below) for an overview of the results.

Figure 2. Forest plot with corrected correlations and the corresponding 95% confidence intervals
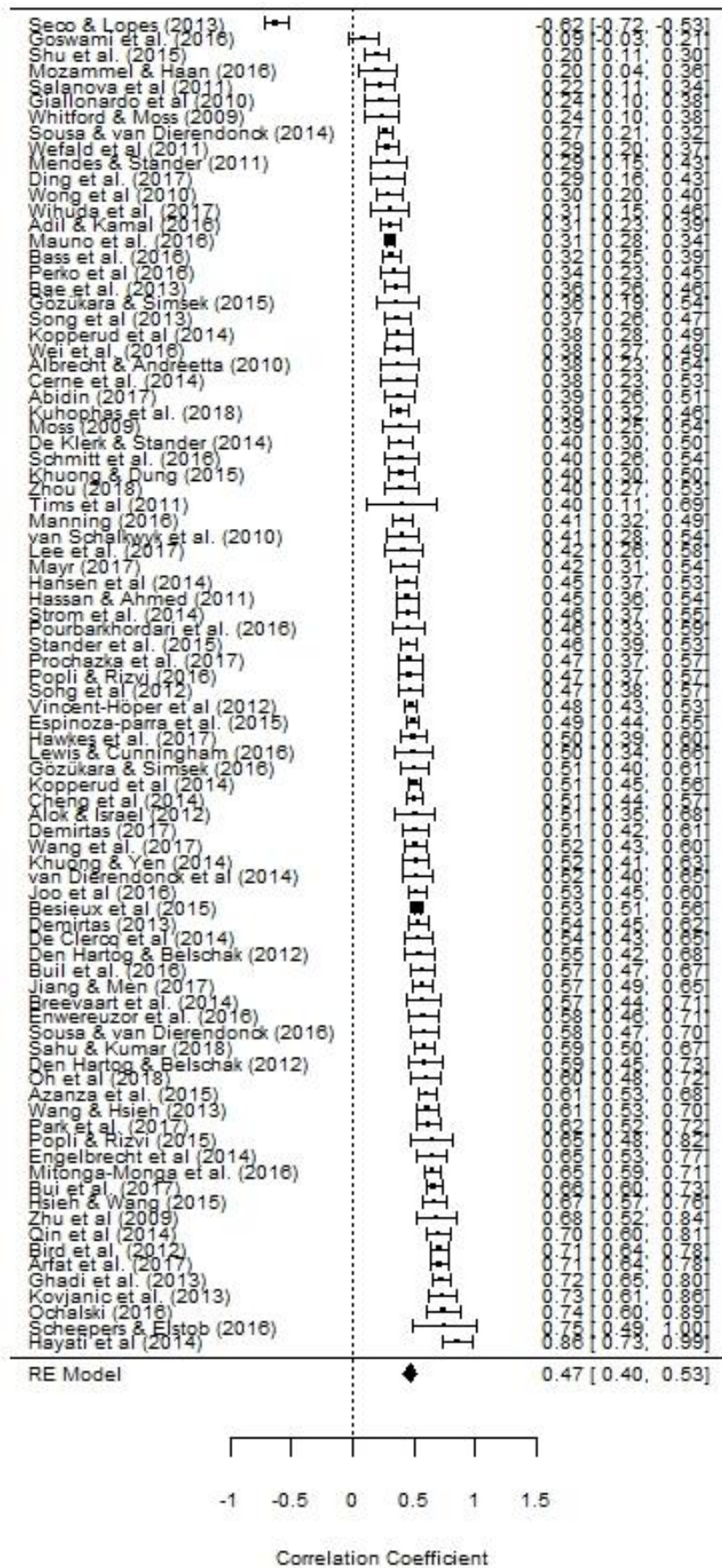
Table 4. Results meta-analysis.

Leadership	N	k	r	r_c	ϱ	SE	Q	95 % CI	95% CR	R²	N_{FS}	Trimfill (SE)
Total	37 905	86	0.42****	0.47****	0.47****	0.04	1311.76****	[0.40; 0.53]	[0.25; 0.68]	22.09%	254 154	Right: 0 (5.28)
Transformational	23 194	43	0.43****	0.47****	0.47****	0.04	502.13****	[0.40; 0.55]	[0.30; 0.64]	22.09%	75 068	Left: 0 (3.89)
Authentic	7 656	21	0.39****	0.43****	0.43****	0.07	603.91****	[0.30; 0.55]	[0.08; 0.77]	18.49%	10 824	Right: 0 (2.51)
Servant	1 806	4	0.34*	0.39*	0.31***	0.09	79.46****	[0.13; 0.49]	[0.19; 0.59]	9.61%	442	Left: 2 (1.47)
Ethical	3 681	10	0.52****	0.56****	0.56****	0.03	40.69****	[0.51; 0.62]	[0.46; 0.66]	31.36%	6341	Right: 0 (2.12)
Empowering	1 568	8	0.38****	0.42****	0.46****	0.04	31.97***	[0.39; 0.54]	[0.31; 0.54]	21.16%	846	Right: 3 (1.87)

* p < .05; ** p < .01; *** p < .001; **** p < .0001; N= number of participants, k= number of studies, r = bare-bones Hunter & Schmidt method using Metafor (corrected for sample size), $r_{c\ =}$ corrected for attenuation; ϱ = corrected for publication bias with trimfill method (other calculations are based on this value); SE = standard error, Q = heterogeneity test; 95% CI = 95% confidence interval; CR = 80% credibility interval; R² = percentage of variance explained in engagement; N_{FS} = fail safe N; Trimfill (SE) = number of studies added to account for publication bias at the left or right of the average individual study correlation.

Moderated meta-analysis

First, we tested whether leadership style moderated the total leadership effect on engagement. This effect was not significant [$Q_M(4) = 4.53$, $p > .05$], further supporting hypothesis 2. In addition, the general effect of industry was also not significant [$Q_M(8) = 11.32$, $p > .05$], although the individual factor results did indicate that the correlation in the education category was lower (correlation difference (Δr) = -.16, $p < .05$). The moderation with regards to the engagement questionnaire (UWES vs. non UWES) was not significant [$Q_M(1) = 1.36$, $p > .05$]. There was also no difference with regards to sample size [$Q_M(1) = 0.0003$, $p > .05$], nor publication year [$Q_M(1) = 0.53$, $p > .05$] or western vs non-western samples [$Q_M(1) = 1.18$, $p > .05$].

In sum, these analyses did not find support for hypothesis 2, concerning moderators in the relationship between positive leadership styles and engagement. However, we only tested a handful of potential moderators in this analysis (i.e. education, questionnaire, sample size and publication year, country of origin), so the possible effect of moderators was not discounted as a whole. Below we discuss potential moderators based on the empirical studies in our sample.

Additional analyses

As an additional analysis, we tested the effects of the leadership questionnaire and engagement questionnaire for each leadership style. With regards to transformational leadership, we found no effect when we compared the Multifaceted Leadership Questionnaire (Bass & Avolio, 1990, 1995, 1999) to other transformational leadership measures [$Q_M(1) = 3.48$, $p > .05$]. The other questionnaires did have slightly lower correlations, but this effect failed to reach significance (correlation difference (Δr) = -.12, $p = 0.06$). The effect of the engagement questionnaires was also not significant [$Q_M(1) = 1.23$, $p > .05$]. With regards to authentic leadership, the difference between questionnaire based on Walumbwa et al. (2008) vs. the others, was also not significant [$Q_M(1) = 0.00$, $p > .05$], as was the moderating effect of the engagement questionnaires [$Q_M(1) = 1.51$, $p > .05$]. With regards to empowering leadership, the moderating effect of leadership questionnaires was also not significant [$Q_M(2) = 4.47$, $p > .05$], although the two studies with the questionnaire from Ahearne et al. (2005) did show a higher correlation (Δr = .15, $p < .05$). This was the only leadership style where the kind of engagement questionnaire did have a moderating effect [$Q_M(1) = 5.00$, $p < .05$], although it is only based on very few studies: the two studies that did not use the UWES had a higher correlation with engagement (Δr = .14, $p < .05$).

The amount of studies ($k = 4$) and different leadership questionnaires (3) with regards to servant leadership made the moderation effect not relevant to test. In addition, all the studies used an UWES-variant to measure engagement. With regards to ethical leadership, all studies but one were measured with the questionnaire from Brown Treviño & Harrison (2005), and all but one

used UWES to measure engagement, which is why this leadership style was also not further explored with regards to the moderating effect of the style of leadership or engagement questionnaire.

In sum, all positive leadership styles, including empowering leadership, were significantly and positively related to work engagement. In addition, all CI and CR intervals showed overlap, indicating that these positive leadership styles partly result in *the same* effect on work engagement. This supports hypothesis 1. Furthermore, education level of employees, leadership or engagement questionnaire, sample size and publication year did not moderate the relationship between leadership and engagement.

Systematic Review of Mechanisms

In addition to the quantitative (moderated) meta-analysis above, we also performed a qualitative review to determine which moderating and mediating mechanisms are more plausible to have an effect on the association between the five positive leadership styles and engagement. For the review, we re-used the studies from the systematic search sample.

Moderating mechanisms

In total there were 14 studies with mostly individual-level moderators based on the sample of studies from the meta-analysis. As can be seen in *Table 5*, high levels of the individual-level moderators positively influenced the effect of leadership on engagement. Of these studies, only promotion focus was found to have an effect twice, both with transformational leadership (Moss, 2009) and ethical leadership (Cheng, Chang, Kuo, & Cheung, 2014). In addition, three organizational level mediators were found: high uncertainty augmented the relationship between servant leadership and engagement (de Sousa & van Dierendonck, 2014) and a more supportive culture heightened the relationship between transformational leadership and engagement (Arfat, Rehman, Mahmood, & Saleem, 2017), while beneficiary contact lessened the impact of authentic leadership on engagement (Scheepers & Elstob, 2016). There was only one team level moderator: group job satisfaction diminished the relationship between ethical leadership and engagement (Qin, Wen, Ling, Zhou, & Tong, 2014). These studies are too diverse to draw any conclusions with regards to shared moderating variables. Therefore, hypothesis two concerning shared moderating variables in the relationship between positive leadership styles and engagement cannot be confirmed with studies from the systematic review. The heterogeneity with regards to moderators in the positive leadership – engagement relationship does indicate the need for more research with regards to boundary conditions.

See *Table 5* on the next page for an overview of the categories of moderating mechanisms and the corresponding studies.

Table 5. Moderators of the relationship between positive leadership styles and engagement in empirical research

Categories	Moderators	Author	Leadership style
Follower characteristics	(high) Positive follower characteristics (independent thinking, willing to take risks, active learner, innovative)	Zhu et al. (2009)	Transformational leadership
	(high) Leader-follower social capital (i.e. goal congruence and social interaction)	De Clercq et al. (2014)	Servant leadership
	(high) Promotion focus	Moss (2009) Cheng et al. (2014)	Transformational leadership Ethical leadership
	(high) Person-job fit	Enwereuzor et al. (2016)	Transformational leadership
	(high) Intrinsic motivation	Shu et al. (2015)	Authentic leadership
	(high) Need for leadership (moderating effect on need fulfillment, leads to engagement)	Breevaart et al. (2014)	Transformational
	(high) Cognitive emotion regulation	Demirtas et al. (2017)	Ethical leadership
	(high) Ethical ideology (moderating effect on justice perception, which leads to engagement)	Demirtas (2013)	Ethical leadership
	(high) self-efficacy	Zhou et al. (2018)	Empowering leadership
Organizational	(high) Uncertainty	Sousa & van Dierendonck (2014)	Servant leadership
	(less) Beneficiary contact	Scheepers & Elstob (2016)	Authentic leadership
	(more) Supportive culture	Arfat et al. (2017)	Transformational
Team level	(low) Group job satisfaction	Qin et al. (2014)	Ethical leadership

Table 5. Between brackets the "amount" of the moderator related to a higher employee work engagement.

Mediating mechanisms

Of the studies included in the meta-analysis, 51 mediators were found for the relationship between a positive leadership style and engagement. They were organized in several categories, i.e. psychological needs, trust, job and personal resources, organizational level mediators and other categories. See *Table 6* for an overview.

1. Psychological needs. As can be seen in *Table 6*, most studies (13) related to psychological needs. First, several studies found psychological needs as conceptualized by Self-Determination Theory (Deci & Ryan, 2008) to be a mediator in the relationship between positive leadership styles and engagement, i.e. competence need satisfaction (Kovjanic et al., 2013), relatedness need satisfaction (Kovjanic et al., 2013) and total psychological need satisfaction (Breevaart, Bakker, Demerouti, Sleebos, & Maduro, 2014; Van Dierendonck et al., 2014).

Second, four studies investigated work meaningfulness as a mediator. This is not surprising, since Kahn (1990) already proposed that psychological meaningfulness, along with availability and safety, were precursors of work engagement. Both Kahn (1990) and SDT proposed theories concerning antecedents for engagement (see 'introduction'), which can be influenced by positive leadership.

Third, psychological empowerment was found to be a significant mediator in five studies with different positive leadership styles. Since this is a relatively new concept, we will provide the definition: "increased intrinsic task motivation manifested in a set of four cognitions reflecting an individual's orientation to his or her work role: competence, impact, meaning, and self-determination" (Spreitzer, 1995, p. 1443). Competence is defined as "an individual's belief in his or her capability to perform activities with skill" (p. 1443). Having an impact is defined as "the degree to which an individual can influence strategic, administrative, or operating outcomes at work" (p. 1444). The third element, meaning, is defined as "the value of a work goal or purpose, judged in relation to an individual's own ideals or standard" (p. 1443). Lastly the self-determination component is defined as "an individual's sense of having choice in initiating and regulating action" (p. 1443). The definitions hint at meaningfulness, competence, autonomy, as well as full self-determination, therefore we categorized this concept under the label 'psychological needs'.

In sum, these studies indicate that the satisfaction of psychological needs may be the primary mechanism through which positive leadership influence engagement: leadership that enhances the fulfillment of psychological needs (SDT) or psychological conditions (Kahn, 1990), enhances work engagement.

2. Trust. Trust in the leader (k = 8) or organization (k = 2) was found to be a mediator in ten different studies. Trust can be defined as "a psychological state comprising the intention to

accept vulnerability based upon positive expectations of the intentions or behaviors of another" (Rousseau et al. 1998; p. 395). Trust can be related to engagement in several ways. Macey and Schneider (2008) point out that "engaged employees invest their energy, time, or personal resources, *trusting* that the investment will be rewarded (intrinsically or extrinsically) in some meaningful way (p. 22). This is similar to what Social Exchange Theory posits (SET; Shore et al., 2006; see introduction). In this view, the exchange relationship between the leader and employee is maintained through a state of interdependence: there is an expectation of reciprocation of favors, work or support based on mutual long-term investment, socio-emotional give-and-take, and trust. Indeed several other authors see (interpersonal) trust as a part of a quality social exchange relationship (Tse, Huang, & Lam, 2013; Colquitt et al., 2013). This relation-based perspective on trust is therefore based on mutual obligation (Blau, 1964; Ferrin & Dirks, 2002). When employees trust leaders, this aids in the development of high-quality exchange relationships (LMX; Werbel & Lopes Henriques, 2009) which may also encourage employees to spend more (personal) resources and energy on job tasks (Colquitt et al., 2007; Li & Tan, 2013).

3. Job and personal resources. In total, nine personal and nine job resources were found to be significant mediators in the relationship between different positive leadership styles and engagement. With regards to job resources, job autonomy and 'job resources in general' were most researched (three studies with significant results; see *Table 6*). Next, the overall congruence of person and job was found to be a mediator twice (Bamford et al., 2013; Bui, Zeng, & Higgs, 2017). Only one study found a positive mediating effect of role clarity (Mendes & Stander, 2011). With regards to personal resources, only optimism and self-efficacy were found to be significant mediators in two studies, other personal resources were positive affect (Wang, Li, & Li, 2016), work-life enrichment (Jiang & Linjuan Men, 2017), project identification (Ding, Li, Zhang, Sheng, & Wang, 2017), practicing core values (Oh, Cho, & Lim, 2018) and psychological capital (Park, Kim, Yoon, & Joo, 2017).

These results are in line with expectations based on the job demands resources model (JD-R model), which posits the importance of personal and job resources for work engagement. Recently, engaging leadership was added to the model (Schaufeli, 2015), indicating that leadership that inspires, connects, and strengthens followers has an indirect, positive effect on their levels engagement through the allocation of job resources and job demands.

4. Multilevel mediators. Seven studies investigated mediators at levels other than the individual employee-leader level. Six of them were organizational-level mediators. Two studies focused on organizational identification (de Sousa & van Dierendonck, 2014; Gozukara & Simsek, 2016), while two other studies focused on social corporate goals as mediators: i.e. corporate social

responsibility (Besieux, Baillien, Verbeke, & Euwema, 2015) and perceived societal impact (Mayr, 2017). Only one study investigated organizational justice (Demirtas, 2015) and 'promotive organization-based psychological ownership' (Alok & Israel, 2012). At the group level, only one study found group identification to be a mediator in the relationship between transformational leadership and engagement (Mayr, 2017).

These results provide evidence for the importance of incorporating multilevel mediators when researching the relationship between positive leadership styles and engagement, specifically organizational identification and social corporate goals.

5. Leader attributes. Two studies found leadership effectiveness (van Dierendonck, Stam, Boersma, de Windt, & Alkema, 2014) and perceived support (Černe, Dimovski, Marič, Penger, & Škerlavaj, 2014) were mediators with regards to the relationship of transformational and authentic leadership, respectively.

Table 6. Mediators

Categories	Mediator	Author	Leadership style
Psychological needs	Competence need satisfaction	Kovjanic et al. (2013)	Transformational
	Relatedness need satisfaction	Kovjanic et al. (2013)	Transformational
	Psychological need satisfaction	Van Dierendonck et al. (2014)	Servant
	Need satisfaction	Breevaart et al. (2014)	Transformational
	Meaningfulness	Aryee et al. (2012)	Transformational
	Perceptions of meaning in work	Ghadi et al. (2013)	Transformational
	Work meaningfulness	Lee et al. (2017)	Empowering
	Meaningfulness	Demirtas et al. (2017)	Ethical
	Psychological empowerment	De Sousa & van Dierendonck (2014)	Servant
		Mendes & Stander (2011)	Empowering
		Albrecht & Andreetta (2011)	Empowering
		Al Zaabi (2016)	Authentic
		De Klerk & Stander (2014)	Empowering
Trust	Trust (in leader)	Engelbrecht et al. (2014)	Ethical
		Khuong & Dung (2015)	Ethical
		Chughtai et al. (2015)	Ethical
		Wang & Bird (2011)	Authentic
		Wang & Hsieh (2013)	Authentic
		Hsieh & Wang (2015)	Authentic
		Wong et al. (2010)	Authentic
	Trust in organization	Stander et al. (2015)	Authentic

	Trust climate (organizational)	Ling et al. (2017)	Servant
	Interpersonal trust in leader (i.e. Leader's Competence, Leader's Benevolence, Leader's Reliability)	Hassan & Ahmad (2011)	Authentic
Job resources	Job autonomy	Gozukara & Simsek (2016)	Transformational
		Gozukara & Simsek (2015)	Transformational
	(not significant)	Kovjanic et al. (2013)	Transformational
	Responsibility	Aryee et al. (2012)	Transformational
	Role clarity	Mendes & Stander (2011)	Empowering
	Job resources in general	Breevaart et al. (2014)	Transformational
		Hawkes et al. (2017)	Transformational
	Overall person-job match	Bamford et al. (2013)	Authentic
	Person-Job Fit	Bui et al. (2017)	Transformational
Personal resources	Self-efficacy	Salanova et al. (2011)	Transformational
	Self-efficacy	Prochaska et al. (2017)	Transformational
	Optimism	Stander et al. (2015)	Authentic
	Academic optimism	Kulophas et al. (2018)	Authentic
	Positive affect	Wang et al. (2017)	Transformational
	Work-life enrichment	Jiang & Men (2017)	Authentic
	Project identification	Ding et al. (2017)	Transformational
	Practicing core values	Oh et al. (2018)	Authentic
	Psychological capital	Park et al. (2017)	Empowering
Organizational level	Organizational identification	De Sousa & van Dierendonck (2014)	Servant
		Gozukara & Simsek (2016)	Transformational
	Organizational justice	Demirtas (2015)	Ethical
	Corporate Social Responsibility	Besieux et al. (2016)	Transformational
	Perceived societal impact	Mayr (2017)	Transformational
	Promotive organization-based psychological ownership	Alok & Israel (2012)	Authentic
Leader Attributes	Leadership effectiveness	Van Dierendonck (2014)	Transformational
	Perceived support	Penger & Cerne (2014)	Authentic
Group level	Group identification	Mayr (2017)	Transformational

Table 6. Mediators in the leadership-engagement relationship from articles in the meta-analysis.

Summary

Our categorization of studies show that a number of moderating and mediating influence the relationship between positive leadership styles and engagement. Psychological variables, i.e. *psychological needs*, made up the largest category ($k = 13$). The second largest category included studies concerning *trust* in the leader and the organization ($k = 10$). Third, both *job resources* ($k = 9$) and *personal resources* ($k = 9$) were well-researched mediators. The fourth category consisted of *multilevel* mediators ($k = 7$). Last, two studies with regards to *leader attributes* were found. In sum, this provides support for hypothesis 3 concerning shared mediating mechanisms in the relationship between positive leadership styles and engagement: psychological needs, trust, job and personal resources, multilevel mediators and leader attributes may be candidates for shared mediating mechanisms between positive leadership styles and engagement (hypothesis 3). In addition, our theoretical analysis as well as the meta-analysis provided evidence for a common ground between all positive leadership styles (see above), therefore, we propose an overarching research model to guide future research (see *Figure 3* below).

Figure 3. Research model.
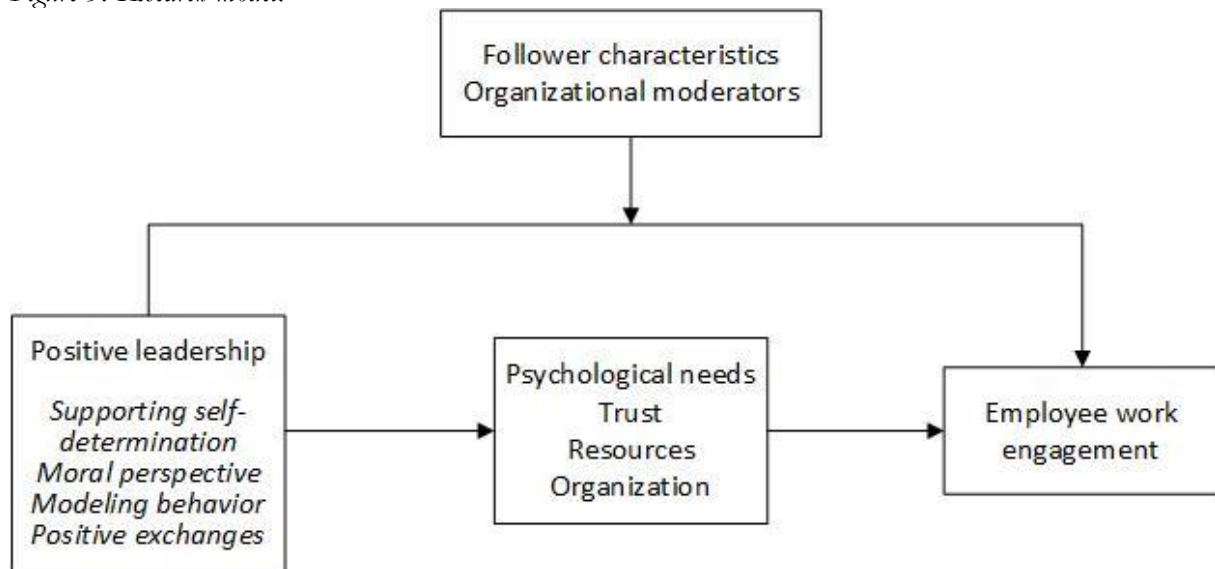
Figure 3. Empirical research model based on the mediating and moderating mechanisms from studies in the meta-analysis. The three behaviors of positive leadership styles in italics are based on a theoretical comparison. The overarching categories over mediators and moderators can be found in the middle squares, in the order of magnitude with regards to the amount of studies in each category. Resources can be further divided into job resources and personal resources.

Discussion

In this study, we set out to empirically investigate the black box of the relationship between positive leadership styles and work engagement. We respond to calls for studies with an integrative view on leadership (Yukl, 2002), for an integration across leadership styles (Derue et al., 2011) and for an investigation of overlap between leadership styles (Rowold et al., 2015) by using both a deductive and an inductive approach, with both quantitative and qualitative analyses. We found shared theoretical mechanisms shared between positive leadership styles, we quantified the positive association between (positive) leadership styles and work engagement through a meta-analysis, and we identified several categories of mediating and moderating mechanisms that may further explain these associations.

The *deductive theoretical analysis* indicated that transformational, authentic, servant, ethical and empowering leadership share overlap in their focus on being a moral manager, role modeling behavior, supporting employee self-determination and fostering positive exchanges with employees. These shared leader behaviors are in line with a shift in the leadership domain from more inspirational leadership to a more moral leadership framework that seems to rest more heavily on values, morality, empathy and service (Banks et al., 2018). The clear overlap between positive leadership styles could, in part, also be due to construct mixology, i.e. the practice of building new psychological constructs by combining older constructs (Newman et al., 2016). This is not necessarily a bad thing, although construct redundancy among newer positive leadership styles seems to be an issue (see Banks et al., 2018). In any case, some never positive leadership styles may have been 'borrowed' some elements from older research on leadership styles. A second explanation may lie in rather similar communication tactics at a behavioral level: leaders spend most of their time communicating with employees, whether directly or indirectly (Wajcman & Rose, 2011), which builds the leader-employee relationship (Gottfredson & Aguinis, 2017). In addition, being a moral manager or role modeling prescribes communication about ethics, while supporting self-determination means that a leader has attention for employee autonomy, competence and relatedness during regular conversations or performance reviews. Lastly, the shared element 'fostering positive exchanges' directly indicates the importance of leader communication.

The *meta-analysis* showed a positive and significant association overall ($r = .47$), as well as for each leadership style separately (from $r = .34$ for servant leadership up to $r = .52$ for ethical leadership). Our population correlations can be qualified as large ($r = .47$; Bosco et al., 2015) and are similar to the results from previous meta-analyses with smaller sample sizes and fewer leadership styles (see Hoch et al., 2018 and Banks et al., 2016). Contrary to Hoch et al. (2018), we did not find that servant leadership had the highest association with work engagement. However,

our findings are similar to what is found in longitudinal research (see *Table 3*), multisource and experimental research (Kopperud et al., 2014; Van Dierendonck et al., 2014; Tuckey et al., 2012). We found only one multisource study where the correlation between transformational leadership and employee engagement (r = .34) dropped to a non-significant level when the leaders rated their own leadership (r = -.09; Kopperud et al., 2014). The moderated meta-analysis with the leadership category as a moderator did not indicate any significant differences between leadership styles. Moreover, the confidence and credibility intervals of each leadership style overlapped. These results indicate that there might indeed be a common ground with regards to the effect of different leadership styles on work engagement that can be explained by the shared leader behaviors identified above.

However, significant heterogeneity (see Q-statistic, *Table 4*), was present within the results of the meta-analysis, indicating the presence of moderating variables in the leadership-engagement relationship. In order to investigate this further, we first conducted a moderated meta-analysis with the engagement questionnaire, the sample origin (western vs. non-western) and industry as moderators, which did not yield any results. In order to further search for trends in explaining mechanisms, we looked at the moderating and mediating variables in the individual studies of the meta-analysis. The moderators in the sample were quite heterogeneous, indicating mostly that various personal and organizational level moderators influenced the relationship between positive leadership styles and engagement. Of course, leadership does not exist in a vacuum, so we suggest that future research looks into organizational level boundary conditions and uses more multi-level or time-sensitive research approaches to capture the unexplained variance found in our meta-analysis (see e.g. Fischer, Dietz & Antonakis, 2017).

We did find a clear pattern with regards to mediating mechanisms. The *psychological needs* category was the most researched category, this is not surprising since two highly popular engagement theories posit the importance of psychological variables: self-determination theory (Deci & Ryan, 2008) states that the enhancement of autonomy, relatedness and competence leads to work engagement, and the theory of Kahn (1990) posits that three psychological conditions, i.e. availability, meaningfulness and safety influence work engagement. This supports the notion that employee psychological need satisfaction is of definite importance to work engagement (see also Van Den Broeck et al., 2008) and that positive leadership styles implicitly or explicitly acknowledge this already in their theoretical framework. Leaders who focus more on employee self-determination, who are spending more time strengthening, connecting and inspiring their followers (Schaufeli, 2015), may have a more beneficial impact on work engagement.

The second most researched mediator-category was *trust*, indicating that the enhancement of employee trust is a vital process through which employee engagement can be augmented. Again, two of the theoretical shared leader mechanisms relate to the enhancement of trust, i.e. being a moral manager and being a role model. This can be explained by a character-based perspective on trust, which implies that followers attempt to draw inferences about the leader's characteristics (i.e. integrity, fairness, ability, ..), which then inform work behavior and employee attitudes. In this view, perceptions about the trustworthiness of leaders become important, since leaders have authority to make decisions that have an impact on the follower and thus makes them vulnerable (Ferrin & Dirks, 2002). Perceived leader behavioral integrity and perceived transparent communication have indeed been related to employee engagement (Vogelgesang, Leroy, & Avolio, 2013), as have leader procedural and interactional fairness (van Knippenberg, De Cremer, & van Knippenberg, 2007). Leader action and practices thus infuse trust in their employees (Ferrin & Dirks, 2002). Being a moral manager and a role model, which enhances employee trust, may therefore be important shared leader mechanisms through which positive leadership styles can influence engagement.

The third mediator category concerned resources, both personal and job resources mediated the relationship between positive leadership styles and engagement. This can be explained by the job demands – job resources model (Schaufeli et al., 2004), in which it is posited that resources, be it personal or job resources, energize an employee and increase work engagement.

The fourth category with *multilevel mediators* indicates the importance of investigating leadership processes and employee consequences from a wider, organizational perspective. The multilevel leadership field is still emerging and rather fragmented, therefore calls have been made for a more thorough investigation of leadership phenomena through this research lens (Batistic, Cerne, & Vogel, 2017).

Finally, *leader attributes* influence the relationship between leadership and engagement, although this category consisted of few studies. It is not hard to imagine that several leader characteristics may influence the quality of the relationship with the leader, and therefore the level of engagement of the employee. Research has e.g. shown that leader characteristics, including personality traits, explain the most variance in the exchange relationship (Duhlebohn et al., 2012).

Several of the theoretically-deduced shared leader behavior and empirically researched mediators also seem to be directly associated with each other: being supportive for employee self-determination (shared leader behavior) influences psychological needs (mediator category), which leads to engagement. Similarly, having a moral perspective and being a role model (shared leader behavior) can be related to the development of trust (mediator category), which then leads to engagement. The last shared leader behavior category, positive exchanges with employees, may

lead to a different allocation of resources by the leader in favor of the employee. We believe that our research model proposes an integrated framework developed to understand the *shared* effect of all the positive leadership styles in our review. Some positive leadership styles, however, may focus more on certain pathways than others: e.g. experimental research from Van Dierendonck et al. (2014) showed that both transformational and servant leadership were related to work engagement; yet transformational leaders were perceived as more effective, while servant leaders were better at fulfilling followers' needs.

We simply propose that some of the underlying mechanisms may be the same. For future research, therefore, we encourage leadership researchers to either (1) control for shared influencing mechanisms (e.g. LMX) when studying effects of a single positive leadership style on e.g. engagement or (2) to focus more on common mechanisms and their translation at the behavioral level (e.g. the role of communication behavior).

Limitations and future research

In the meta-analysis and review, only peer-reviewed studies were included to ensure the quality of the research. A possible caveat is the risk of over-representing positive and significant results, although the meta-analysis did not seem to indicate publication bias. Only with the leadership styles with fewer studies (servant and empowering leadership) did the trimfill analysis add studies to counteract publication bias, but this did not drastically alter the results. Furthermore, the data in the meta-analysis were cross-sectional, so no inferences concerning causality can be made. This also points out the possibility of endogeneity and common source bias (Antonakis, 2017), because employees in the meta-analysis rated both their leader and their own engagement using self-report questionnaires. However, longitudinal, multisource and experimental studies show similar results (see *Table 3*; Kopperud et al., 2014; Kovjanic et al., 2013; Van Dierendonck et al., 2014). Additionally, for the inductive approaches (both quantitative and qualitative), we were limited to the research that was present. This research may be guided by popular theoretical rationales and hence influence the amount of studies that were present with a certain mediating or moderating mechanism. We can only encourage future research to take into account multiple mechanisms and perhaps to test them simultaneously. To this regard, testing and modeling multiple mediation paths will help test the proposed research model (see e.g. Fischer, Dietz & Antonakis, 2017).

It would be interesting if future research focuses more on similarities between different leadership styles, either theoretically (on a dimensional or definitional level) or empirically; future research can e.g. focus on further examining overlap between positive leadership styles on a more behavioral level. To accomplish this aim, perhaps diary studies (see e.g. Breevaart et al., 2016)

combined with a multilevel approach (see e.g. Liao, 2017) might be an interesting research avenue. Also, the focus on how to build positive relationships with followers has been a research question for a while (Dulebohn, 2012), which is why future research may want to focus more on underlying communication behavior as a mediator. Lastly, team engagement (see e.g. Costa et al. 2013) and engaging leadership (Schaufeli, 2015) are interesting developments in the literature that will extend our understanding of how leadership influences employee engagement.

   Practical relevance. Positive leadership styles are significantly and positively related to work engagement. Although each leadership style has its own focus, they do seem share a common ground with regards to their effect on work engagement. Positive leaders seem to provide a moral perspective, act as role models, support follower self-determination and foster positive social exchanges. Focusing on these elements in selection or training of leaders may dramatically increase work engagement. In addition, leaders can also have a positive influence on work engagement through trust enhancement, a better resource allocation and positive organizational level initiatives, all which serve as pathways through which effects on work engagement manifest. In sum, there are many ways leaders can enhance work engagement. It is well worth the effort, not only because higher work engagement enhances general well-being, but – if more convincing is needed – work engagement (and positive emotions) (1) may be contagious and therefore enhance general firm well-being (Hatfield, Cacioppo and Rapson, 1994; Bakker, Van Emmerik and Euwema, 2006) as well as (2) increase employees' (creative) performance and productivity (Robertson & Cooper, 2011; Halbesleben, 2010; Kašpárková, Vaculík, Procházka, & Schaufeli).

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Appendix

Table 7. Study information from meta-analysis sample

Table 8. Substitution for Cronbach's alphas of the engagement questionnaires

Table 9. Substitution for Cronbach's alphas of the leadership questionnaires

Table 7. Study information from meta-analysis sample

Author (year)	Leadership style	Leadership measure	alpha	Engagement measure	alpha	Country	N	Industry	r
Abidin (2017)	Authentic	ALQ 16 (Walumbwa et al., 2008)	.76	WES 18 (Rich et al., 2010)	.88	Malaysia	260	Budget hotels	.32
Adil & Kamal (2016)	Authentic	ALQ 16 (Walumbwa et al., 2008)	.93	UWES 9 (Schaufeli et al., 2006)	.95	Pakistan	500	University teachers	.29
Albrecht & Andreetta (2011)	Empowering	Empowering subscale (Pearce & Sims, 2002)	.91	UWES 9 (Schaufeli et al., 2006)	.87	Australia	139	Community health service	.34
Alok & Israel (2012)	Authentic	ALQ 16 (Walumbwa et al., 2008)	.95	UWES 9 (Schaufeli et al., 2006)	.88	India	117	Working professionals	.47
Arfat et al. (2017)	Transformational	MLQ 5x (Bass & Avolio, 1995)	.81	Engagement (Saks, 2006)	.83	Pakistan	700	Banking	.58
Azanza et al. (2015)	Authentic	ALQ (Walumbwa et al., 2008)	.89	UWES 9 (Schaufeli et al., 2006)	.89	Spain	623	Various	.54
Bae et al. (2013)	Transformational	MLQ 12 (Bass & Avolio, 1992)	.97	UWES 9 (Schaufeli & Bakker, 2003)	.92	US	304	School teachers	.34
Bass et al. (2016)	Transformational	4 items (adapted from Pearce & Sims, 2002)	.91	UWES 9 (Schaufeli et al., 2006)	.84	US	728	School employees	.28
Besieux et al (2015)	Transformational	MLQ 13 items (Avolio et al., 1999)	.95	18 items (Towers Watson, 2010)	.86	Belgium	5313	Banking	.48
Bird et al. (2012)	Authentic	ALQ (Walumbwa et al., 2008)	.84	Q12 Gallup (Buckingham & Coffham, 1999)	.88	US	633	Teaching staff	.61
Breevaart et al. (2014)	Transformational	TLI (Podsakoff et al., 1990)	.91	UWES 9 (Schaufeli et al., 2006)	.94	Netherlands	162	Various	.53
Bui et al. (2017)	Transformational	MLQ 20 (Avolio & Bass, 2004)	.97	UWES 9 (Schaufeli et al., 2002)	.96	China	691	Various	.64
Buil et al. (2016)	Transformational	7 items (Carless et al., 2000)	.90	UWES 9 (Schaufeli et al., 2003)	.89	Spain	323	Receptionists in hotels	.51
Cerne et al. (2014)	Authentic	ALI 16	.94	UWES 9 (Schaufeli et al., 2006)	.75	Slovenia	171	Manufacturing & processing	.32

Study	Leadership	Leadership measure		Engagement measure		Country	N	Context	
		(Neider & Schriesheim, 2011)							
Cheng et al (2014)	Ethical	ELS 10 items (adapted Brown et al., 2005)	.93	WES 18 items (Rich et al., 2010)	.96	Taiwan	670	Economic research	.48
De Clercq et al (2014)	Servant	SLQ 28 items (Liden et al., 2008)	.96	UWES 17 (Schaufeli et al., 2006)	.90	Ukraine	263	IT companies	.50
De Klerk & Stander (2014)	Empowering	LEBQ (Konczak et al, 2000)	.91	WES (Rothmann, 2010)	.90	SA	322	Various production areas	.36
Demirtas (2015)	Ethical	ELS 10 (Brown et al., 2005)	.95	UWES 17 (Schaufeli et al., 2002)	.88	Turkey	418	Firm in aviation logistics	.49
Demirtas (2017)	Ethical	ELS 10 (Brown et al., 2005)	.93	UWES 9 (Schaufeli et al., 2002)	.92	US	317	Aviation maintenance	.48
Den Hartog & Belschak (2012)	Ethical	ELS 10 (Brown et al., 2005)	.91	UWES 9 (Schaufeli & Bakker, 2004)	.92	Netherlands	167	Various jobs	.54
Den Hartog & Belschak (2012)	Ethical	ELS 10 (Brown et al., 2005)	.88	UWES 9 (Schaufeli & Bakker, 2004)	.91	Netherlands	200	Various jobs	.49
Ding et al. (2017)	Transformational	MLQ 5x (Bass & Avolio, 1994)	.94	WES 9 (Rich et al., 2010; He et al., 2014)	.90	China	162	Infrastructure projects	.27
Engelbrecht et al (2014)	Ethical	LES 17 (this study)	.97	UWES 17 (Schaufeli & Bakker, 2003)	.89	South-Africa	204	Various orgs	.60
Enwereuzor et al. (2016)	Transformational	TLI 22 (Podsakoff et al., 1990)	.83	UWES 9 (Schaufeli et al., 2006)	.89	Nigeria	224	Hospital nurses	.50
Espinoza-parra et al. (2015)	Transformational	MLQ 5x short (Molero et al., 2010)	.95	UWES 17 (Salanova et al., 2000)	.90	Chile	985	Police officers	.45
Ghadi et al. (2013)	Transformational	GTL (Carless et al., 2000)	.95	UWES 9 (Bakker, 2009)	.95	Australia	530	Various	.69
Giallonardo et al (2010)	Authentic	ALQ 16 (Avolio et al., 2007)	.91	UWES 17 (Schaufeli & Bakker, 2003)	.86	Canada	170	Registered nurses	.21
Goswami et al. (2016)	Transformational	TLQ 24i (Podsakoff et al., 1990)	.87	UWES 17 (Schaufeli et al., 2006)	.93	US	235	Consulting	.08
Gözükara & Simsek (2015)	Transformational	MLQ 5x (Bass & Avolio, 1995)	.96	UWES 17 (Schaufeli & Bakker, 2003)	.90	Turkey	101	Academic staff	.34

Gözükara & Simsek (2016)	Transformational	MLQ 5x (Bass & Avolio, 1995)	.96	UWES 17 (Schaufeli & Bakker, 2003)	.90	Turkey	252	Higher education	.47
Hansen et al (2014)	Transformational	TFL 15 (Rafferty & Griffin, 2004)	.96	UWES 9 items (Schaufeli et al., 2002)	.92	US	451	International firm	.42
Hassan & Ahmed (2011)	Authentic	ALQ 19 items (Avolio et al., 2007)	.91	UWES 9 (Schaufeli & Bakker, 2004)	.91	Malaysia	395	Banking	.41
Hawkes et al. (2017)	Transformational	LBS (Podsakoff et al., 1990)	.96	UWES 9 (Schaufeli et al., 2006)	.93	Australia	277	Various	.47
Hayati et al (2014)	Transformational	MLQ 20 (Bass & Avolio, 1997)	.91	UWES 17 (Schaufeli et al., 2002)	.73	Iran	240	Nurses	.70
Hsieh & Wang (2015)	Authentic	ALQ (Walumbwa et al., 2008)	.88	UWES 17 (Schaufeli et al., 2002)	.95	Taiwan	345	Manufacturing & service	.61
Jiang & Men (2017)	Authentic	Neider & Schriesheim (2011)	.97	11 items (Kang 2014; Saks, 2006)	.96	US	391	Various	.55
Joo et al (2016)	Authentic	ALQ (Avolio et al., 2005)	.88	UWES 9 (Schaufeli et al., 2006)	.91	Korea	599	Knowledge workers	.47
Khuong & Dung (2015)	Ethical	ELS 10 (Brown et al., 2005)	.93	UWES 17 (Schaufeli et al., 2002)	.90	Vietnam	312	Technicians	.37
Khuong & Yen (2014)	Ethical	ELS 10 (Brown et al., 2005)	.93	UWES 17 (Schaufeli et al., 2002)	.92	Vietnam	269	5 industries	.48
Kulophas et al. (2018)	Authentic	ALQ (Walumbwa et al., 2008)	.92	UWES 18 (Schaufeli et al., 2006)	.93	Thailand	605	Teachers several schools	.36
Kopperud et al (2014)	Transformational	MLQ 20 (Bass & Avolio, 1990)	.82	UWES 9 (Schaufeli et al., 2006)	.92	Norway	1226	Financial services	.44
Kopperud et al (2014)	Transformational	MLQ 20 (Bass & Avolio, 1990)	.91	UWES 9 (Schaufeli et al., 2006)	.89	Norway	291	Audit company	.34
Kovjanic et al. (2013)	Transformational	MLQ 19 (Bass & Avolio, 1995)	.97	UWES 9 (Schaufeli et al., 2006)	.95	Germany	190	Various	.71
Lee et al. (2017)	Empowering	LBQ (Pearce & Sims, 2002)	.86	UWES 9 (Schaufeli et al., 2006)	.91	Malaysia	134	Various	.37

Lewis & Cunningham (2016)	Transformational	TFL 18 (Rafferty & Griffin, 2004)	.97	UWES 17 (Schaufeli & Bakker, 2003)	.88	US	120	Nurses	.46
Manning (2016)	Transformational	MLQ 5x (Bass & Avolio, 1995)	.91	UWES 17 (Schaufeli & Bakker, 2003)	.90	US	441	Staff nurses, 3 hospitals	.37
Mauno et al. (2016)	Transformational	GTL 7 items (Carless et al., 2000)	.94	UWES 9 (Schaufeli et al., 2006)	.93	Finland	3466	Nurses	.29
Mayr (2017)	Transformational	MLQ 20 (Bass & Avolio, 1995)	.96	UWES 9 (Schaufeli et al., 2006)	.93	Germany	213	Volunteer fire fighters	.40
Mendes & Stander (2011)	Empowering	LEBQ (Konczak et al., 2000) + 2 items info sharing (Arnold et al., 2000)	.88	UWES 9 (Schaufeli et al., 2002)	.83	South-Africa	179	Chemical org	.25
Mitonga-Monga et al. (2016)	Ethical leadership	ELS 10 (Brown et al., 2005)	.91	UWES 9 (Schaufeli et al., 2002)	.90	SA	839	Railway transportation	.59
Moss (2009)	Transformational	TFL 15 (Rafferty & Griffin, 2004)	.89	UWES 9 vigor & dedication	.87	Australia	160	Various	.35
Mozammel & Haan (2016)	Transformational	MLQ 20 (Avolio & Bass, 2004)	.91	UWES 9 (Bakker & Schaufeli, 2003)	.89	Bangladesh	128	Banking	.18
Ochalski (2016)	Transformational	MLQ 5x (Avolio & Bass, 2004)	.91	UWES 17 (Bakker, 2011)	.90	US	157	Pharmaceutical	.67
Oh et al (2018)	Authentic	ALQ 16 (Walumbwa et al., 2008)	.75	UWES 9 (Schaufeli et al., 2006)	.80	South Korea	281	3 big corporations	.47
Park et al. (2017)	Empowering	12 items (Ahearne et al., 2005)	.93	WES 18 (Rich et al., 2010)	.97	South Korea	285	8 large firms	.59
Perko et al (2016)	Authentic	ALQ 16 (Walumbwa et al., 2008)	.94	UWES 9 vigor (Schaufeli et al., 2006)	.87	Finland	262	Various - public sector	.31
Popli & Rizvi (2015)	Transformational	MLQ 5x (Bass & Avolio, 1995)	.93	DDI E3 (Phelps, 2009)	.90	India	106	Service sector	.59
Popli & Rizvi (2016)	Transformational	MLQ 5x (Bass & Avolio, 1995)	.90	DDI E3 (Phelps, 2009)	.90	India	329	Service sector	.42

Study	Leadership	Leadership Scale		Engagement Scale		Country	N	Sample	
Prochazka et al. (2017)	Transformational	CLQ (Prochazka et al., 2016) based on MLQ	.96	UWES 9 (Schaufeli, 2015)	.92	Czech republic	307	Various	.44
Pourbarkhordari et al. (2016)	Transformational	16 items (Wang & Howell, 2010)	.94	UWES 9 (Schaufeli et al., 2006)	.81	China	202	Telecommunications	.40
Qin et al (2014)	Ethical leadership	ELS 10 (Brown et al., 2005)	.95	UWES 9 (Schaufeli et al., 2006)	.90	China	285	Tourism	.65
Sahu & Kumar (2018)	Transformational	MLQ 12 (Bass & Avolio, 1992)	.96	Gallup 12 (Mann & Ryan, 2014)	.88	India	405	IT	.54
Salanova et al (2011)	Transformational	MLQ 20 (Bass & Avolio, 1997)	.78	UWES 17 vigor & dedication (Schaufeli et al., 2002)	.84	Portugal	280	Nurses	.18
Scheepers & Elstob (2016)	Authentic	ALQ (Avolio et al., 2007)	.90	UWES 9 (Schaufeli et al., 2006)	.54	South-Africa	81	Financial service orgs	.52
Schmitt et al. (2016)	Transformational	11 items Dutch scale (De Hoogh et al., 2004)	.94	UWES 9 (Schaufeli et al., 2002)	.91	Netherlands	148	Various	.37
Seco & Lopes (2013)	Authentic	ALQ (Walumbwa et al., 2008)	.89	UWES 9 (Schaufeli et al., 2006)	.94	Portugal	326	Teachers several schools	-.57
Shu et al. (2015)	Authentic	ALI 16 (Neider & Schriesheim, 2011)	.87	UWES 9 (Schaufeli et al., 2006)	.91	Taiwan	350	Chinese workers	.18
Song et al (2013)	Transformational	MLQ 12 (Bass & Avolio, 1992)	.91	UWES 9 (Schaufeli et al., 2006)	.95	US	284	CTE teachers	.34
Song et al (2012)	Transformational	MLQ 6x 12 (Bass & Avolio, 1992)	.85	UWES 9 (Schaufeli et al., 2006)	.74	Korea	432	6 for-profit orgs	.38
Sousa & van Dierendonck (2014)	Servant	SLS 30 items (van Dierendonck & Nuijten, 2011)	.79	UWES 9 (Schaufeli et al., 2002)	.90	Portugal	1107	Two merging companies	.22
Sousa & van Dierendonck (2017)	Servant	SLS 30 items (van Dierendonck & Nuijten, 2011)	.93	UWES 9 (Schaufeli et al., 2002)	.94	Portugal	236	Various	.55
Stander et al. (2015)	Authentic	ALI (Neider & Schriesheim, 2011)	.93	UWES 8 items (Schaufeli et al., 2002)	.90	South-Africa	633	27 Hospitals	.42

Study	Leadership	Measure	α	Engagement	α	Country	N	Sample	r
Strom et al. (2014)	Transformational	MLQ 20 (Bass & Avolio, 1990)	.97	UWES 9 (Schaufeli et al., 2006)	.96	US	348	Various	.44
Tims et al (2011)	Transformational	MLQ 12 (Bass & Avolio, 1990)	.85	UWES 9 (Schaufeli et al., 2006)	.89	Netherlands	42	Various - 2 different orgs	.35
van Dierendonck et al (2014)	Servant	SL 14 (Ehrhardt, 2004)	.93	UWES 9 (Schaufeli et al., 2006)	.94	Netherlands	200	Support staff university	.49
van Schalkwyk et al. (2010)	Empowering	LEBQ (Konczak et al., 2000)	.96	UWES 17 (Schaufeli et al., 2002)	.93	South-Africa	168	Petrochemical lab	.39
Vincent-Höper et al (2012)	Transformational	MLQ 5x, 20 items (Bass & Avolio, 1995)	.97	UWES 9 (Schaufeli et al., 2006)	.95	Germany	1132	Various	.46
Wang & Hsieh (2013)	Authentic	ALQ (Walumbwa et al., 2008)	.94	UWES 17 (Schaufeli et al., 2002)	.95	Taiwan	386	Manufacturing & service	.58
Wang et al. (2017)	Transformational	TLI 22 (Podsakoff et al., 1990)	.92	UWES 17 (Schaufeli et al., 2002)	.90	China	422	IT company	.47
Wefald et al (2011)	Transformational	GTL 7 items (Carless et al., 2000)	.95	UWES 9 (Schaufeli et al., 2002)	.93	Netherlands	382	Finances	.27
Wei et al. (2016)	Authentic	ALQ (Walumbwa et al., 2008)	.92	UWES (Schaufeli & Bakker, 2004)	.92	China	248	Not specified	.35
Wihuda et al. (2017)	Empowering	12 items (Ahearne et al., 2005)	.94	UWES 17 (Schaufeli & Bakker, 2004)	.96	Indonesia	121	Hotels	.29
Whitford & Moss (2009)	Transformational	TFL 15 vision & recognition (Rafferty & Griffin, 2004)	.91	UWES 17 vigor & dedication (Schaufeli et al., 2002)	.89	Australia	165	Various	.22
Wong et al (2010)	Authentic	ALQ (Avolio et al., 2007)	.97	UWES 9 (Schaufeli et al., 2006)	.90	Canada	280	Registered nurses	.28
Zhou (2018)	Empowering	10 items (Pearce & Sims, 2002)	.84	UWES 9 (Schaufeli et al., 2006)	.81	China	220	11 hotels	.33
Zhu et al (2009)	Transformational	MLQ 5x (Bass & Avolio, 1997)	.84	GWA 12 items (Harter et al., 2002)	.86	South-Africa	140	Various	.58

Table 8. Substitution for Cronbach's alpha of the engagement questionnaires

Questionnaire	Average alpha	Times substituted
UWES 9 items (Schaufeli et al., 2006)	.89	4x
UWES 17 items (Schaufeli et al., 2002)	.90	6x

Table 9. Substitution for Cronbach's alpha of the leadership questionnaires

Leadership questionnaire	Average alpha	Times substituted
Transformational leadership		
GTL (Carless et al., 2000)	.95	1x
MLQ 20 (Bass & Avolio, 1995)	.91	5x
Authentic leadership		
ALQ (Walumbwa et al., 2008)	.89	1x
Ethical leadership		
ELS (Brown et al., 2005)	.93	1x

PART 2:

ON LEADER WELL-BEING

Chapter 3

When mindfulness interacts with neuroticism
to enhance transformational leadership:
the role of psychological need satisfaction

Transformational leadership is a popular and well-researched leadership style. Although much is understood about its positive consequences, less research has focused on antecedents of transformational leadership. In this research we draw upon self-determination theory and incorporate a self-regulatory approach to investigate if and how leader mindfulness influences transformational leadership. The analyses show that autonomy, competence and relatedness need satisfaction mediate between mindfulness and transformational leadership. Furthermore, the data show that neuroticism moderates the relationship between mindfulness and relatedness need satisfaction. Generally speaking, the association between mindfulness and relatedness need satisfaction is positive. When neuroticism is also high, mindfulness has the largest impact. Or conversely, when emotional stability is high, mindfulness has the smallest association with relatedness need satisfaction. This is in line with evidence suggesting that mindfulness may primarily exert its influence through emotional self-regulation. Furthermore, the moderated mediation model for relatedness satisfaction is significant, indicating that neuroticism is a boundary condition for the indirect effect of mindfulness on transformational leadership through relatedness need satisfaction.

Introduction

Transformational leadership is a well-known and well-researched leadership style (Bass & Avolio, 1990). It has been related to a number of outcomes including innovation (Kraft & Bausch, 2015), organizational commitment and citizenship behavior, job performance (Zhu, Newman, Maio, & Hooke, 2013), job satisfaction, team performance (Braun, Peus, Weisweiler, & Frey, 2012) and trust (Judge & Piccolo, 2004). In addition, since today's world is characterized by volatility, uncertainty, complexity and ambiguity (Rodriguez & Rodriguez, 2015) the role of leaders to provide guidance in these turbulent times is more important than ever. Transformational leaders fulfill this role since they envision a future, act as a role model, set performance standards, show determination and confidence, and are described as being able to transform interactions from 'pure self-interest to having interest for others' (Kopperud et al., 2014, p.3). In sum, transformational leaders aim at transforming employees' mindsets toward achieving organizational goals (Bass & Avolio, 1990). Transformational leaders are characterized by (1) idealized influence, i.e. leader charisma and making employees feel good, (2) intellectual stimulation, i.e. stimulating creativity and innovation, (3) inspirational motivation, i.e. providing a vision, and (4) individualized consideration, i.e. considering each employee individually and taking into account individual differences.

Although there has been much research investigating the consequences of transformational leadership for both employees and organizations, "little is known about the social and motivational factors that influence transformational leadership behavior" (Trépanier, Fernet, & Austin, 2012, p. 272). This is not to say that scholars on transformational leadership have neglected research on antecedents completely: research has investigated e.g. the role of cynicism about organizational

change (Bommer, Rubin, & Baldwin, 2004), peer leader behavior relationships (Bommer et al., 2004) and leaders' workplace relationships (Trépanier et al., 2012) or leader's emotion recognition and personality (Rubin, Munz, & Bommer, 2005). Nevertheless, *the actual mindset of leaders*, and the *way in which they pay attention*, has been less scrutinized (Sauer & Kohls, 2011). There is a need for research to investigate a possible pathway through which transformational leaders may perform better in our ever-changing, 'VUCA', world (Rodriguez & Rodriguez, 2015).

In order to address this need, we study *mindfulness*, which can be defined as a way to pay attention in a particular way: intentional, in the present moment and non-judgmental (Kabat-Zinn, 1994). Research has shown that mindfulness in an organizational context is related to reduced emotional exhaustion (i.e. the core component of burn-out; Jochen Reb, Narayanan, Chaturvedi, & Ekkirala, 2017), more job satisfaction (Hülsheger et al., 2013), more authentic functioning and work engagement (Leroy, Anseel, Dimitrova, & Sels, 2013), better decision making through reducing bias (Karelaia & Reb, 2015) and better performance (Reb, Narayanan, Chaturvedi, & Ekkirala, 2016). A recent meta-analysis on mindfulness interventions on the work floor has indicated that short interventions may be a valuable tool for managing psychological distress (Virgili, 2015). In sum, mindfulness has been shown to reduce stress and enhance well-being. Since previous research on transformational leadership has shown that a leader's happiness and well-being contribute to transformational leadership (Jin, Seo, & Shapiro, 2016), this study will examine whether mindfulness may help increase a leaders' psychological need satisfaction and consequently enhance transformational leadership.

To date, only one research study we know of linked mindfulness to transformational leadership (Pinck & Sonnentag, 2017). In this research, it was shown that transformational leadership mediates between leader mindfulness and employee well-being. We add to this work by investigating exactly how mindfulness is related to transformational leadership. Mindfulness may be beneficial for transformational leaders in several ways. In general, since mindfulness enhances general functioning through emotion regulation, enhancing focus and work engagement (Brown & Ryan, 2003), it should help leaders to perform acts in accordance with positive leadership styles. In addition, mindfulness should help facilitate "attentive, stimulating, and inspiring behavior that characterizes transformational leadership" (Pinck & Sonnentag, 2017; p. 2).

More specifically, mindfulness may be beneficial for transformational leadership because of the *potential effects on the four dimensions* of transformational leader behavior. Mindfulness could enhance (1) *idealized influence* since it is related to authentic functioning and work engagement (Leroy et al., 2013). The enhanced authentic functioning may help display the idiosyncratic and personal leader charisma, while the resulting vigor and motivation from work engagement may also be

inspirational for employees. Leaders who score high on mindfulness in general are seen as inspirational and influential role models within organizations because they can help solve difficult problems, make balanced decisions, are able to regulate their emotional responses to stressful events while being present with their employees (Bunting, 2016).

Second, mindfulness should help the leaders' propensity to provide (2) *intellectual stimulation*, since it helps to see situations with a "beginners' mind" (Brown & Ryan; Dane, 2011), allows leaders to observe situations more objectively (Bishop, Lau, Carmody, & Abbey, 2004; Pinck & Sonnentag, 2017) and helps overcome automatic processes and cognitive biases (Brown, Ryan, & Creswell, 2007; Karelaia & Reb, 2015). Mindfulness also enhances flexibility, curiosity and therefore creativity (Langer & Moldoveanu, 2000; Weick & Putnam, 2006). In sum, this helps leaders to provide their employees with novel ideas and perspectives.

Third, mindfulness should also be able to influence (3) *inspirational motivation* since it supports value-driven, ethical behavior (Eisenbeiss & Van Knippenberg, 2015; Guillén & Fontrodona, 2018; Ruedy & Schweitzer, 2010). That way, mindfulness helps leaders to better understand and therefore act in accordance with their values and goals (Glomb, Bono, & Yang, 2011; Brown & Ryan, 2003; Pinck & Sonnentag, 2017). Mindfulness can thus help the leader to clarify values and be an authentic and engaged role model (Leroy et al., 2013), present and able to inspire and motivate employees.

Last, mindfulness helps leaders (4) to *consider each employee individually* (i.e. individualized consideration) through enhanced awareness when communicating with employees (Pinck & Sonnentag, 2017; Bunting, 2017). This should help leaders to better regulate their (possible negative and automatic) reactions to employees, while also taking into account the exterior circumstances in which the employee operates (Dane, 2011). The awareness in the present moment should help leaders to "consider subordinates' personal needs and wishes before acting" (Pinck & Sonnentag, 2017, p. 2). Research has already shown that mindfulness enhances perspective taking and empathic concern in romantic couples (Block-Lerner, Adair, Plumb, Rhatigan, & Orsillo, 2007). In sum, there are several ways through which mindfulness supports transformational leadership.

In addition, we draw mainly on *self-determination theory* and a *self-regulatory approach* to further theorize how and under which circumstances mindfulness leads to transformational leadership. Based on self-determination theory (Deci & Ryan, 2008), we argue that psychological need satisfaction is one of the possible underlying processes that explains how leader mindfulness impacts transformational leadership. When leaders feel well through mindfulness and psychological need satisfaction, they have more resources to perform exceptional transformational leader behaviors. This assumption is also in line with predictions for the conservation of resources theory

(Hobfoll, 2001), which proposes that the loss of (personal) resources leads to stress. Since mindfulness helps to manage stress, and therefore conserve cognitive resources, it might ensure that energy levels remain sufficiently high to perform transformational leader behaviors. We propose that this may be especially true for transformational leadership, based on the reasons outlined above that specify exactly how mindfulness can benefit transformational leadership.

Self-determination theory is a very influential theory in occupational health psychology on human motivation and optimal functioning (Van Den Broeck, Vansteenkiste, & De Witte, 2008): the need for autonomy, competence and relatedness represent the fundamental nutrients that are necessary for growth, integrity and well-being (Deci & Ryan, 2000). These basic needs are proposed to drive an autonomous, even intrinsic, motivation at work (Deci & Ryan, 2008; Van Den Broeck et al., 2008). Psychological need satisfaction has been related to well-being, health and performance (Deci & Ryan, 2000). It is plausible to assume that leaders whose psychological needs are fulfilled, will be more energized to perform transformational behaviors that go above and beyond their managerial job description. Furthermore, since the influence a leader has on his/her own psychological need satisfaction depends on their mindset, decision making and self-regulation, mindfulness may be one of the key drivers of this process (Glomb et al., 2011; Hülsheger, Alberts, Feinholdt, & Lang, 2013). More specifically, mindfulness may impact the three psychological needs in different ways (see 'theoretical development' below), analogous to the arguments we laid out with regards to how mindfulness may impact transformational leadership directly.

We further adopt a *regulatory approach* and propose that mindfulness also enhances adaptive cognitive functioning through influencing rumination or catastrophizing and general negative emotional reactivity (Prins, Decuypere, & Van Damme, 2014; Barnhofer, Duggan & Griffith, 2011). Put more simply: meta-analyses have also shown that mindfulness is related to reduced distress among working adults (e.g. Virgili, 2015) and to enhanced emotion regulation (Mesmer-Magnus, Manapragada, Viswesvaran, & Allen, 2017). Brain research on the effects of mindfulness on the amygdala and prefrontal control-mechanisms are in line with this finding (Tang, Hölzel, & Posner, 2015). Research has also shown that mindfulness and neuroticism interact to produce effects on emotional reactivity and mood: when mindfulness is high, effects of high neuroticism or catastrophizing can be neutralized (Hülsheger, Alberts, Feinholdt & Lang, 2013; Prins et al., 2014). Moreover, especially the ability to describe inner experiences seem to be helpful in dealing with negative emotions (Barnhofer et al., 2011). This is important for leaders as well, since research has shown that leader stress influences leader behavior (Harms, Credé, Tynan, Leon, & Jeung, 2017). Negative aspects that seem to threaten leaders' well-being and consequently diminish their transformational leader behaviors are mostly depression, anxiety and workplace alcohol

consumptions (Byrne et al., 2014). Therefore, mindfulness as a tool to help cope with these situations and emotions, may be fruitful. In this sense, mindfulness may specifically help leaders to display transformational leadership when neuroticism (of negative emotion and distress) is high. In contrast, when leaders are already emotionally stable and less prone to behaving overrun by negative affect in stressful situations, mindfulness may be less influential for fostering transformational leadership. Therefore, we propose that neuroticism moderates the relationship between mindfulness and psychological need satisfaction. In sum, we argue that the relationship between leader mindfulness and transformational leadership may be moderated by emotional stability and mediated by psychological need satisfaction. *Figure 1* depicts the theoretical research model.

Figure 1. Theoretical model
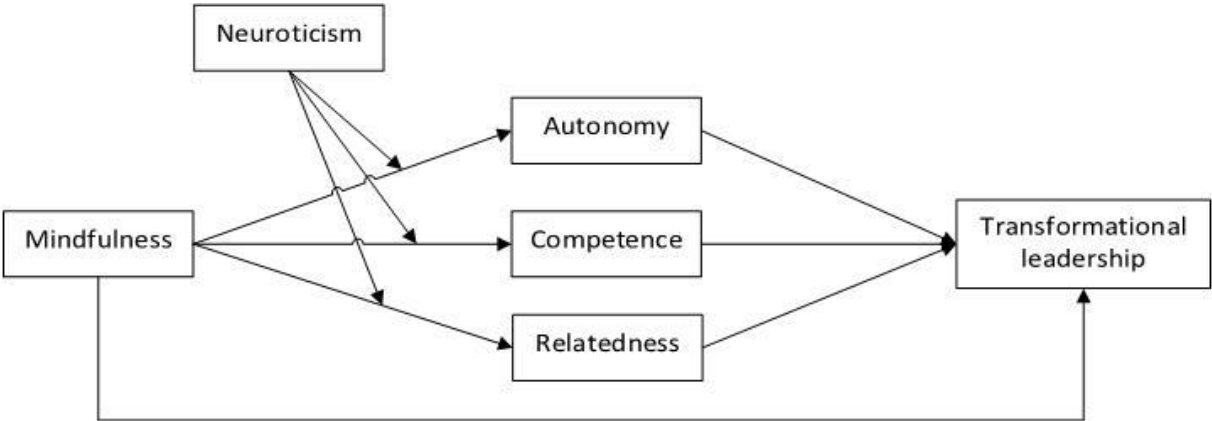
Our research makes several theoretical contributions to the literature. First of all, we outline specifically how mindfulness may benefit transformational leadership, and hereby build on and extend previous theorizing on the specific link between mindfulness and transformational leadership (Pinck & Sonnentag, 2017). By studying mindfulness in relationship with transformational leadership, this study supports the emerging field on leader mindfulness (Reb & Atkins, 2015). Second, by adopting a perspective based on self-determination theory, we advance the research by identifying an underlying mechanism that can explain mindfulness' effects on transformational leadership. In the leadership literature, more research has focused on how transformational leadership leads to followers' psychological need satisfaction, rather than on psychological need satisfaction of leaders themselves (Trépanier et al., 2012), although it may be a vital process through which leaders are motivated for their crucial roles in organizations . Third, we advance the field on leader personality research through proposing that personality does not only directly influences leadership (Bono & Judge, 2004), but may also be a moderating factor

influencing transformational leadership. More specifically, we propose that the negative effects of neuroticism may be mitigated by mindfulness. This addresses calls for research specifically for personal variables that moderate between leader mindfulness and transformational leadership (Pinck & Sonnentag, 2017). Fourth, we explore antecedents of transformational leadership that can be influenced by leaders themselves. From a practical standpoint, the relevance of mindfulness for transformational leadership indicates changing one's mindset or following a mindfulness training protocol may enhance transformational leadership on the work floor. This is valuable information for organizations who have already recruited leaders and want them to perform optimally.

Theoretical basis and hypothesis development

Most research on transformational leadership has focused on the outcomes with regards to employees or the organization. The majority of these studies have been focused on the effects on subordinates' well-being, while *leaders' own well-being* and the effect on their leadership abilities has been less scrutinized (Trépanier et al., 2012). To expand on this research, we include a relatively new concept (Dane, 2011) as an antecedent to transformational leadership, i.e. mindfulness. To explain its effect on transformational leadership, we focus on psychological need satisfaction: a well-validated psychological construct which has been shown to have positive effects on employees' functioning that could easily translate to leaders' psychological functioning (Deci & Ryan, 2000; Van Den Broeck et al., 2008). Furthermore, the same can be said about the role of mindfulness: there is a growing body of research that shows a positive impact of leader mindfulness on employee well-being (Reb et al., 2014), while the role of leader mindfulness on positive leadership styles, e.g. transformational leadership, has been largely neglected. We only know of one study that examined the interplay of mindfulness and transformational leadership, which again focused on employee well-being, rather than leader-centric variables (Pinck & Sonnentag, 2017). With this study we aim to unravel the black box of explaining mechanisms with regards to mindfulness' effects on transformational leadership.

The direct relationship of mindfulness and transformational leadership

We draw on *conservation of resources theory* to propose that mindfulness is positively related to transformational leadership. Conservation of resources theory proposes that people possess a finite number of resources, e.g. self-esteem, time, knowledge or conditions (job security or social relationships at work). In an effort to prevent suffering, people strive to obtain and protect these resources (Hobfoll, 2001). Individuals who lack these resources will experience stress, and are prone to further loss. Therefore depletion may lead individuals to adopt defensive postures to conserve whatever they have left (Hobfoll, 2001). Research has also shown that e.g. depleted employees score higher on burnout (Halbesleben, 2006). Since transformational leaders inspire

their followers, intellectually stimulate them and are individually considerate (Bass, 1999), they extend more effort into their leadership role than e.g. transactional leaders. Performing transformational leader behavior therefore requires sufficient personal resources (Byrne et al., 2014). We propose that mindfulness supports the conservation of resources (Hobfoll, 2001), since it enhances self-regulation and therefore self-care (Brown & Ryan, 2003). In this sense, mindfulness will help protect leaders from a resource deficit and a negative stress-cycle with further depletion. A recent meta-analysis shows that mindfulness is negatively related to both stress and burnout (Mesmer-Magnus et al., 2017). Therefore, we propose that when trait mindfulness is a (personal) resource for leaders, it is more likely they enact transformational leadership.

Mindfulness as a *personal resource* may benefit several leadership styles, not only transformational leadership. Nevertheless, considering the relevance of transformational leadership in today's VUCA world (Rodriguez & Rodriguez, 2015), we are specifically interested in how mindfulness impacts transformational leadership. In addition, based on theorizing and empirical research with regards to mindfulness, we proposed that mindfulness has distinct effects on the four dimensions of transformational leadership specifically. In sum, mindfulness enhances (1) idealized influence since it relates to authentic functioning (Leroy et al., 2013), it supports (2) intellectual stimulation of employees because of the enhanced objectivity, overcoming of biases and enhanced creativity (Brown & Ryan, 2003; Dane, 2011; Bishop et al., 2004; Karelaia & Reb, 2015; Langer & Moldoveanu, 2000; Weick & Putnam, 2006). Mindfulness also influences (3) inspirational motivation since it supports value-driven, ethical behavior and a better understanding of own values and needs (Brown & Ryan, 2003; Eisenbeiss & Van Knippenberg, 2015; Ruedy & Schweitzer, 2010; Guillén & Fontrodona, 2018). Mindfulness can also be related to (4) individualized consideration since the enhanced awareness when communicating with employees, increased empathy and decreased emotional reactivity, should enable the leader to make more idiosyncratically helpful and supportive decisions with regards to employees (Pinck & sonnentag, 2017; Bunting, 2017; Block-Lerner et al., 2007). Therefore we propose hypothesis 1:

Hypothesis 1: Mindfulness is positively related to transformational leadership

The mediating role of psychological need satisfaction

We draw on *self-determination theory* (SDT, Deci & Ryan, 2008), to advocate that psychological need satisfaction may be one of the underlying processes that help explain how leader mindfulness impacts transformational leadership. Previous research has already established the importance of psychological need satisfaction for transformational leaders (Trépanier et al., 2012). In this study

we build on this research by proposing that mindfulness may positively impact a leaders' self-determination. More specifically, mindfulness can be specifically associated with enhancing autonomy, competence and relatedness need satisfaction. *Autonomy* refers to a sense of volition and freedom (Van Den Broeck, Vansteenkiste, De Witte, Soenens, & Lens, 2010). Mindfulness influences autonomy since it is related to leader self-mastery and self-regulation (King & Haar, 2017). Mindfulness is also characterized by an open, present moment attention span in which information can be processed more accurately (Karelaia & Reb, 2015). This way, mindfulness enhances creativity (Carson & Langer, 2006; Zheng & Liu, 2017) and decreases decision biases in decision making (Hafenbrack, Kinias, & Barsade, 2014; Kiken & Shook, 2011). Furthermore, mindfulness helps to create a 'space' between trigger and response, in which difficult situations can be adequately assessed and emotional responses can be better managed. This is also shown by neuroscience research indicating that mindfulness helps regulate affect through enhancing prefrontal cortex inhibition of the amygdala (emotional) responses (Goleman & Davidson, 2017). All of this may contribute to a feeling of volition. Furthermore, when leaders' autonomy needs are met, they are more likely to be able to stimulate employee autonomy, which is a part of transformational leadership (Bass, 1999). In addition, SDT posits that autonomy deficits are sought to be replenished (Deci & Ryan, 2008). Therefore, based on a resource-maintenance perspective on autonomy (Van Quaquebeke & Felps, 2016), a leader who is low on autonomy is less likely to be able to provide autonomy to employees. Conversely, autonomy need satisfaction will lead to more transformational leadership.

Hypothesis 2a: Leader autonomy need satisfaction mediates the relationship between mindfulness and transformational leadership.

Competence, the second psychological need, can be described as succeeding at challenging tasks (Van Den Broeck et al., 2010). Mindfulness enhances *competence* need satisfaction since it is directly related to self-rated job performance (Mesmer-Magnus, 2017), as well as a higher leader effectivity rated by the employees (Waldron & Ebbeck, 2015; Wasylkiw, Holton, Azar, & Cook, 2016) and the leaders' managers (King & Haar, 2017). Mindfulness leads to performance and effectivity through several possible pathways: the effect of mindfulness on (emotional) self-regulation, information processing and decision making will certainly contribute to leader effectivity and consequently the feeling of competence (Karelaia & Reb, 2015). In addition, the positive association of mindfulness with efficacy or confidence, work effort and job satisfaction, as well as the negative relationship with stress, burn-out and work withdrawal (Mesmer-Magnus,

2017) are also relevant in this context. Moreover, through the process of distancing and (re)perceiving a certain situation, the leader can become less controlled by thoughts and emotions (Verdorfer, 2016), enhancing a feeling of personal competence as well. When leaders feel competent and effective, when they "do the right thing", they act as role models (Kelloway & Barling, 2000). This provides inspirational motivation for employees, which is a part of transformational leadership. In addition, high levels of leader self-esteem, which can be based on competence, are also associated with transformational leadership (Gretchen & Robert, 1996). Therefore we propose the following hypothesis:

> *Hypothesis 2b: Leader competence need satisfaction mediates the relationship between mindfulness and transformational leadership.*

The last psychological need, *relatedness*, refers to being connected to others and feeling cared for (Van Den Broeck et al., 2010). First of all, mindfulness has been shown to influence employee relatedness need satisfaction (Reb, Narayanan, & Chaturvedi, 2014). Since a work relationship is a two-way street (Bauer & Green, 1996), the reverse may also be true: when the leader-employee relationship is good, it is plausible that the relatedness need satisfaction of the leader is also more satisfied. Furthermore, the association between mindfulness and interpersonal relations at work has also been shown in a recent meta-analysis (Mesmer-Magnus et al., 2017). Mindfulness may help leaders to connect with their employees through being present in the moment and through listening attentively (Ucok, 2006). It helps leaders to communicate more clearly and develop trust (Frizzell, Hoon, & Banner, 2016; Kearney, Kelsey, & Herrington, 2013; Roberts & Williams, 2017), which also leads to good working relationships. This is in line with research showing that mindfulness increases empathy (Block-Lerner et al., 2007). When leader relatedness need satisfaction is high, and the connection with their employees is satisfactory, the leader is able to pay more attention to developmental needs of followers. This strengthens the supporting and coaching role of leaders, which relates to the individualized consideration dimension of transformational leadership (Bass, 1999).

> *Hypothesis 2c: Leader relatedness need satisfaction mediates the relationship between mindfulness and transformational leadership.*

The moderating role of neuroticism

First of all, mindfulness relates to an enhanced attention and awareness in the present moment, without judgement. Generally speaking, it is a broad and open awareness (Dane, 2011). The level of mindfulness can vary from person to person, but is it also trainable (Brown & Ryan, 2003). A very prominent feature or working mechanism of mindfulness is the enhanced *self-regulation*, which is also captured in a very early definition from Kabat-Zinn (1982, p.34): "Meditation can be defined as the intentional self-regulation of attention from moment to moment". Through the focus on the present moment, there is less distraction from worries about the future or past (Brown & Ryan, 2003). Through accepting the present moment as it is, stress is diminished (Shapiro, Wang, & Peltason, 2015) and negative effects from excessive worrying, e.g. catastrophizing, are counteracted (Prins et al., 2014). Mindfulness is thus a way to avoid automatic assumptions or (emotional) reactions. Research indeed indicates that mindfulness is negatively related to neuroticism and negative affect (Giluk, 2009). It enables leaders to respond more reflective instead of reactive, which is also shown by brain research on amygdala responsiveness to emotional stressors (Goleman & Davidson, 2017). Therefore, mindfulness is especially helpful to enhance emotion regulation and respond effectively to numerous stressors or encounters in the work place. Research has also shown that when mindfulness is high, potential negative effects of high neuroticism can be neutralized (Barnhofer et al., 2011). Based on these findings, we propose that mindfulness is especially effective when leader neuroticism is high.

Neuroticism can also be related to psychological need satisfaction. In earlier research that provided the basis for the Self-Determination Theory, it was posited that there are individual differences with regards to '*causality orientations*' that can be captured within an autonomy, control and impersonal orientation. These causality orientations influence how people interpret and respond to events (Deci & Ryan, 1985). Interestingly, the authors posit that the causality-orientations have relationships with personality constructs. Specifically, they found associations between the impersonal causality orientation (which is equivalent to a feeling of a lack of competence) and negative emotions (i.e. neuroticism; Deci & Ryan, 1985). Other research e.g. reports positive associations between autonomy and emotional stability (Barrick & Mount, 1993). It is conceivable that neuroticism interacts with psychological need satisfaction in several ways. First, when negative affect is high, this may impede a feeling of competence. This is implicitly shown in meta-analytic research with regards to the effects of work demands on job performance: when stress and negative affect are high, because of e.g. work-life conflict or role ambiguity, performance suffers (Gilbao, Shirom, Fried & Cooper, 2008). Consequently, one may feel less competent. Second, emotional stability may influence autonomy need satisfaction: when one is

emotionally stable, one is *internally free* from negative emotionality that may be distracting or impede work performance. Third, emotional stability or neuroticism can have an impact on the formation of work relationships: high neuroticism may e.g. impede one's capacity to be present for other people on the work floor and reduce the ability to connect to employees.

Bringing these perspectives together, we propose that neuroticism acts as a moderator in the relationship between mindfulness and psychological need satisfaction. More specifically, we propose that mindfulness-based emotion regulation will enhance autonomy need satisfaction through aiding the *personal freedom* from (emotional) reactivity. Second, it will aid competence need satisfaction through enhanced *leader effectivity*. And third, it will enhance relatedness need satisfaction through enhanced *attentive listening and communication* abilities (Bunting, 2016; Kets de Vries, 2014).

Hypothesis 3a: Neuroticism moderates the relationship between mindfulness and autonomy need satisfaction, such that the relationship is stronger for those high in neuroticism.

Hypothesis 3b: Neuroticism moderates the relationship between mindfulness and competence need satisfaction, such that the relationship is stronger for those high in neuroticism.

Hypothesis 3c: Neuroticism moderates the relationship between mindfulness and relatedness need satisfaction, such that the relationship is stronger for those high in neuroticism.

The moderated mediation model

Incorporating a regulatory approach into the self-determination perspective, our research proposes an integrated model in which neuroticism moderates the mediating mechanism of psychological need satisfaction in the relationship between mindfulness and transformational leadership. Employees with high levels of neuroticism will see the most benefits with regards to the effect of mindfulness on psychological need satisfaction, since mindfulness will act as a buffer for neuroticism and make sure that leaders high in neuroticism can also be high on autonomy, competence and relatedness. Consequently, leaders high in need satisfaction will have more resources to engage in transformational leader behaviors. In contrast, leaders low in neuroticism might experience a lower self-regulatory impact of mindfulness on psychological need satisfaction. Mindfulness may still have a direct impact on psychological need satisfaction and transformational leadership, but we hypothesize the effect will be smaller. These proposed relationships are summarized in hypothesis 4.

Hypothesis 4: Neuroticism moderates the mediating effect of psychological need satisfaction on leader mindfulness and transformational leadership, such that the mediating effect is stronger for those high rather than low on neuroticism.

Method

Sample and procedure

The data from this study came from head nurses in leadership positions in elderly care homes. Structured paper-and-pencil questionnaires were administered in October-November 2017. The supervisors of the organizations were informed on the research goal and asked to identify head nurses who could participate during breaks. To enhance data quality, a paper-and-pencil data collection was issued on site. In total, 108 elderly homes in Belgium were visited, of which 277 head nurses filled out the questionnaire. The data were part of a larger survey.

Fifty-five head nurses were male (19.9%) and 217 were female (78.3%), 5 head nurses did not report their gender. The average age was 45 years old (SD 9.7), ranging from 22 to 74 years. The average tenure was a nurse was 15 years (SD 9.2), ranging from 0 to 37 years. The average tenure as a head nurse was 11.3 years (SD 8), ranging from 0 to 35 years. The average span of control was 19.2 employees (SD 8.9), ranging from 2 to 50. Participants' educational background: ranged from 5 with vocational secondary education (1.8%), 4 with technical secondary education (1.4%), 3 with general secondary education (1.1%), 225 with higher education (81.2%) and 30 with university education (10.8%). See *Table 1* below for a summary.

Table 1. Demographic information

Variable	277 supervisors
Average age (SD)	45.38
Gender (% female)	78.3
Tenure as an employee (in years)	15.06
Tenure as a supervisor (in years)	11.27
Span of control	19.24
Educational background	
Vocational secondary education (%)	1.8
Technical secondary education (%)	1.4
General secondary education (%)	1.1
Higher education (%)	81.5
University education (%)	10.8

Common method bias.

Several a-priori procedures were included to minimize common-method variance (as proposed in Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). First, head nurses were ensured the data would be treated *confidentially*, without any repercussions for them personally. Second, we only used measures from which the items were carefully constructed and from which the *psychometric properties* were demonstrated in prior research. Third, we made sure there was *psychological separation* of the focal constructs in the survey, by dividing them into different survey 'chapters'. This way, questionnaires were separated by themes, headings and blank space under the page (each new questionnaire also started on new page). Finally, statistical procedures were used to assess the potential level of common-method variance.

Measures

In order to obtain high content validity, all measures were derived from literature. All items of the surveys below were administered in Dutch and rated on a 7-point scale (1 = I completely disagree to 7 = I completely agree). Head nurses rated their own levels of mindfulness, transformational leadership, need satisfaction and emotional stability. Self-report measures are appropriate for these variables, since especially the level of mindfulness, need satisfaction and emotional stability are 'private events' that can best be assessed by the focal employee (Conway & Lance, 2010). In addition, the measurement of transformational leadership has a long-standing tradition of being measured with self-report questionnaires as well (see e.g. Besieux, Baillien, Verbeke, & Euwema, 2015; Bui, Zeng, & Higgs, 2017; Kovjanic, Schuh, & Jonas, 2013). Leaders may be more aware of the subtle things they do to be a role model, provide inspiration, stimulate employees intellectually and consider their individuality. Moreover, the answers to the self-report questionnaire can be seen as behavioral intentions that represent a readiness to act as a transformational leader. Based on the theory of reasoned action (Fishbein & Azjen, 1975), intentions are good predictors of volitional behaviors. Therefore, self-report measures can also effectively measure leadership.

Transformational leadership

Transformational leadership was measured using 12 items from the Multifaceted Leadership Questionnaire (MLQ; Avolio, Bass, & Jung, 1999; Bass & Avolio, 1990). Because of time constraints, we chose a more concise measure, as was done in previous studies with busy leaders (see e.g. Peterson, Galvin, & Lange, 2012). The short MLQ version with 12 items concerning 4 dimensions has been validated and used in previous research (Bae, Song, Park, & Kim, 2013; Song, Bae, Park, & Kim, 2013; Tims, Bakker, & Xanthopoulou, 2011). Items were translated in Dutch using a translation-back translation procedure with two iterations (Brislin,

1990). In addition, the items were adapted to the context (i.e. nursing homes), therefore the general 'others' in the scale was replaced by 'my nursing staff'. The scale included 3 items for each of the four dimensions of transformational leadership, including idealized influence (e.g. "I make sure my nursing staff feels good when I am around."), inspirational motivation (e.g. "I use a few simple words to express what we can do."), intellectual stimulation (e.g. "I help my nursing staff to think in new ways about old problems.") and individual consideration (e.g. "I help my nursing staff to develop themselves."). An English translation of the exact items can be found in the *appendix*. In line with previous research and recommendations from authors, these items were combined into one factor (Cronbach's α = .899) (Judge & Bono, 2000; Bono, Foldes, Vinson, & Muros, 2007; Bycio, Hackett, & Allen, 1995). This is because all the measured behaviors are expected to contribute to transformational leadership *an sich* (Avolio et al., 1999; Bass & Avolio, 1990), which is also supported by the medium to high intercorrelations between the four dimensions (r = .51-.80).

Need satisfaction

Need satisfaction was measured with 18 items from the Work-Related Basic Need Satisfaction Scale (W-BNS). The scale included 6 items for each of the three dimensions, comprising the basic psychological needs for autonomy (e.g. "The tasks I have to do at work are in line with what I really want to do."), competence (e.g. "I really master my tasks at my job.") and relatedness (e.g. "At work, I feel part of a group."). The scale has been extensively validated in Dutch (Van Den Broeck et al., 2010) and showed a good internal consistency (Cronbach's α = .894). The Cronbach's alfa was also examined for each factor separately: autonomy (α = .817), competence (α = .86), relatedness (α = .785). Since the three needs are conceptually different, we assessed their effects separately, as was done in previous research

Mindfulness

Mindfulness was measured with 15 items from the Mindful Attention and Awareness Scale (Brown & Ryan, 2003), which assumes that mindfulness has a unidimensional structure. This questionnaire measures awareness and attention with regards to what is taking place in the present (e.g. "I could be experiencing some emotion and not be conscious of it until sometime later.") and has been validated in Dutch (Schroevers & Nyklíček, 2008). The internal consistency in the present study was satisfactory (Cronbach's α = .857).

Neuroticism

Neuroticism was measured with two items for emotional stability from the short 10-item Big Five Inventory (BFI) questionnaire for research contexts with time constraints (Rammstedt & John, 2007): I see myself as someone who… (1) is relaxed, handles stress well; (2) gets nervous

easily. The questionnaire was designed to capture as much variance as possible with the smallest item number as possible. Linked to this purpose, the two-item scale can present lower internal consistency (Rammstedt & John, 2007). On the other hand, the (test-retest) reliability and overall validity of this scale have been shown to be adequate and item loadings are similar to those of the larger Big Five Inventory with 44 items (Rammstedt & John, 2007). Convergent validity with the NEO-PI-R (and its facets) has also been established (Rammstedt & John, 2007). The scale has been successfully used in previous research (e.g. Daly, Liou, Tran, Cornelissen, & Park, 2014). Research has shown that Cronbach's alfa underestimates true reliability of a two-item scale (Eisinga, te Grotenhuis, & Pelzer, 2013). Therefore the Spearman-Brown coefficient was calculated (Eisinga et al., 2013), which in this case showed similar results (Spearman-Brown = .591; Cronbach's alfa α = .590). The reliability results were in line with other studies using 10-item personality measures (e.g. Perreault, Cohen, & Blanchard, 2016). The correlation between the two items is probably not high enough to yield more than moderate reliability indices (Pearson's r = .42) (Eisinga et al., 2013). A lower reliability is to be expected, since it is a very small questionnaire designed to efficiently capture different variance in emotional stability (Rammstedt & John, 2007).

Demographic control variables

We controlled for supervisors' gender, age, tenure as an employee (nurse), tenure as a supervisor (head nurse) and span of control. Gender has been shown to be related to need satisfaction, with women scoring slightly higher (Van Den Broeck, Vansteenkiste, De Witte, & Lens, 2008). Furthermore, tenure and span of control were added, since we expect this to influence the three subsdimensions of need satisfaction of the supervisor (Bernerth & Aguinis, 2016). Tenure and span of control may influence the need for autonomy and competence, since a high tenure may ensure a supervisor to work more autonomous and a high span of control may increase the workload to diminish the amount of autonomy. Tenure and span of control may also influence the need for relatedness, since a high tenure may have caused friendships to develop, but a high span of control may limit the time a supervisor spends with his/her colleagues or employees.

Analytical strategy

First, to examine the factor structure of each construct separately, a regular factor analysis was performed in SPSS 24 to see of each of our concepts loaded significantly on the specified factors. Second, confirmatory factor analyses (CFA) were performed with Lavaan in R (Rosseel, 2012) to ensure the discriminant validity of the measures. Third, to test the mediation and moderation effect, multiple regression analyses were conducted to assess each component. The SPSS macro developed by Preacher, Rucker, & Hayes (2007) which uses a bootstrapping method, was then used to further estimate the bias-corrected confidence estimates for the mediation and

moderation, as well as for testing the moderated mediation hypothesis. In this last step, the significance of the conditional indirect effects for different values of the moderator variable (- 1 STD and + 1 STD) are estimated as well. Bootstrapped confidence intervals are interesting to use since they avoid problems with non-normal distributions of indirect effects (MacKinnon, Lockwood, & Williams, 2004). Prior to any analyses, the interaction variables were mean-centered (Cohen, Cohen, West, & Aiken, 2003). To aid interpretation with the moderation figure, the variables were not centered there.

Results

Preliminary analyses

Common method bias analyses

To examine the level of common method bias, Harman's (1976) recommendation was followed: all the variables in the study were loaded into an exploratory factor analyses. Eleven factors with eigenvalues greater than 1 emerged. The first factor only accounted for 22.87% of the variance and the 11 factors accounted for 63.65% of the total variance. The first factor only accounts for a small portion of the variance. Furthermore, CFA (see below) indicated that a one factor solution for our measurement model showed very poor fit and differed significantly from the hypothesized model (Δ (SB)χ^2(6) = 20.829, p <.001). Therefore, according to this first analysis, common method bias did not seem to be a serious threat to the validity of the analyses. Since this procedure in itself is not a perfect measure of common method bias (Podsakoff et al., 2003), we also conducted an analysis in which we added an unmeasured latent factor to the measurement model. If such a method factor existed, the model would have a better fit compared with the model without such a factor (Podsakoff et al., 2003). Adding this additional latent factor did result in a slightly better fit (χ^2 = 1312.800, d.f. 880, p < 0.05), indicating the possibility of a small amount of common method bias influencing the results despite our apriori efforts to counteract it. This is unfortunate, but it does not exclude that there may be merit to our results (Conway & Lance, 2010), especially when interactions are concerned (Evans, 1985; Siemsen et al., 2010).

Factor loadings

The regular factor structure of each construct was examined separately using principal axis factoring with a specified loading with a fixed number of factors (=1). Principal axis factoring was used since it does not assume multivariate normality and thus provides a more robust test of the data (Gie Yong & Pearce, 2013).

The factor loadings for mindfulness ranged from .38 to .71. Since 2 items loaded lower than .4 on the general factor, it was decided to omit them from further analysis (see *appendix*). This slightly improved the Cronbach's alfa (from .86 to.86). The factor loadings for need satisfaction

were analyzed separately for each of the three needs (see below). The factor loadings of autonomy need satisfaction ranged from .58 to .74. The factor loadings from competence need satisfaction ranged from .56 to .90. The factor loadings from relatedness need satisfaction ranged from .33 to .70. It was decided to omit the lowest loading variable (*see appendix*). This increased Cronbach's alfa from .78 to .80. The factor loadings for transformational leadership ranged from .58 to .76. Factor loadings of emotional stability were not examined, since a factor with 2 variables is only reliable when the variables themselves are highly correlated (>.70) (Yong & Pearce, 2013), which was not the case (r = .42).

Measurement model

Confirmatory factor analyses (CFA) were performed to ensure the discriminant validity of the measures. There is a good fit between the hypothesized model and tha data when χ^2/df is lower than 3, the Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) are close to .95, the root mean square error of approximation (RMSEA) and the standardized root mean square residual (SRMR) are close to 0.06 and 0.08, respectively (Hu & Bentler, 1999). To adjust for non-normality with ordinal data, the Satorra-Bentler $(SB)\chi^2$ difference test was used. Results are summarized in *Table 2* (on the next page).

The confirmatory factor analysis with six factors (transformational leadership, emotional stability, mindfulness and 3 for autonomy, competence and relatedness need satisfaction) had the best fit, albeit somewhat below standard recommendations [$(SB)\chi^2$ (887) = 1442.030, χ^2/df = 1.63, CFI = 0.84, TLI = 0.83, RMSEA = 0.056, SRMR = 0.068]. This is not necessarily problematic, since the model fit indices may be sensitive to a large number of parameters (e.g. data structure, the particular index and sample size) and golden standards for model fit may not have a huge utility (Marsh, Hau, & Wen, 2009). In addition, scholars have argued the importance of considering theory-relevant criteria for assessing model fit (Barrett, 2007). Taking this into account, our hypothesized 6 factor-model fit was significantly better than a four factor-model with the need satisfaction scales clustered [$\Delta \chi^2$ (893) = 20.829***], a three factor-model with mindfulness and need satisfaction [$\Delta \chi^2$ (899) = 303.3***], a three factor-model with need satisfaction and leadership [$\Delta \chi^2$ (899) = 342.08***], a three factor-model with leadership and neuroticism [$\Delta \chi^2$ (899) = 264.11***], a two factor-model with mindfulness and need satisfaction [$\Delta \chi^2$ (901) = 344.33***], a two factor-model with need satisfaction and leadership [$\Delta \chi^2$ (901) = 375.44***] and a one factor-model [$\Delta \chi^2$ (902) = 433.65***].

In sum, the CFA shows that all items loaded on their hypothesized factors. The three needs from basic need satisfaction (competence, autonomy and relatedness) could indeed be further examined separately.

Table 2. Confirmatory Factor Analyses

Models	(SB)χ^2	df	χ^2/df	Δ (SB)χ^2	Δ df	CFI	TLI	RMSEA	SRMR
Six factor-model: Hypothesized model	1442.030	887	1.63			0.84	0.83	0.06	0.07
Four factor-model: Needsat clustered	1463.955	893	1.64	20.829**	6	0.84	0.83	0.06	0.07
Three factor-model: MFN + needsat	2199.239	899	2.47	303.3***	12	0.62	0.60	0.07	0.09
Three factor-model: Needsat + TL	2268.584	899	2.52	342.08***	12	0.60	0.58	0.09	0.10
Three factor-model: TL + neuroticism	1865.867	899	2.07	264.11***	12	0.72	0.71	0.07	0.08
Two factor-model MFN + needsat	2247.121	901	2.49	344.33***	14	0.61	0.59	0.09	0.10
Two factor-model: Needsat + TL	2328.068	901	2.58	375.44***	14	0.59	0.57	0.09	0.10
One factor-model: All variables combined	2736.812	902	3.03	433.65***	15	0.46	0.43	0.10	0.11

(SB)χ^2= Satorra-Bentler adjusted chi square coefficient, df = degrees of freedom, CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; SRMR= standardized root mean square of approximation. Both Δ χ^2 and Δ df were based on the comparison with the six-factor model. ** = p < .001, *** = p < 0; Needsat = need satisfaction; MFN = mindfulness, TL = transformational leadership

Intercorrelations of study variables

The means, standard deviations, and correlations are presented in *Table 3*. The correlations show that mindfulness is significantly negatively associated with neuroticism (r = -0.33, p < .01). Furthermore, mindfulness is positively associated with need satisfaction: autonomy (r = .39, p < .01), competence (r = .43, p < .01) and relatedness need satisfaction (r = .35, p < .01). Lastly, mindfulness and transformational leadership are positively associated (r = .25, p < .01). Neuroticism is also negatively associated with need satisfaction (autonomy r = -.309, p < .01; competence: r = -.43, p < .01), relatedness: r = -.20, p < .01) and transformational leadership (r = -.38, p < .01). Next, transformational leadership is significantly associated with autonomy (r = .29, p < .01), competence (r = .36, p < .01) and relatedness need satisfaction (r = .30, p < .01).

Furthermore, not all control variables were significantly associated with our core research variables (see *Table 2*). Age was significantly associated with mindfulness (r = .18, p < .01), competence need satisfaction (r = .24, p < .05) and transformational leadership (r = .13, p < .05). Tenure as a nurse was significantly associated with autonomy (r = -.16, p < 0.5) and transformational leadership (r = .15, p < .05). Tenure as a head nurse was significantly associated with mindfulness (r = .16, p < .05), competence need satisfaction (r = .23, p < .05) and relatedness need satisfaction (r = 0.13, p < .05). Span of control was only significantly associated with relatedness need satisfaction (r = -.15, p < .05). Following Becker's (2005) recommendations, only

significant control variables were included in the relevant analyses. Furthermore, since age and tenure are highly correlated ($r = .50$, $p < .01$ with tenure as an employee; $r = .61$, $p < .01$), it was opted to control for tenure alone.

Test of the main effect

Hypothesis 1 predicts that mindfulness is positively related to transformational leadership. We performed a linear regression and controlled for both tenure as a leader and span of control. The analysis shows that mindfulness is indeed positively associated with transformational leadership ($B = .17$, $p < .001$; $F(3) = 5.54$, $p = 0.001$, $r^2 = 0.06$). Therefore, hypothesis 1 was supported.

Test of the mediation effect

Hypothesis 2a proposes that autonomy need satisfaction mediates the relationship between mindfulness and transformational leadership. The results in *Table 4* show that autonomy need satisfaction was positively associated with transformational leadership ($B = 0.14$, $SE = 0.04$, $p < .01$), after controlling for the effect of mindfulness. Furthermore, we examined the robustness of this effect by estimating bootstrapped confidence intervals for this mediation effect with 5000 samples. The results show that the indirect effect of mindfulness on transformational leadership via autonomy need satisfaction was significant ($B = 0.05$, $SE = 0.02$, CI = [0.02, 0.10]). Therefore, hypothesis 2a was supported.

Hypothesis 2b proposes that competence need satisfaction mediates the relationship between mindfulness and transformational leadership. The results in *Table 4* show that competence need satisfaction was positively associated with transformational leadership ($B = 0.22$, $SE = 0.05$, $p < .001$), after controlling for the effect of mindfulness. Moreover, the effect of mindfulness became non-significant ($B = 0.08$, $SE = 0.05$, $p > .05$), indicating a full mediation. Furthermore, we examined the robustness of this effect by estimating bootstrapped confidence intervals for this mediation effect with 5000 samples. The results show that the indirect effect of mindfulness on transformational leadership via competence need satisfaction was significant ($B = 0.08$, $SE = 0.02$, $p < .001$, CI = [0.04, 0.13]). Therefore, hypothesis 2b was supported.

Table 3. Descriptive statistics and intercorrelations

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Gender[a]	0.8	0.40										
2. Age	45.38	9.69	0.017									
3. Tenure[1]	15.06	9.19	0.089	0.501**								
4. Tenure[2]	11.27	8.04	-0.103	0.610**	-0.049							
5. Spoc	19.24	8.88	-0.014	0.075	0.120	0.063						
6. Mindfulness	5.15	0.81	0.040	0.177**	0.026	0.156*	-0.41					
7. Neuroticism	2.85	1.04	0.110	-0.102	0.022	-0.077	-0.082	-0.325**				
8. Autonomy	5.31	0.86	0.004	0.004	-0.157*	0.101	-0.069	0.393**	-0.309**			
9. Competence	5.74	0.76	-0.04	0.244*	0.080	0.233*	-0.030	0.431**	-0.432**	0.514**		
10.Relatedness	5.79	0.90	0.084	0.094	-0.023	0.129*	-0.151*	0.347**	-0.201**	0.513**	0.339**	
11.Transformational	5.52	0.56	0.089	0.127*	0.146*	0.41	-0.067	0.248**	-0.377**	0.288**	0.357**	0.303**

$* p < 0.05$, $** p < 0.01$; [a]Coded 0 = male, 1 = female; [1]Tenure as employee; [2]Tenure as a supervisor; Spoc = span of control; N = 277

Hypothesis 2c proposes that relatedness need satisfaction mediates the relationship between mindfulness and transformational leadership. The results in *Table 4* show that relatedness need satisfaction was positively associated with transformational leadership ($B = 0.14$, $SE = 0.04$, $p < .001$), after controlling for the effect of mindfulness. Furthermore, we examined the robustness of this effect by estimating bootstrapped confidence intervals for this mediation effect with 5000 samples. The results show that the indirect effect of mindfulness on transformational leadership via relatedness need satisfaction was significant ($B = 0.05$, $SE = 0.02$, $p < .001$, CI = [0.02, 0.09]). Therefore, hypothesis 2c was supported.

Table 4: Moderation and mediation effects

Variables	Need satisfaction			Transformational leadership		
	M1 B(SE)	**M2** B(SE)	**M3** B(SE)	**M4** B(SE)	**M5** B(SE)	**M6** B(SE)
Intercept	3.96 (.45)***	4.74 (.37)***	4.49 (.48)***	4.26 (.27)***	3.92 (.28)***	4.13 (.28)***
Controls						
Tenure[1]	.01 (.01)	.02 (.01)**	.02 (.01)	.00 (.00)	-.00 (.00)	.00 (.00)
Spoc	-.01 (.1)	-.00 (.01)	-.02 (.01)*	-.00 (.00)	-.00 (.00)	-.00 (.00)
R²	*.02*	*.06**	*.04**	*.01*	*.01*	*.01*
Predictors						
Mindfulness	.36 (.07)***	.29 (.06)***	.33 (.07)***	.11 (.04)*	.08 (.04)[2]	.12 (.04)**
Neuroticism	-.14 (.05)**	-.22 (.04)***	-.08 (.06)			
R²	*.19***	*.30***	*.15***	*.07***	*.07***	*.07***
Mfn*Neuroticsm	.03 (.05)	.05 (.04)	.12 (.06)*			
R²	*.19*	*.30*	*.17**			
Mediation						
Autonomy				.13 (.04)**		
Competence					.22 (.05)***	
Relatedness						.14 (.04)***
R²				*.10**	*.14***	*.12***

*N = 277; [1] Tenure as a leader; Spoc = Span of control; M1/4 = autonomy, M2/5 = competence, M3/6 = relatedness; *p < .05, **p < .01, ***p<.001; R² = adjusted R square; standardiszed coefficients were presented; mfn = mindfulness; [2]The effect was marginally significant (p = .07).*

Test of the moderation effect

Table 4 presents the results from the moderation and mediation linear regression analyses. M1, M2 and M3 represent the moderation analysis for autonomy, competence and relatedness need satisfaction, respectively. Only the final regression model (including the interaction step) was included for reasons of parsimony. Furthermore, the models depicted only include control variables that explained variance (Hox, 2010), i.e. tenure as a leader (explained 8.3% variance in competence need satisfaction) and span of control (explained 2.8% variance in need for relatedness).

Hypothesis 3a proposes that neuroticism moderates the relationship between mindfulness and autonomy need satisfaction, such that the positive relationship of mindfulness and need satisfaction is higher at high levels of neuroticism (or low levels of emotional stability). As shown in *Table 4* (see M1), the interaction term of mindfulness and neuroticism was not significantly related to autonomy need satisfaction ($B = 0.02$, $SE = 0.05$, p > .05). Therefore, hypothesis 3a was not supported.

Hypothesis 3b proposes that neuroticism moderates the relationship between mindfulness and autonomy need satisfaction, such that the positive relationship of mindfulness and need satisfaction is higher at high levels of neuroticism (or low levels of emotional stability). As shown in *Table 4* (see M2), the interaction term of mindfulness and neuroticism was not significantly related to competence need satisfaction ($B = 0.04$, $SE = 0.04$, p > .05). Therefore, hypothesis 3b was not supported.

Hypothesis 3c proposes that neuroticism moderates the relationship between mindfulness and autonomy need satisfaction, such that the positive relationship of mindfulness and need satisfaction is higher at high levels of neuroticism (or low levels of emotional stability). As shown in *Table 4* (see M3), the interaction term of mindfulness and neuroticism was significantly related to autonomy need satisfaction ($B = 0.11$, $SE = 0.05$, p < .05). With the interaction effect, 14.6% of variance in need satisfaction was explained. The interaction effect is visualized in *Figure 2*. To assess the robustness of this relationship, we assessed the same effect through a bootstrap procedure. Based on 5000 bootstrapped samples, the same effect was found. When the level of neuroticism was low (1 SD below the mean), the relationship between mindfulness and relatedness need satisfaction was significantly positive ($B = 0.22$, $SE = 0.09$, p < .05, CI = [0.04, 0.40]). When the level of neuroticism was high (1 SD above the mean), the relationship between mindfulness and relatedness need satisfaction was significantly positive and stronger ($B = 0.44$, $SE = 0.09$, p < .001, CI = [0.26, 0.62]). This indicates that neuroticism actively influences the effect of mindfulness on need satisfaction, such that high neuroticism leads to a higher effect of mindfulness on need satisfaction. Or conversely, low emotional stability leads to a higher effect of mindfulness on relatedness need satisfaction. Therefore, hypothesis 3c was supported. For a visualization, see *Figure 2* on the next page.

Figure 2. Visualization of the interaction effect: the moderating effect of neuroticism on the relationship between mindfulness and relatedness need satisfaction.
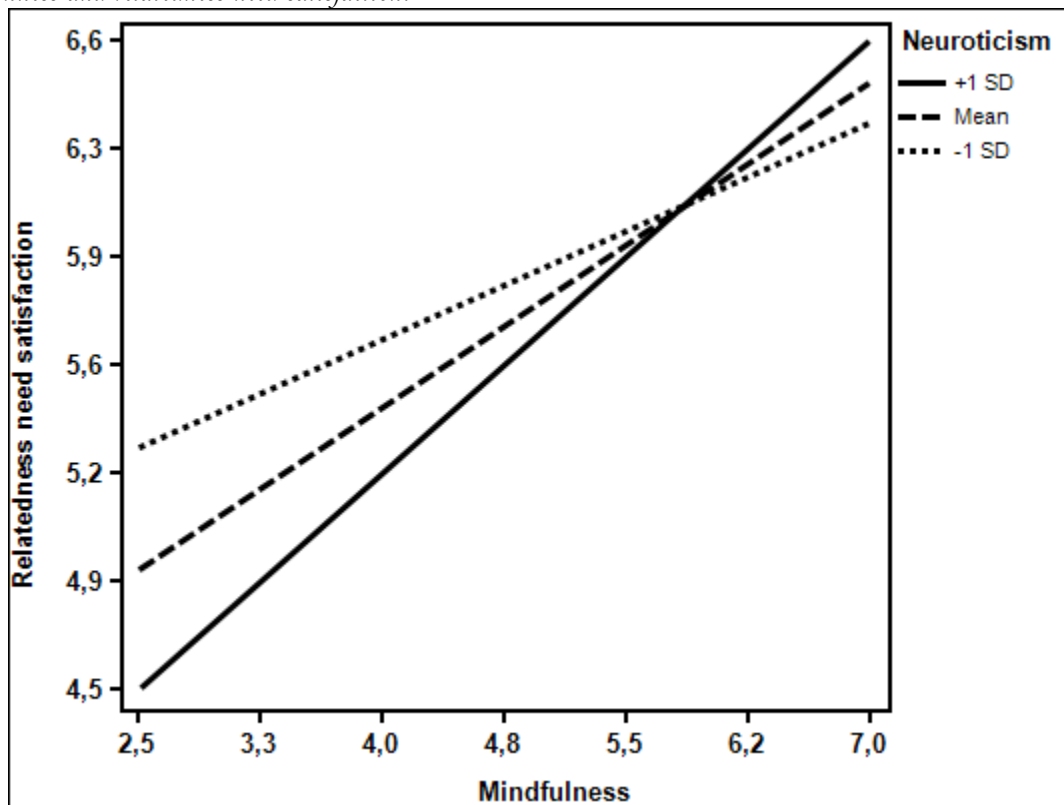
Test of the Moderated Mediation Model

Hypothesis 4 stipulates a moderated mediation model, in which neuroticism moderates the mediating effect of need satisfaction on the relationship between mindfulness and transformational leadership. Since the moderating effect of neuroticism on autonomy need satisfaction and competence need satisfaction was not significant, the hypothesis can only be investigated for relatedness need satisfaction.

The conditional indirect effect was tested at three values of neuroticism: one standard deviation above the mean, the mean, and one standard deviation below the mean. The index of the moderated mediation in total was significant ($B = 0.02$, $SE = 0.01$, 95% CI = [0.001, 0.05]), indicating the existence of a moderated mediation effect. The results are presented in *Table 5*. This shows that at low levels of neuroticism, the conditional indirect effect is not significant ($B = 0.03$, $SE = 0.02$, 95% CI = [-0.005, 0.07]), since the confidence interval includes zero, whereas for mean neuroticism ($B = 0.05$, $SE = 0.02$, 95% CI = [0.02, 0.07]) and high neuroticism ($B = 0.06$, $SE = 0.02$, 95% CI = [0.02, 0.12]), the conditional indirect effect is significant. These results show that the indirect effect of mindfulness on transformational leadership through relatedness need satisfaction was observed only when neuroticism was medium to high. Conversely, the indirect

effect of mindfulness on transformational leadership through relatedness need satisfaction was only observed when emotional stability was medium to low; indicating that mindfulness and neuroticism/emotional stability interact to create the effects through need satisfaction on transformational leadership. When neuroticism is low (or conversely emotional stability is high), there is no conditional indirect effect on transformational leadership. Together, these results support hypothesis 4 with regards to relatedness need satisfaction.

Table 5. Results of the conditional indirect effects

	MFN (X) -> Relatedness (M) ->TL (Y)		
Conditions	**be (SE)**	**[95% CI]**	
Low neuroticism -1 SD (-1.03)	0.03 (0.02)	-0.005	0.07
Mean neuroticism (0.00)	0.05 (0.02)***	0.02	0.08
High neuroticism +1 SD (1.03)	0.06 (0.02)***	0.02	0.12

N = 277; Neuroticism was mean-centered beforehand; be = unstandardized bootstrapped regression coefficient of the indirect effect; Tenure as a leader and span of control as covariates. Bootstrap sample size = 5000; *p < .05, **p < .01, ***p < .001; MFN = mindfulness, relatedness = relatedness need satisfaction; TL = transformational leadership

Discussion

Our study investigated the antecedents of transformational leadership, with a focus on mindfulness specifically. Previous research mostly studied the benefits of mindfulness for employees in organizations (Reb & Atkins, 2015), whereas the present study zooms in on the benefits of mindfulness for leaders themselves. Specifically, we focused on *if* and *when* mindfulness influences transformational leadership. Mindfulness was hypothesized to be specifically beneficial for transformational leaders in several ways: it may enhance idealized influence since is related to authentic functioning (Leroy et al., 2013), it may support intellectual stimulation based on the enhanced objectivity and creativity (Brown & Ryan, 2003; Dane, 2011; Bishop et al., 2004; Karelaia & Reb, 2015; Langer & Moldoveanu, 2000; Weick & Putnam, 2006), mindfulness may influence inspirational motivation since it supports value-driven, ethical behavior and a better understanding of own values and needs (Brown & Ryan, 2003; Eisenbeiss & Van Knippenberg, 2015; Ruedy & Schweitzer, 2010; Guillén & Fontrodona, 2018) and it may increase individualized consideration based on the enhanced awareness when communicating with employees, increased empathy and decreased emotional reactivity (Pinck & sonnentag, 2017; Bunting, 2017; Block-Lerner et al., 2007).

Besides theorizing based on mindfulness research, *Self-Determination Theory* was our primary theoretical lens: we hypothesized that mindfulness also influences transformational leadership through aiding the satisfaction of the need for autonomy, competence and relatedness. Mindfulness

can be related to (1) enhanced autonomy because it augments leader self-mastery and self-regulation (King & Haar, 2017). It can be related to (2) competence, since research has shown that it is directly related to leader job performance (Mesmer-Magnus, 2017; Waldron & Ebbeck, 2015; Wasylkiw et al., 2016) and mindfulness can be associated with increases in (3) the need for relatedness because it enhances empathy (Block-Lerner et al., 2007) and attentive listening (Ucok, 2006), which are core components of developing good relationships. Furthermore, we acknowledged that emotional distress may be a threat for effectively functioning as a transformational leader (Harms et al., 2017; Byrne et al., 2014). Therefore, we adopted a *regulatory approach* in which we investigated neuroticism as a moderator with regards to the effect of mindfulness on psychological need satisfaction and consequently transformational leadership. We proposed that mindfulness may exert its effects as an emotion regulatory mechanism, i.e. interacting with neuroticism to dampen the negative effects of high neuroticism (and emotional stress) on transformational leaders' performance. This is in line with previous research showing the importance of mindfulness for mitigating the negative effects of neuroticism and catastrophizing (Barnhofer et al., 2011; Prins et al., 2014), as well as brain research showing that mindfulness has an impact on the amygdala and prefrontal cortex – which seems to indicate enhanced emotion regulation as well (Goleman & Davidson, 2017; Tang et al., 2015).

First of all, the analyses confirm that *mindfulness is indeed related to transformational leadership*, which is in line with a previous study (Pinck & Sonnentag, 2017). We add to this previous work by finding that this relationship is partially explained through the mediation of psychological need satisfaction, indicating that mindfulness influences the feeling of autonomy, competence and relatedness of leaders. Competence need satisfaction was a full mediator in this respect, while autonomy and relatedness were partial mediators. Through these findings we expand the knowledge in the emerging field of leader mindfulness (Reb & Atkins, 2015).

Second, we show that *neuroticism interacts with mindfulness with regards to relatedness need satisfaction* in such a way that when neuroticism was high, mindfulness had the highest impact on relatedness need satisfaction. Or conversely, when neuroticism was low, mindfulness had a smaller (but still positive) impact on relatedness need satisfaction (see *Figure 2*). This is in line with the idea that part of mindfulness' influence on relatedness need satisfaction exerts itself through an enhanced emotion regulation (Barnhofer et al., 2011; Goleman & Davidson, 2017; Tang et al., 2015; Prins et al., 2014). This was predicted by our inclusion of a regulation approach, in which we stated that mindfulness may enhance emotional regulation, and influence neuroticism, by focusing on the present moment and observing emotions rather than becoming reactionary. The relationship with relatedness need satisfaction indicates that *high neuroticism (combined with low mindfulness) might intervene*

with developing solid work relationships, perhaps because a highly neurotic leader may scare off or overburden employees. When a leader scores high on mindfulness, this effect can be mitigated and even lead to a better development of work relationships. Perhaps this is possible because a leader with higher scores on neuroticism is better equipped to understand emotional reactions and may be more able to be empathic through his/her own experience with emotional reactivity. The combination of neuroticism (emotionality) and mindfulness (positive coping), may then be a good example for (neurotic) employees and lead to better work relationships.

Third, our results indicate that the moderated mediation model for relatedness need satisfaction is also significant. This combines the effects explicated above and indicates that *neuroticism is a boundary condition for the indirect effect of mindfulness on transformational leadership through relatedness need satisfaction*. Within this moderated mediation model, the bootstrapped confidence intervals for one standard deviation above and below the mean also indicated that when neuroticism was low (or conversely when emotional stability was high), there was no conditional indirect effect any more on transformational leadership. This provides additional evidence for our regulatory hypothesis: *when emotional stability is high, there is no longer an interaction effect* with neuroticism on relatedness need satisfaction influencing transformational leadership. In this respect, the emotion regulation aspect of mindfulness no longer yield results, since there is *no negative affect (neuroticism) to regulate any more*. The regulatory effect of mindfulness may thus be one of the mechanisms in which mindfulness influences psychological need satisfaction, and relatedness need satisfaction specifically. Of course, emotion regulation was not measured *an sich*, but the specific patterns of interactions between mindfulness and neuroticism are in line with research positing that mindfulness works primarily through emotion regulation mechanisms (Feldman et al., 2007; Hülsheger et al., 2013; Tang et al., 2015).

Theoretical implications

Our research makes several contributions to the literature. First of all, we contribute to the literature on transformational leadership by *focusing on antecedents* rather than outcomes. Within this realm we focused specifically on cognitive/psychological rather than environmental/organizational antecedents of transformational leadership. In addition, the field of mindfulness research in organizational settings has just begun to explore *mindful leadership* (Reb & Atkins, 2015). Our study is one of the first studies to contribute to this field with regards to the relationship between mindfulness and transformational leadership, and the first study within this emerging field that only focuses on leader-central variables, rather than employee-related outcomes (see Pinck & Sonnentag, 2017). This is important, because expanding the knowledge on the interplay between mindfulness, need satisfaction and transformational leadership may help us understand how

transformational leaders can perform well in our changing environment (Rodriguez & Rodriguez, 2015). Furthermore, previous research focused on the vision, values and behaviors of transformational leaders (Sauer & Kohls, 2011), within this study *we focus on the actual mindset of leaders, and the way in which they pay attention.* Mindfulness was also proposed to be a personal resource for transformational leaders, and specifically related to transformational leader behaviors. We coupled this with a theoretical perspective based on self-determination theory and the importance of autonomy, competence and relatedness need satisfaction for leaders. Therefore, we contributed to the emerging field of leader mindfulness (Reb & Atkins, 2015), as well as on applications of the self-determination theory (Van Den Broeck et al., 2008), by integrating a framework concerning leader cognition, mindfulness as a resource for transformational leader behavior and leader *psychological need satisfaction for the emergence of transformational leadership.* Moreover, through adopting a regulatory focus, we also examined whether or not mindfulness exerts its influence primarily through an interaction with neuroticism. Therefore, we add to the (theoretical) literature on mindfulness and emotion regulation (Hülsheger et al., 2013). This also addresses calls for research on the issue of personal variables that moderate between leader mindfulness and transformational leadership (Pinck & Sonnentag, 2017).

Practical implications

Our study has several practical implications. Firs, since leaders are role models within the organization, they can have a large impact on employees. Therefore, the *positive effect of leader mindfulness can be expected to trickle down* through the organization, in part because the leader will be more able to be transformational. When mindfulness infuses leadership, the leader will thus be more characterized by idealized influence, inspirational motivation, intellectual stimulation and individual consideration and therefore help employees to envision a joint, organizational goal to pursue.

Second, our results show that psychological need satisfaction is a mediating mechanism between mindfulness and transformational leadership. This indicates that *mindfulness can increase the leaders' freedom to act (autonomy), effectivity (competence) and enhancement of work relations (relatedness).* The satisfaction of these three needs leads to a higher autonomous motivation, and likely to more energy to poor into the leader role. These results show the relevance of providing leader mindfulness training. In addition, it shows *the relevance of leaders' own well-being* (i.e. psychological need satisfaction) for their capacity to behave in accordance with positive leadership styles.

Third, our results show that neuroticism plays a role in the association between mindfulness and relatedness need satisfaction: *when neuroticism was high, or conversely when emotional stability was low, mindfulness had the largest impact on relatedness need satisfaction.* This interaction between mindfulness and

neuroticism shows that mindfulness may primarily exert its influence through an interaction with neuroticism, which is in line with the expectation that mindfulness primarily works through emotion regulation: when a highly neurotic leader is more able to *open up for his/her emotions, rather than (over)react* in the presence of subordinates or colleagues, it might be more easy to develop work relationships. The higher quality of these relationships will then help the leader to become more autonomously motivated and energized to be a transformational leader. Practically, these results indicate that *leader neuroticism need not be a problem for leaders*, if they learn how to deal with their nature and do not take their emotions out on the people around them. Mindfulness may be a valuable tool to achieve this. So again, providing mindfulness training, especially to leaders scoring high on neuroticism and low on trait mindfulness, might be a valuable intervention.

Last, and more broadly speaking, mindfulness impacts employee well-being (Reb et al., 2014) as well as leader well-being and leadership (this study). The (emotion regulation) effect of mindfulness may therefore be important for all members of an organization. Consequently, we argue that *embedding mindfulness in the culture of an organization may have the most beneficial effect*. The research on collective mindfulness is only just emerging, but shows promising results (Sutcliffe, Vogus, Dane, & Jones, 2016). When organizations invest in accepting presence, attention and thus mindfulness as a regular practice of leaders and employees, the enhanced well-being may lead organizations to excel, especially in a changing environment (Dane, 2011).

Limitations and future research

Our research has several limitations that provide opportunities for future research. First of all, and most obviously, since this is a field survey study which used self-report data from leaders in several organizations at one time point, we cannot make actual causal inferences based on the results. Although this kind of data can be subject to bias, research shows that self-report data are not inherently flawed (Chan, 2009) and claims on common source bias are exaggerated (George & Pandey, 2017). Furthermore, we used a-priori procedures to address common method bias (Podsakoff et al., 2003) as much as was possible within the constraints of the study design. Despite our efforts, the analyses indicated that common method may be present, thus the results from this study should be interpreted with caution. However, research does show that common method bias does not seem to be a threat when significant interactions are found (Evans, 1985): when common method variance is present, interactions can only be deflated (Siemsen, Roth, & Oliveira, 2010). This indicates that common method variance might have suppressed part of our results. Nevertheless, we suggest that future studies replicate our findings with data from multiple sources (e.g. employees or the leaders' leaders) and multiple time points (longitudinal design), or in a laboratory setting to clearly establish causality. Based on our results and the possibility of common

method bias, there is not only a pressing need for replication, but also for the use of more elaborate study designs. In a similar vein, we suggest that future research may want to use a more elaborate neuroticism scale as a replication tool (e.g. the original BFI with 44 items; Rammstedt & John, 2007), when the study design allows this, since we recognize that the internal consistency estimates in this study are quite low, even though the reliability and validity of two-item neuroticism measures has been established previously (Gosling, Rentfrow, & Swann, 2003; Rammstedt & John, 2007). In sum, a cross-sectional design based on self-reports has very clear limitations. We see our study, therefore, as a first exploration that should be interpreted with caution, but nevertheless may provide useful insights and directions for future research.

Second, while our study provides indications with regards to the importance of mindfulness and neuroticism for transformational leadership, we adopted a broad operationalization which did not take into account facets of mindfulness nor neuroticism. Faceted mindfulness questionnaires can be considered to provide more in-depth information with regards to which mindfulness facets influence psychological need satisfaction most. Useful questionnaires in this regard may be the Five Facet Mindfulness Questionnaire (Baer et al., 2008) or the Comprehensive Inventory of Mindfulness Experiences (CHIME; Bergomi et al., 2013). Future research may also want to use a faceted Big Five questionnaire to measure neuroticism (such as the NEO-PI-R; Costa & Mccrae, 1995). In this regard, research also showed that sub-facets of personality traits explained on average about twice as much variance in employee performance in comparison with aggregated traits (Judge, Rodell, Klinger, Simon, & Crawford, 2013). Therefore, future research can e.g. use personality questionnaires from Costa & McCrae (1992; 1995) to explain moderation effects of neuroticism in more detail. In addition, our results seem to support the self-regulatory hypothesis with regards to the effect of mindfulness, but we did not measure self-regulation itself. Rather, we investigated the interaction between mindfulness and neuroticism. Therefore, we should still be careful about the inferences we make with regards to mindfulness' emotion regulatory capacities. Future research may want to delve deeper into our results and measure emotion-regulation directly, e.g. through measuring established emotion-regulation strategies like surface acting (see e.g. Hülsheger et al., 2013).

Third, future research may also want to delve deeper into the results found in this study more generally: exactly how does mindfulness contribute to better relationships at work? Are there also other mindfulness-related mechanisms that play a part in this besides emotion regulation? Do mindful leaders communicate differently with their employees, which is then reflected in an enhanced relatedness need satisfaction? Perhaps leader relatedness need satisfaction based on mindfulness also has effects on the employee? Does the effect of mindfulness on leadership trickle

down the organization from top leadership to the employee level? These and other interesting questions may be resolved through future research. It may for instance be very interesting to study whether mindfulness trickles down the organization and is able to have effects on other levels of the organization.

Conclusion

Drawing mostly upon self-determination theory, integrated with a regulatory approach, our research uncovered the black box of leader-central antecedents of transformational leadership. The results indicate the psychological need satisfaction is the underlying mediating process in the relationship between leader mindfulness and transformational leadership. Moreover, neuroticism interacts with this effect for relatedness need satisfaction: when neuroticism is high, mindfulness has the highest impact on relatedness need satisfaction. Or conversely, when emotional stability is low, mindfulness has the lowest impact on relatedness need satisfaction. This is in line with research indicating that mindfulness might exert part of its influence through emotional regulation. Our research contributes both to theoretical developments integrating mindfulness in the leadership paradigm, while also offering suggestions for practice.

Final note

Our research reveals that leader mindfulness and leader psychological need satisfaction are relevant for transformational leadership. When organizations can support leader well-being, and introduce mindfulness, positive effects can be expected for both the leader, as well as for his/her subordinates, perhaps especially when the leader scores high on neuroticism. It is our hope that future research will dig deeper into these findings, so that organizations can be persuaded to refocus on mindfulness and the resulting well-being and psychological need satisfaction as a work relationship enhancer performance and performance booster.

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Table 6. Items and factor loadings

		MFN	Need satisfaction			TL
			Autonomy	*Competence*	*Relatedness*	
MF1*	I could be experiencing some emotion and not be conscious of it until some time later. *(R)* *	.361				
MF2	I break or spill things because of carelessness, not paying attention, or thinking of something else. *(R)*	.482				
MF3	I find it difficult to stay focused on what's happening in the present. *(R)*	.619				
MF4	I tend to walk quickly to get where I'm going without paying attention to what I experience along the way. *(R)*	.682				
MF5	I tend not to notice feelings of physical tension or discomfort until they really grab my attention. *(R)*	.420				
MF6	I forget a person's name almost as soon as I've been told it for the first time. *(R)*	.411				
MF7	It seems I am "running on automatic", without much awareness of what I'm doing. *(R)*	.685				
MF8	I rush through activities without being really attentive to them. *(R)*	.662				
MF9	I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there. *(R)*	.563				
MF10	I do jobs or tasks automatically, without being aware of what I'm doing. *(R)*	.699				
MF11	I find myself listening to someone with one ear, doing something else at the same time. *(R)*	.591				
MF12	I drive places on "automatic pilot" and then wonder why I went there. *(R)*	.657				
MF13*	I find myself preoccupied with the future or the past.* *(R)*	.347				
MF14	I find myself doing things without paying attention. *(R)*	.708				
MF15	I snack without being aware that I'm eating. *(R)*	.445				
NS1	I feel like I can be myself at my job		.702			
NS2	At work, I often feel like I have to follow other people's commands *(R)*		.579			
NS3	If I could choose, I would do things at work differently *(R)*		.737			

NS4	The tasks I have to do at work are in line with what I really want to do	.611		
NS5	I feel free to do my job the way I think it could best be done	.658		
NS6	In my job, I feel forced to do things I do not want to do *(R)*	.654		
NS7	I don't really feel competent in my job *(R)*		.565	
NS8	I really master my tasks at my job		.778	
NS9	I feel competent at my job		.904	
NS10	I doubt whether I am able to execute my job properly *(R)*		.571	
NS11	I am good at the things I do in my job		.857	
NS12	I have the feeling that I can even accomplish the most difficult tasks at work		.767	
NS13	I don't really feel connected with other people at my job *(R)*			.701
NS14	At work, I feel part of a group			.601
NS15	I don't really mix with other people at my job *(R)*			.667
NS16	At work, I can talk with people about things that really matter to me			.635
NS17	I often feel alone when I am with my colleagues *(R)*			.741
NS18*	Some people I work with are close friends of mine*			.333

MLQ1	I make sure my nursing staff feels good when I am around.	.615
MLQ2	I use a few simple words to express what we can do.	.605
MLQ3	I help my nursing staff to think in new ways about old problems.	.766
MLQ4	I help my nursing staff to develop themselves.	.757
MLQ5	My nursing staff has complete faith in me.	.610
MLQ6	I draw my nursing staff a pleasant picture concerning all we can do.	.652
MLQ7	I provide my nursing staff with a fresh outlook on the matters.	.784
MLQ8	I let my nursing staff hear my opinion on how they are doing.	.635
MLQ9	My nursing staff is proud to be associated with me.	.556

MLQ10	I help my nursing staff to rethink existing ideas, which haven't been questioned before.	.668
MLQ11	I succeed to let my nursing staff rethink existing ideas, which haven't been questioned before.	.635
MLQ12	I attach personal importance to nursing staff feeling discouraged.	.581

Factor loadings are based on principal axis factoring on one dimension; * = deleted item; (R) = reverse item; MFN = mindfulness, TL = transformational leadership

Chapter 4:
Leader psychological need satisfaction trickles down:
The role of LMX

This research article focuses on the impact of leader psychological need satisfaction on employees. We draw on Self-Determination Theory (SDT) and Leader-Member-Exchange (LMX) theory to investigate if and how leader psychological need satisfaction trickles down to employee psychological need satisfaction in a multi-actor, multilevel study based on 1036 leader-employee dyads. Results indicate that employee-rated LMX mediates the trickle-down effect of leader psychological need satisfaction. Additional exploratory analyses on individual leader needs show that leader competence is the need that drives this effect. We also found an small unexpected negative association between leader autonomy need satisfaction and employee competence need satisfaction. Overall, this study shows the importance of both (1) leaders' psychological need satisfaction and (2) employee perceptions of the relationship quality for employee psychological need satisfaction.

Introduction

While much is known about how 'positive' leadership styles increase employee motivation and performance (Antonakis & Day, 2017), most studies neglect the importance of the well-being of leaders themselves. However, leaders' well-being is of vital importance for their own motivation as well as their capacity to lead well (Trépanier, Fernet, & Austin, 2012): when leaders' psychological needs are satisfied, they are energized to perform behaviors that are more in accordance with positive leadership styles (Trépanier et al., 2012). Therefore, this paper zooms in on leaders' psychological need satisfaction, and explores whether this has an immediate impact on employee psychological need satisfaction. In addition, since leadership is inherently relational (Uhl-Bien, 2006), we investigate whether this process is influenced by how both leaders and employees view their exchange relationship. Meta-analytic data also shows that it is of vital importance to employ a dual, or dyadic, perspective since leader and employee LMX-ratings are only moderately related (Gerstner & Day, 1997; Schyns & Day, 2010; Sin et al., 2009). In sum, in this research article, we focus on psychological need satisfaction as an internal state that trickles down from leaders to employees through a dyadic perspective based on Leader-Member Exchange (LMX). In this context, trickle-down effects can be seen as interaction patterns or perceptions that cascade to different levels in the organization (Ambrose et al., 2013; Jeuken, 2016).

Psychological need satisfaction finds its origins in the Self-Determination Theory (SDT; Deci & Ryan, 2008; Van Den Broeck et al., 2008; Van Den Broeck et al., 2010), which states that fostering autonomy, competence and relatedness will lead to an autonomous motivation at work. Past research has related need satisfaction to both well-being (e.g. work engagement), as well as performance (Deci & Ryan, 2000). In the leadership literature, psychological need satisfaction is mostly researched as a consequence of leadership and not as an antecedent. For example, transformational leadership (Breevaart et al., 2014; Kovjanic et al., 2013), mindful leadership (Reb et al., 2014) and servant leadership (Van Dierendonck et al., 2014) have all been related to employee

psychological need satisfaction in empirical studies. However, recent research also indicates that basic psychological need satisfaction of leaders, i.e. as antecedent, is related to the quality of their leadership (Decuypere et al., 2018), and will therefore influence employees and shape how they respond to their leaders. Consequentially, how leaders feel with regards to their psychological need satisfaction is an important element that influences leader behavior in interpersonal exchange processes with their employees.

Leader-Member Exchange (LMX) is one of these exchange processes. LMX research suggests that leaders develop differentiated relationships with their employees (Graen & Uhl-Bien, 1995) based on "their different needs, attitudes and personalities" (Tse et al., 2018; p. 136). High quality relationships are characterized by exchanges based on mutual trust, respect, liking and influence (Liden & Maslyn, 1998) and lead to positive outcomes for both parties (Dulebohn et al., 2012; Graen & Uhl-Bien, 1995). Therefore, leaders' ability to maintain high-quality relationships with employees is of crucial importance for his/her effectiveness (Uhl-Bien, 2006). According to social exchange theory (Blau, 1964; Shore et al., 2006), these high quality and reciprocal relationships are developed through exchanging valuable resources that create mutual obligations. Employees' positive expectations with regards to the leaders' responses to their voluntary actions, also characterized as 'investments', are both a product of high LMX (Little et al., 2016) as well as a result: based on expectations concerning the nature and reciprocity of the exchanges, LMX perceptions can change (Maslyn & Uhl-Bien, 2001). Thus, LMX influences how leaders behave towards their employees and the other way around. In fact, leaders "adopt different leadership styles to form relationships with individual subordinates" (Tse et al., 2018; p. 136). Therefore, in this research paper, our aim is to investigate LMX as the process through which leader psychological need satisfaction trickles down to employees, from a dyadic viewpoint.

This research aim contributes to the literature in several ways. First, we add to theorizing on psychological need satisfaction in two ways: we further validate research that views psychological need satisfaction as a consequence of leader(ship) behavior, yet we also explore its role as an antecedent. We expand SDT by incorporating a trickle-down perspective. Second, we focus on the dyadic perspective on LMX, which is less prevalent (Krasikova & Lebreton, 2002; Schyns & Day, 2010), but definitely called for (McCusker et al., 2019; Uhl-Bien, 2006). Last, we address calls to examine the mediation mechanisms of trickle effects (Wo et al., 2019): we propose that LMX may be one of the mechanisms driving the trickle-down effect of psychological need satisfaction. This study is also of practical importance, since it indicates the necessity of focusing on leader self-determination as a way to kill two birds with one stone: while enhancing leaders'

sense of autonomy, competence and relatedness, the employees' psychological experience can improve as well. See *Figure 1* for the hypothesized model.

Figure 1. Research model
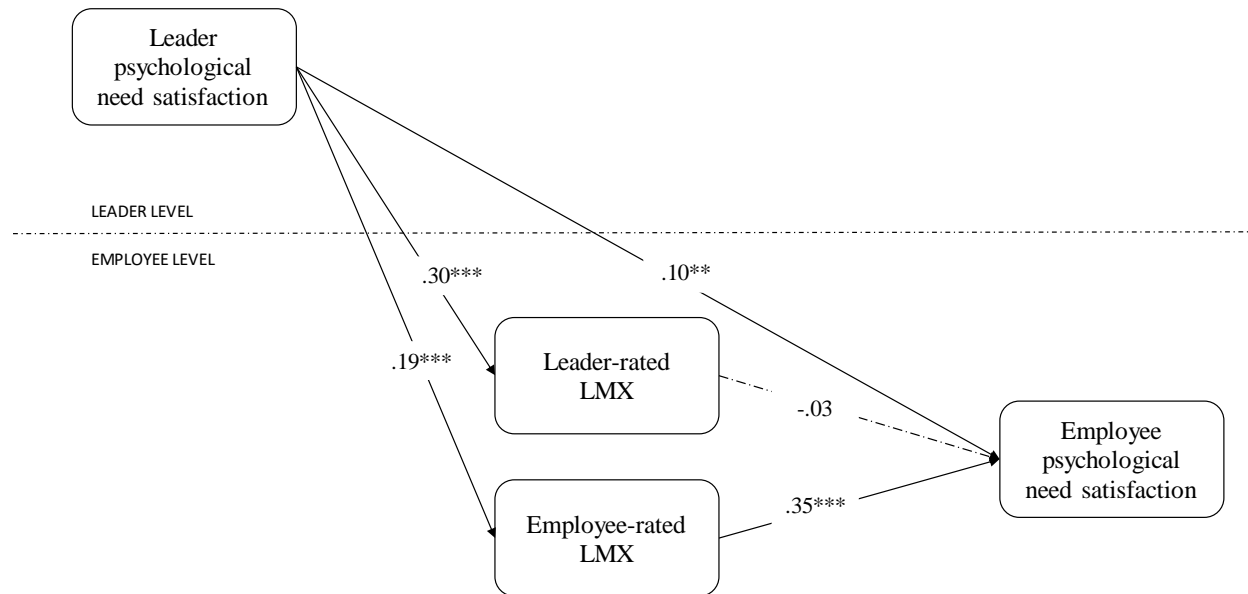
Theoretical framework and hypotheses

In what follows, we first discuss why we expect a trickle-down effect from leader psychological need satisfaction to employee psychological need satisfaction. For this purpose, we base ourselves on a *behavioral process*, in which we propose that leader basic psychological need satisfaction has an effect on leader behavior towards the employee. Subsequently, we will discuss the mediating role of LMX, i.e. the *relational process* associated with the hypothesized trickle-down effect.

Direct process: the trickle-down effect of psychological need satisfaction.

In order to hypothesize the trickle-down effect of leader to employee psychological need satisfaction, we base ourselves on Self-Determination Theory. First, we argue how and why leader psychological need satisfaction may lead to different leader behavior that fulfills the basic psychological needs of employees. We propose that need satisfaction or need frustration will motivate the leader to behave differently. According to Self-Determination Theory, leaders will seek to restore their needs, or resources, when depleted (Deci & Ryan, 2008). In what follows, we will hypothesize what depleted versus fulfilled leader need satisfaction behavior looks like and what effects it may have on employee psychological need satisfaction.

The *need for autonomy* is related to "experiencing choice and feeling like the initiator of one's own actions" (Baard et al., 2004, p. 2046) or "experiencing a sense of volition and psychological freedom" at work (Van Den Broeck et al., p. 981). Leaders depleted in autonomy need satisfaction, seeking to restore their resources (Deci & Ryan, 2008; Hobfoll, 2001), will be reluctant to give up (conversational) control and show higher rates of defensiveness (Hodgins et al., 2006; Van Quaquebeke & Felps, 2016). On the other hand, we argue that when leaders' own need for autonomy is satisfied, they will feel less threatened by the idea of providing employees with autonomy (Hodgins et al., 2006). This will translate to leader behavior concerned with giving employees more voice (Van Quaquebeke & Felps, 2016), which will enhance employees' autonomy need satisfaction.

The *need for competence* is related to "succeeding at optimally challenging tasks and attaining desirable outcomes" (Baard et al., 2004, p. 2046) or put more succinctly: "feeling effective" (Van Den Broeck et al., 2010, p. 981). Leaders who feel insecure, i.e. leaders who are depleted in competence need satisfaction, may ask less genuine questions (Van Quaquebeke & Felps, 2016). This may lead to poorer decision making of leaders, but also to less inquiry with regards to employees' perspective, which is crucial for relationship building and leader liking ratings (Meinecke & Kauffeld, 2018). In addition, a lack of self-perceived leader competence is related to leader aggression (Fast & Chen, 2006) and will also enhance leader stress. This has demonstrable effects on employee stress and affective well-being (Skakon et al., 2010), which will hamper employees' competence need satisfaction as well. Conversely, when leaders' need for competence is satisfied, and they feel secure about their capabilities and performance, they will be more likely to ask employees genuine questions (Van Quaquebeke & Felps, 2016), that may help provide employees with the guidance and "meaningful positive feedback" (Gagné & Deci, 2005; p. 339) they need to build their confidence or capabilities. In a similar vein, studies have shown that 'good' or 'positive' leadership from competent leaders is related to employee psychological need satisfaction (Breevaart, Bakker, Demerouti, et al., 2014; Kovjanic et al., 2013; Reb et al., 2014; Van Dierendonck et al., 2014). Therefore, we hypothesize that leader competence fuels leader behavior that directly influences employee competence need satisfaction.

Need for relatedness can be described as "establishing a sense of mutual respect and reliance with others" (Baard et al., 2004, p. 2046) or simply as feeling a sense of connection and belonging on the work floor (Van den Broeck et al., 2010). Leader relatedness need satisfaction, or how much leaders feel like they belong, will impact how jovial and open the communication with their employees is: when relatedness need satisfaction is depleted, leaders can enter into a vicious cycle where their willingness to engage in genuine conversation may decrease due to social insecurity

(Van Quaquebeke & Felps, 2016), which, in turn, further diminishes relatedness need satisfaction. On the contrary, leader relatedness need satisfaction may translate into social behaviors towards employees that positively influence employees' relatedness need satisfaction. When leaders feel a sense of connection with their employees, employees are likely to feel the same sense of belonging as well (Uhl-Bien, 2006).

In sum, when leaders' needs for autonomy, competence and relatedness are satisfied, leaders may be more inclined to grant autonomy and support, boost confidence levels of employees, and ask genuine questions that foster employee relationships (Van Quaquebeke & Felps, 2016). In sum, we hypothesize that leader psychological need satisfaction trickles down to employee psychological need satisfaction. When this happens, it is a win-win: both the leader and the employee can enjoy a level of decision-making freedom, feel competent and succeed (i.e. perform better), and feel fulfilled about their working relationship.

Hypothesis 1: Leader psychological need satisfaction is directly related to employee psychological need satisfaction

Indirect process: the mediating role of LMX.

LMX research suggests that leaders develop differentiated relationships with their employees (Graen & Uhl-Bien, 1995). High quality relationships are characterized by exchanges based on mutual trust, respect, liking and influence (Liden & Maslyn, 1998). High LMX therefore results in leader behavior that benefits employees such as support, feedback, access to participation in important projects (Graen & Uhl-Bien) or even the possibility to negotiate job-related matters (Dansereau et al., 1975). In sum, LMX influences how leaders behave towards their employees, which leads to positive outcomes for both parties (Graen & Uhl-Bien, 1995). In this section, we propose that LMX is the process through which leader psychological need satisfaction trickles down to employees. Below we will outline why we propose that (1) leader psychological need satisfaction is associated to LMX, (2) LMX is associated to employee psychological need satisfaction and (3) LMX mediates the relationship between leader and employee psychological need satisfaction.

By formulating our hypotheses (see below) from both leader and employee perspectives, we take into account the fundamental notion of a leader-employee dyad in LMX and social exchange theory (Gooty et al., 2012; Gooty & Yammarino, 2011; Krasikova & Lebreton, 2002; Tse et al., 2018). We propose that the LMX-perception of both leader and employee will influence employee psychological need satisfaction for several reasons. First, high (leader-perceived) LMX

quality is related to more positive leader behavior (Tse et al., 2018), which is associated with employee psychological need satisfaction (Breevaart et al., 2014; Kovjanic et al., 2013; Reb et al., 2014; Van Dierendonck et al., 2014). Similarly, employee-rated LMX quality is related to employee psychological need satisfaction as well (Hepperlen, 2003). Furthermore, meta-analytic research has indicated that leader and employee LMX-ratings are only moderately related (Gerstner & Day, 1997; Schyns & Day, 2010; Sin et al., 2009), which is why we take both perspectives into account. Therefore, we propose that both leader- and employee-rated perceptions of LMX have important consequences for employee psychological need satisfaction.

Leader psychological need satisfaction and LMX. We argue that leader psychological need satisfaction influences LMX in several ways. First, when leaders' basic psychological needs are satisfied, and their resources are not depleted, they are more likely to treat employees respectfully (Masterson et al., 2000; Scandura, 1999) and to engage in genuine dialogue (Van Quaquebeke & Felps, 2016). Together, this will benefit high-quality relationships with employees, from both the perspective of the leader *and* the employee. Second, leader psychological need satisfaction is related to less aggression, defensiveness and social insecurity (Fast & Chen, 2006; Hodgins et al., 2006; Van Quaquebeke & Felps, 2016), which will enhance perceived fairness of employee treatment and therefore interpersonal justice. Perceptions of fairness and justice are associated with higher LMX-quality as well (Graen & Scandura, 1987; Reb et al., 2018; Scandura, 1999; Sparr & Sonnentag, 2008). Taken together, we propose:

> *Hypothesis 2a: Leader psychological need satisfaction is related to leader-rated LMX*
> *Hypothesis 2b: Leader psychological need satisfaction is related to employee-rated LMX*

LMX and employee psychological need satisfaction. We also propose that high-quality LMX from both leader and employee influences employee psychological need satisfaction. First, high-quality *leader-perceived LMX* influences employee psychological need satisfaction in two ways. When there is a high leader-perceived LMX, this may motivate the leader to provide the employee with several resources (Graen & Uhl-Bien, 1995), including granting more autonomy (which influences the employees' need for autonomy) and support (which leads to more employee competence). In addition, a high LMX relationship will satisfy employees' need for relatedness. For example through friendship and a sense of belonging shared with the leader (Van Den Broeck et al., 2010).

Second, high-quality *employee-perceived LMX*, may also result in enhanced employee psychological need satisfaction through similar mechanisms. The high quality LMX relationship is characterized by high levels of trust and support (Liden & Maslyn, 1998), which can provide the

employee with the necessary relational environment in which to ask for more autonomy or support (e.g. in terms of training) when needed. In addition, trust may serve as a good foundation to have difficult conversations, like giving and receiving feedback (Peterson & Jackson Behfar, 2003). In addition, feedback is also more appreciated, since high-quality LMX is associated with more respect for each other's contributions (Graen & Uhl-Bien, 1995). This may also enhance employees' effectiveness and success, which contributes to competence need satisfaction (Van Den Broeck et al., 2010). Likewise, high employee perceived LMX will lead to a higher relatedness need satisfaction, since this is all based on forming good (work) relationships and developing a sense of belonging (Van Den Broeck et al., 2010). Therefore, we hypothesize:

> *Hypothesis 3a: Leader-rated LMX is related to employee psychological need satisfaction*
> *Hypothesis 3b: Employee-rated LMX is related to employee psychological need satisfaction*

Combining the reasoning outlined above and the dyadic perspective in LMX-theory (Gooty et al., 2012; Gooty & Yammarino, 2011; Krasikova & Lebreton, 2002; Tse et al., 2018), we further hypothesize that the LMX-perception of both leaders and employees is relevant in the trickle-down relationship of leader psychological need satisfaction. This notion is also supported by research on respectful inquiry, which proposes that psychological need satisfaction can trickle down from leaders to followers through positive, open, and respectful communication (van Quaquebeke & Felps, 2016), forming the basis of high-quality relationships (Uhl-Bien, 2006). This leads us to the last hypotheses:

> *Hypothesis 4a: Leader-rated LMX mediates the trickle-down effect of leader psychological need satisfaction on employee psychological need satisfaction*
> *Hypothesis 4b: Employee-rated LMX mediates the trickle-down effect of leader psychological need satisfaction on employee psychological need satisfaction*

Method

Research context

The data-collection was part of a larger research project on leadership and well-being in elderly care homes in Flanders. The nursing sector is a psychologically stressful occupation (Decker, 1997) due to high work pressure, demanding patient contacts and shift work (Payne, 2001; Smith, 2014; Tahghighi, Rees, Brown, Breen, & Hegney, 2017). This outcome-focused and stressful work environment provides an interesting research context, since our choice for elderly care homes

provides a stringent test for our hypotheses that *leader-employee relationships matter* (for psychological need satisfaction), even in high-stress environments.

In addition, there is a phenomenon labeled "the glass escalator": a process in which men who work in a predominantly female sector appear to encounter structural advantages that enhance their careers and translate in e.g. higher wages, better internal promotion changes and faster promotions (Williams, 1992; Hultin, 2003; Punshon et al., 2019). Therefore, it is to be expected that there are more women in general in this study, as well as more males in the head nurse position.

Sample and procedure

In the autumn of 2017, we recruited a sample of nurse-head nurse dyads within elderly care wards. Data was collected in 108 elderly care homes through an on-site paper-and-pencil questionnaire with sealed, anonymous envelopes. Prior to the data collection, the directors of the nursing homes were briefed about the purpose and nature of the research. Informed consent was obtained from the director and each participant. We received responses from 283 head nurses and 1045 nurses. After a matching procedure through unique and anonymized codes, 1036 nurse-head nurse dyads - clustered within nurse wards - could be retained. Specifically, the data-collection followed a strict procedure: head nurses rated the LMX with regards to 3 to 4 nurses alphabetically ordered based on their first name, the nurse questionnaires were then administered in the same order (X1-X4 alphabetically based on their first name). Subsequently, the questionnaires were anonymously computerized with these codes. Nurses were predominantly female (91.70%). On average they were 38.79 years old (SD = 11.35) and had 14.96 years of experience (SD = 9.20). As was expected based on the glass escalator hypothesis, fewer (but still most) head nurses were female (80.4%), 45.38 years old (SD = 9.69), had 11.50 years of experience in their role (SD = 8.03) and supervised on average 19.24 nurses in his or her ward (SD = 8.99).

Measures

We used scales with established psychometric properties and adopted a seven-point Likert scale for each questionnaire (1 = totally disagree, 7 = totally agree). Leaders rated their own psychological needs satisfaction and LMX with regards to each individual employee. Employees rated LMX with the leader in addition to their own psychological need satisfaction. Items were administered in Dutch, using valid translations from previous studies.

Psychological need satisfaction. This was assessed using the Dutch version of the Work-Related Basic Need Satisfaction Scale (Van den Broeck et al., 2010), that distinguishes between autonomy, competence and relatedness. Both leader's psychological need satisfaction and employees' psychological need satisfaction demonstrated good internal reliabilities with alpha .87 and .84, respectively.

LMX. This was measured with the scale by Bauer & Green (1996). We obtained Dutch items from Audenaert et al. (2019). One item loaded insufficiently on its factor ($\lambda < .40$) and was removed from the leader-rated LMX scale. For comparability reasons, we also removed this item from the employee-rated LMX scale ("[I/My leader], would bail [me/this employee] out, even if this is at [my/his/her] expense"). Leader-rated LMX and employee-rated LMX had respective alphas of .89 and .90.

Controls. We controlled for gender, tenure and span of control (SPOC). First, gender has been associated with possible differences in psychological need satisfaction, e.g. in the level of relatedness (Baard, Deci, & Ryan, 2004). Second, leader tenure is likely associated with leader levels of autonomy and competence. The (relationship) tenure has also been shown to be associated with LMX quality (Maslyn & Uhl-Bien, 2001; Sin et al., 2009). Third, we also controlled for SPOC, since the organizational context influences how dyads function (Graen & Scandura, 1987; Schyns & Day, 2010), SPOC influences LMX (Cogliser, Schriesheim, Scandura, & Gardner, 2009) and with a very large SPOC – similar to the SPOC of some of the leaders in our sample – it may be difficult to develop high-quality relationships with all employees (Schyns & Day, 2010).

Analytic strategy

Our model is designed as two 2-1-1 mediations, with individual nurses nested in wards under their head nurse. The intraclass correlations (ICCs) demonstrated that 21.50% of the variance in employee-rated LMX, 35.55% of the variance in leader-rated LMX and 4.26% of the variance in employee psychological need satisfaction was situated at ward or head nurse-level, warranting the use of multilevel techniques. First, we tested the convergent and discriminant validity of the measurement model with multilevel confirmatory factor analysis (MCFA). Following Kline (2015), we respected cut-off values of $\geq .90$ for the Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI), $\leq .08$ for the Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMR). To combat potential negative effects of negatively worded items on the covariance structure, we used item parceling for positively and negatively worded (reverse) items from the psychological need satisfaction scale (Zhang, Noor, & Savalei, 2016). Second, we examined our hypotheses with hierarchical regression analyses. For each model, we calculated the pseudo explained variance for each level of analysis (Bliese, 2016), as well as the total explained variance. Finally, we assessed multilevel mediation through Monte Carlo simulations with quasi-Bayesian confidence intervals (Preacher & Selig, 2012). Analyses were performed in R with the packages lavaan (Rosseel, 2012) and nlme (Pinheiro et al., 2017).

Results

Measurement model and common source bias

The various MCFA models and fit indices can be consulted in *Table 1* below. The results showed that the hypothesized four-factor model (i.e. leader psychological need satisfaction, leader-rated LMX, employee-rated LMX, employee psychological need satisfaction) had a good fit to the data, with acceptable fit indices (χ^2 [578] = 1489.48, CFI = .92, TLI = .93, RMSEA = .04, SRMR = .08). All items loaded on their respective factors ($\lambda > .40$; range: .44 - .93), excluding two items that were previously removed (see 'LMX' under 'measures'). Since a one-factor model ($\Delta\chi^2$ = 3765.34, Δdf = 364, $p < .001$) and a common factor model ($\Delta\chi^2$ = 1007.61, Δdf = 45, $p < .001$) fitted the data significantly worse, considerable common source bias could be ruled out. Furthermore, an eight-factor model (i.e. psychological need satisfaction scales as separate dimensions) only fitted the data marginally better ($\Delta\chi^2$ = 8.67, Δdf = 4, $p < .10$). Therefore, we chose to retain the hypothesized model for the main analyses.

Table 1. Models and fit indices

	χ^2	df	CFI	TLI	RMSEA	SRMR
Four-factor model (needsat total)	1489.48	578	.92	.91	.04	.08
Eight-factor model (subcomponents)	1480.82	574	.92	.91	.04	.09
One-factor model (CSB)	5254.82	942	.55	.53	.09	.09
Common factor model (CSB)	2497.09	623	.82	.80	.06	.06

CFI = comparative fit index, TLI = Tucker-Lewis index, RMSEA = root mean square error of approximation, needsat = psychological need satisfaction; SRMR = standardized root mean square residual, CSB = common source bias.

Descriptive statistics and correlations

Table 2 reports the descriptive statistics and correlations. Leaders' gender, as well as employees' gender and tenure were unrelated to the focal constructs. Leader tenure was positively related to leader leader-rated LMX ($r = .11$, $p < .01$) and psychological need satisfaction ($r = .19$, $p < .01$). Leaders' SPOC was negatively associated with leader-rated need satisfaction ($r = -.09$, $p < .01$). Leader-rated LMX was positively associated to leader psychological need satisfaction ($r = .24$, $p < .01$). Employee-rated LMX showed positive correlations with employee psychological need satisfaction ($r = .46$, $p < .01$).

Table 2. Descriptive statistics and correlations

	Mean	SD	1	2	3	4	5	6	7	8
Leader level										
1 Leader gender	.80	.40								
2 Leader tenure	11.27	8.04	-0.10							
3 Leader SPOC	19.24	8.89	-0.01	0.06						
4 Leader-rated LMX	5.64	.62	.01	.13*	.09	(α = .89)				
5 Leader need satisfaction	5.59	.67	.02	.19**	-.10	.33**	(α = .87)			
6 *Leader autonomy*	5.31	.86	.00	.10	-.07	.24**	.87**	(α = .82)		
7 *Leader competence*	5.74	.76	-.04	.23**	-.03	.27**	.76**	.51**	(α = .65)	
8 *Leader relatedness*	5.74	.82	-.08	.15*	-.14*	.30**	.81**	.59**	.37**	(α = .79)
Employee level										
1 Employee gender	.92	.28								
2 Employee tenure	14.96	9.20	.05							
3 Employee-rated LMX	5.52	.91	-.03	.04	(α = .90)					
4 Employee need satisfaction	5.45	.64	.01	.00		(α = .84)				
5 *Employee autonomy*	4.97	.95	.03	.02	.42**	.80**	(α = .79)			
6 *Employee competence*	5.83	.68	-.03	-.04	.27**	.68**	.38**	(α = .78)		
7 *Employee relatedness*	5.31	.92	.00	.00	.32**	.76**	.36**	.29**	(α = .78)	

*Gender was coded as 1 = female, 0 = male; † p < .10 * p < .05 ** p < .01 *** p < .001; N employees = 1045; N leaders = 283*

Hypothesis testing

Table 3 presents the results of the hierarchical regression analyses. Effects of the control variables were largely absent, although leader tenure was associated with higher leader-rated LMX ($\beta = .01$, $p <.05$) and employee-rated LMX ($\beta = .01$, $p <.05$). In addition, a higher SPOC corresponded to lower employee-rated LMX ($\beta = -.01$, $p <.05$). Congruent with Hypothesis 1, leader psychological need satisfaction was directly related to employee psychological need satisfaction ($\beta = .11$, $p <.01$). Leader psychological need satisfaction also predicted both leader-rated LMX ($\beta = .30$, $p <.00$) and employee-rated LMX ($\beta = .19$, $p <.00$), conforming to Hypothesis 2a and Hypothesis 2b. However, while employee-rated LMX was associated with employee need satisfaction ($\beta = .34$, $p <.00$), this was not the case for leader-rated LMX ($\beta = -.03$, $p >.05$). Therefore, we can confirm Hypothesis 3b, but not Hypothesis 3a.

Table 3. Hierarchical regression results for the final model

	Leader-rated LMX		Employee-rated LMX		Employee's psychological need satisfaction	
	β	SE	β	SE	β	SE
Intercept	3.63***	.41	4.57***	.44	2.99***	.26
Leader gender	-.00	.11	.06	.12	-.02	.06
Employee gender	.07	.12	-.02	.13	.09	.08
Leader tenure	.01*	.01	.01*	.00	.00	.00
Employee tenure	.00	.00	.00	.01	-.00	.00
SPOC	.00	.00	-.01*	.00	-.00	.00
Leader psychological need satisfaction	.30***	.07	.19***	.07	.10**	.04
Leader-rated LMX					-.03	.03
Employee-rated LMX					.35***	.02
Pseudo r² lv1	.11		.01		.24	
Pseudo r² lv2	.29		.09		.03	
Total r²	.18		.02		.20	

*p < .05; **p < .01; *** p < .001; Total r² = pseudo r² level 1 x [1- ICC(1)] + pseudo r² level 2 x ICC1], which also shows that only the total r² (not the pseudo r²s) can be compared across models

Subsequently, we assessed the mediation hypotheses. Since leader psychological need satisfaction was (a) related to employee need satisfaction, as well to (b) employee-rated LMX and (c) the latter variables were also related to each other, we assessed the indirect effect through Monte Carlo mediation. See *Table 4* for the results. Based on 10,000 simulations the average indirect effect across groups was .07 ($p < .02$), 95% CI [.02; .12], and the total effect was .17 ($p < .00$), 95% CI [.08; .25], providing support for Hypothesis 4b. Since leader psychological need satisfaction (a)

related to employee need satisfaction, as well to (b) leader-rated LMX, but (c) the latter variables showed no significant relations, we could reject Hypothesis 4a. See *Figure 2* for a visualization of research results.

Table 4. Monte Carlo Mediation for Leader psychological need satisfaction

Effect	b	CI lower	CI upper
Direct	.10*	.02	.18
Indirect	.07**	.02	.12
Total	.17***	.08	.25

*p < .05; **p < .01; *** p < .001

Figure 2: Hierarchical regressions
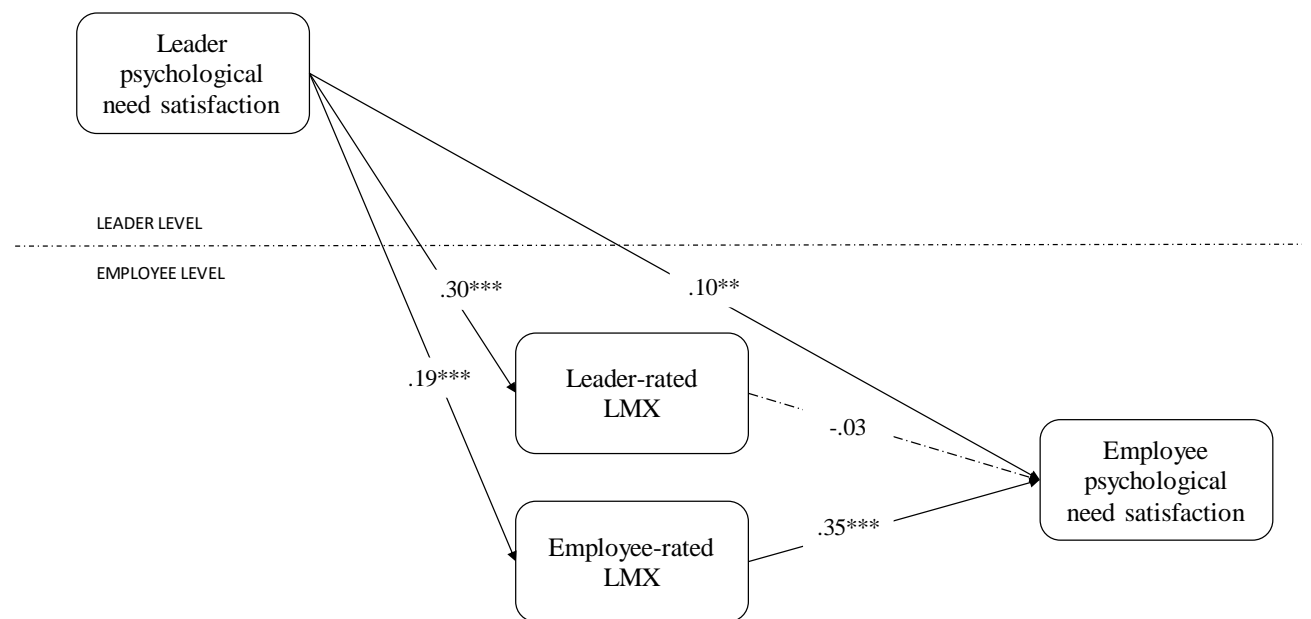
Additional analyses[2]

Since a model with differential psychological need satisfaction (i.e. autonomy, competence, relatedness) presented a marginal improvement, we also calculated the regression results for models where both leader and employee psychological need satisfaction were presented by their separate dimensions. The intraclass correlations (ICCs) for the separated psychological needs demonstrated that 8.98% of the variance in autonomy need satisfaction, 1.7% of the variance in competence need satisfaction and 5.97% of the variance in relatedness need satisfaction was situated at ward or head nurse-level. We did not formulate any specific hypotheses for these calculations. Since some interesting results appeared, we decided to report them here. The full results of the hierarchical regressions can be consulted in *Table 5*. The full results for the Monte Carlo mediation effects can be found in *Table 6*. For a visualization see *Figure 3*. With regards to the control variables, we found that employee autonomy was lower in the presence of female leaders (β = -.16, p < .05), but also higher for female employees (β = .23, p < .05). Furthermore, a higher SPOC corresponded to lower employee relatedness (β = -.01, p < .01).

Direct effects. Leader autonomy was only related to one employee psychological need, i.e. employee competence. Contrary to expectations, leader autonomy had a negative relationship with employee competence (β = -.23, p <.00). Leader competence was positively related to employee competence (β = .88, p <.00), as well as to employee-rated LMX (β = .24, p <.05). Leader-rated LMX was not associated with employee autonomy, competence or relatedness. Employee-rated LMX, however, had significant influences on all three psychological need dimensions: employee autonomy (β = .42, p <.05), employee competence (β = .15, p <.05) and employee relatedness (β = .33, p <.05).

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[2] We tested for reverse causality with cluster-corrected regressions. Results show that employee psychological need satisfaction also affects employee- and leader-rated LMX. In turn, leader-rater LMX affects leader psychological need satisfaction. While these effects are significantly smaller, they could suggest a trickle-up effect in addition to a trickle-down effect.

Table 5. Hierarchical regressions per psychological need

	Leader-rated LMX		Employee-rated LMX		Employee autonomy		Employee competence		Employee relatedness	
	β	SE	β	SE	β	SE	β	SE	β	SE
(Intercept)	3.52***	.47	4.16***	.49	2.44***	.46	2.16***	.41	3.93***	.49
Leader gender	.03	.11	.11	.11	-.16†	.09	.02	.09	.13	.09
Employee gender	.03	.12	-.10	.13	.23†	.12	-.03	.08	.06	.11
Leader tenure	-.01†	.01	-.01†	.01	-.00	.00	-.01	.00	.00	.01
Employee tenure	-.00	.00	.01	.00	-.00	.00	.00	.00	.00	.00
SPOC	.00	.00	-.01	.00	-.00	.00	.00	.00	-.01*	.00
Leader autonomy	.04	.06	-.11†	.07	.02	.06	-.23***	.06	.02	.06
Leader competence	.13	.08	.24**	.09	.05	.07	.88***	.06	.05	.07
Leader relatedness	.16*	.06	.14*	.07	.03	.06	-.07	.06	-.02	.06
Leader-rated LMX					-.07	.04	-.04	.03	-.09	.04
Employee-rated LMX					.42***	.04	.15***	.03	.33***	.04
Pseudo r² lv1	.13		.04		.13		.42		.15	
Pseudo r² lv2	.27		.35		.19		.19		.12	
Total r²	.18		.11		.19		.41		.14	

† *p* < .10 * *p* < .05 ** *p* < .01 *** *p* < .001; Total r² = pseudo r² level 1 × [1- ICC(1)] + pseudo r² level 2 × ICC1], which also shows that only the total r² (not the pseudo r²s) can be compared across models

Indirect effects. Since leader autonomy was unrelated to both employee- and leader-rated LMX, only the indirect effects of leader competence and leader relatedness were calculated.

Leader competence. Monte Carlo simulations showed that the indirect effect of leader competence on employee autonomy was .11 ($p < .05$), 95% CI [.04, .18]. The indirect effect on employee competence was .04 ($p < .01$), 95% CI [.01; 07] and the indirect effect on employee relatedness was .09 ($p < .001$), 95% CI [.03; .14]. See *Table 6* (below) and *Figure 3* (on the next page) for the full results.

Leader relatedness. The indirect effect of leader relatedness on employee autonomy was .06 ($p < .05$), 95% CI [.01, .12]. The indirect effect on employee competence was .02 ($p < .05$), 95% CI [.01; 05] and the indirect effect on employee relatedness was .05 ($p < .01$), 95% CI [.01; .10]. See *Table 6* (below) and *Figure 3* (on the next page) for the full results.

Table 6. Monte Carlo Mediation indirect effects per psychological need

Model	*b*	CI lower	CI upper	Mediation
Leader competence				
* / Employee-rated LMX / Employee Autonomy*	.11*	.04	.18	full
* / Employee-rated LMX / Employee Competence*	.04**	.01	.07	part
* / Employee-rated LMX / Employee Relatedness*	.09***	.03	.14	full
Leader relatedness				
* / Employee-rated LMX / Employee Autonomy*	.06*	.01	.12	full
* / Employee-rated LMX / Employee Competence*	.02*	.003	.04	full
* / Employee-rated LMX / Employee Relatedness*	.05*	.01	.10	full

*p < .05; **p < .01; *** p < .001

Figure 3. Hierarchical regressions per psychological need

LEADER LEVEL

EMPLOYEE LEVEL

-.23***

-.11†

.88***

.13†

.24*

.14*

.42***

.15***

.33***

Leader autonomy

Leader competence

Leader relatedness

Leader-rated LMX

Employee-rated LMX

Employee autonomy

Employee competence

Employee relatedness
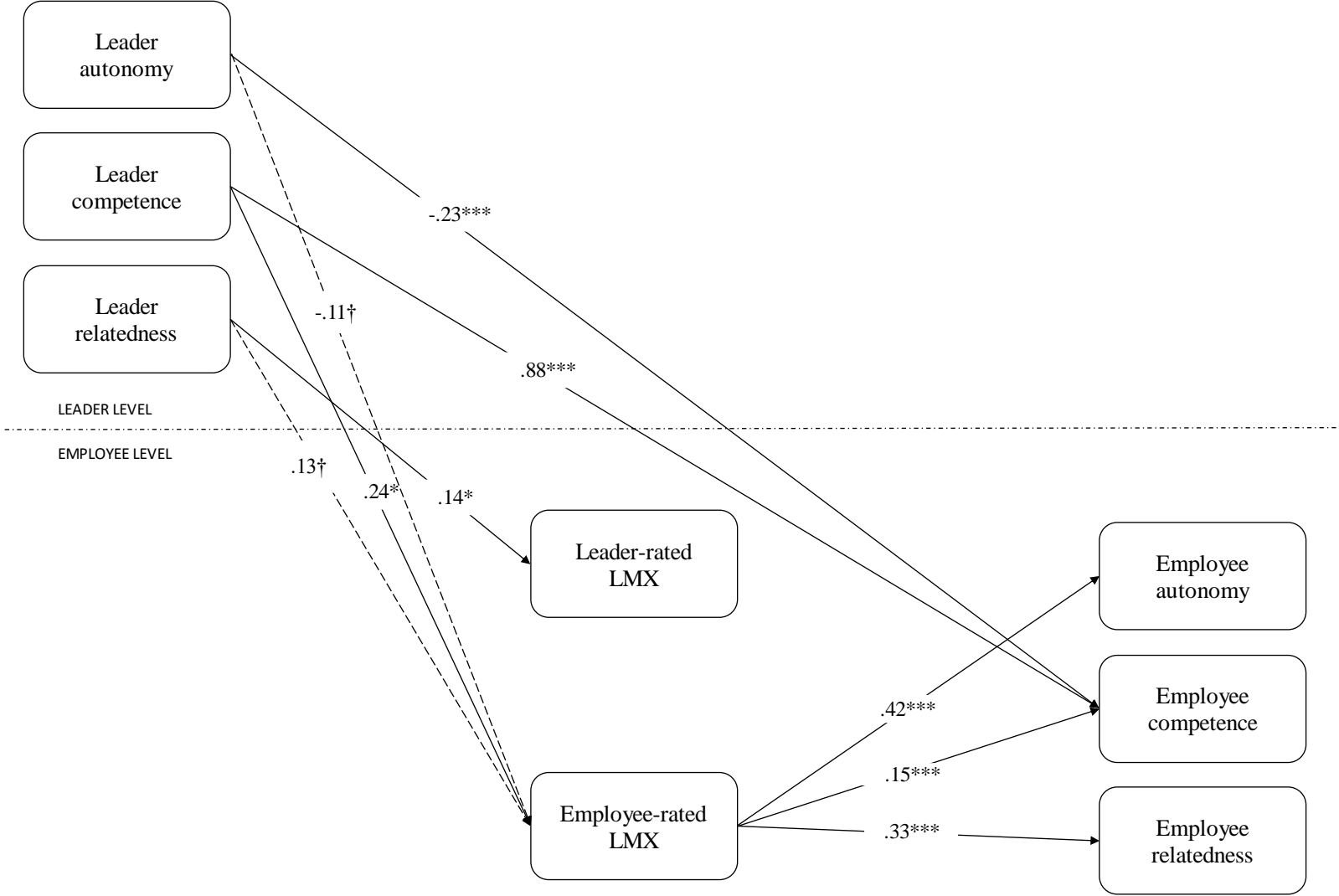
Discussion

In this paper, we examined the trickle-down effect of leader psychological need satisfaction via the dyadic process of leader-member exchange. Previous research devoted attention to how 'positive' leadership styles and leader behaviors contribute to employee motivation and performance (Antonakis & Day, 2017), while less attention has been devoted to how a leader's mindset influences employees (Sauer & Kohls, 2011) or trickles down the organization (Frazier & Tupper, 2018). Since leadership is an inherently relational social influence process (Uhl-Bien, 2006), it is relevant to study how interactions with employees unfold (Cropanzano et al., 2017) from a dyadic (Gooty et al., 2012; Gooty & Yammarino, 2011; Krasikova & Lebreton, 2002; Tse et al., 2018) and multilevel perspective (Batistič et al., 2017). Our study was consistent with such perspectives and also answered calls in the trickle-down field for more work on the mediating mechanisms in the trickle-down process (Wo et al., 2019).

Therefore, we hypothesized that leader psychological need satisfaction would be directly related to employee psychological need satisfaction as well as (partially) mediated by (leader and employee-rated) leader-member exchange. In doing so, we integrated (individual-level) SDT and (dyadic) LMX-theory. Specifically, in order to enrich the understanding of the possible effect of leader psychological need satisfaction, we proposed two underlying processes, i.e. (1) a direct behavioral process based on our proposition that leader psychological need satisfaction results in different (positive or negative) leader behaviors that influence employee psychological need satisfaction and (2) an underlying – mediating – indirect relational process in which we proposed that the development of different LMX-relationships (based on different leader behavior and emotional dynamics) influences employee psychological need satisfaction (Graen & Uhl-Bien, 1995). This contributes to theoretical considerations on trickle-down effects (Wo et al., 2019) as well as posits LMX as a 'micro-macro link' between leader and employee psychological need satisfaction.

Our results show that leader psychological need satisfaction predicted employee psychological need satisfaction. In turn, leader psychological need satisfaction also influenced both leader-rated LMX and employee-rated LMX. In other words, when leaders feel their psychological needs are satisfied, this influences their interactions with employees in such a way that the overall LMX-quality, i.e. perceived LMX quality based on both perspectives, benefits. However, only employee-rated LMX was associated with employee psychological need satisfaction. This was not in line with our hypotheses. Since psychological need satisfaction, like perceptions of LMX-quality, can be seen as 'private' events, best judged by self-report questionnaires (Conway & Lance, 2010; Decuypere et al., 2018), we should have expected that employee perceptions of LMX-quality are

more likely to be associated with (self-rated) employee outcomes than with leader perceptions. Likewise, only employee-rated LMX mediated the trickle-down effect of leader psychological need satisfaction on employee psychological need satisfaction. In addition, the control variables did indicate a small association between leader tenure and LMX rated by both parties. A higher SPOC, which limits the chances of developing employee-relationships, corresponded with a lower employee-rated LMX. This was in line with previous observations and theorizing (Cogliser et al., 2009; Graen & Scandura, 1987; Maslyn & Uhl-Bien, 2001; Schyns & Day, 2010; Sin et al., 2009).

From a theoretical point of view, these findings confirm the existence of both a direct trickle-down effect of leader psychological need satisfaction, as well as an indirect effect through employee-rated LMX. Therefore, this study answered to calls on taking into account the underdeveloped leader perspective on LMX (Schyns & Day, 2010). Moreover, by taking a dyadic approach, we assured multiple perspectives on the leader-employee professional relationship were incorporated (Krasikova & Lebreton, 2002; Schyns & Day, 2010; McCusker et al., 2019; Uhl-Bien, 2006). Our results indicate that employee LMX-perceptions could be more influential for employee psychological need satisfaction.

Furthermore, we contribute to a more fine-grained understanding of the trickle-down effect of separate psychological needs by demonstrating some interesting patterns in our additional analysis of the separate need factors. First, leader autonomy need satisfaction was not related to leader-rated LMX and only marginally (and negatively) associated with employee-rated LMX. Leader autonomy was also associated with only one employee psychological need: we found a negative relationship with employee competence. This is an unexpected finding. Perhaps a higher perceived level of freedom and decision making latitude experienced by the leader is intimidating for an employee, hampering employee confidence and thus lowering employee competence need satisfaction. Perhaps leaders in our research context who feel more freedom are somehow less inclined to support and help their employees.

Second, leader competence was both directly and indirectly related to employee psychological needs: it was positively related to both employee competence, as well as to employee-rated LMX. This indicates that leaders who feel competent can increase employees' subjective feelings of competence. Perhaps leaders accomplish this by actually providing support (e.g. training) to their employees, or perhaps leaders who feel competent (and confident) themselves are simply able to instill or inspire the same feeling of competence (and confidence in abilities) in their employees. Leader competence need satisfaction is also the only psychological need that trickles down directly to employees. In addition, through increasing employee-rated LMX, leader competence need satisfaction also influences all three employee needs indirectly. Again, this shows

that a leader who feels competent impacts employee need satisfaction through enhanced employee relationships.

Third, leader relatedness was positively associated with leader-rated LMX and only marginally related to employee-rated LMX. Therefore, leader relatedness seems most important for leader outcomes, even though the indirect effects from leader relatedness through employee-rated LMX on employee competence and relatedness were also significant.

In sum, these additional analyses revealed an important and rather unexpected research finding that contributes to the literature and evokes further questions: separate psychological needs do not necessarily follow the same trickle-down path. Leader autonomy only has a direct influence, leader competence both directly and indirectly influences employee psychological need satisfaction and leader relatedness is only significantly related to leader-rated LMX. Furthermore, the additional analyses mostly indicate the importance of leader competence need satisfaction for employee psychological need satisfaction. A leader who feels competent will enhance employee relatedness, autonomy and competence. Previous research indeed indicated all kinds of negative employee effects in the absence of leader competence. For example, a lack of self-perceived leader competence is related to leader aggression (Fast & Chen, 2006). It will also enhance leader stress, which has demonstrable effects on employee stress and affective well-being (Skakon et al., 2010).

In addition, the control variables in these additional analyses also showed some unexpected (gendered) patterns worth elaborating on. First, employee autonomy was lower with female leaders, indicating that employees of female leaders experience less decision making freedom. Women do score higher on a personality subtrait of conscientiousness, i.e. orderliness, which is related to maintaining order and organization as well as to perfectionism (Weisberg et al., 2011). Perhaps female leaders are more perfectionistic and detail-oriented when working with their employees, which may lead them to come across as more 'controlling' and granting less autonomy. Another possibility is that women leaders in this particular field actually grant less autonomy to their employees because of the 'glass escalator' phenomenon (see "sample and procedure"). This could make woman leaders feel at a disadvantage to advance their own careers, which may fuel the need to control the performance of their employees more (see e.g. the 'flywheel effect', van Dijk & van Engen, 2019). Second, female employees also perceived higher levels of autonomy than male employees. Perhaps this finding indicates a gender difference in autonomy perception. Perhaps these effects are also influenced by the gender dynamics in an environment dominated by women, although men seem to be rather successful in these occupations as well (see glass escalator; Williams, 1992; Hultin, 2003; Punshon et al., 2019).

Beyond these theoretical and analytical contributions, our research also has some practical implications. Specifically, our results indicate that leader psychological need satisfaction matters not only for the leaders themselves, but (in)directly influences their employees as well. Therefore, both leaders and their organizations have a responsibility in supporting psychological need satisfaction. Our results indicate that organizations need not only develop HR practices and policies to help those at the lowest level in the organization succeed, but also for their leaders. Of course, employees can also satisfy their own basic psychological needs themselves, e.g. through self-leadership, job crafting or strengths use (Bakker & van Woerkrom, 2017), although this is beyond the scope of this article.

Arguable the most important practical implication is that organizations should focus on increasing leaders' autonomy (e.g. through more decision making latitude), competence (e.g. through more education or mentoring programs) and relatedness (e.g. through more informal gatherings or activities), since this will both lead to well-being and performance for leaders themselves (Deci & Ryan, 2000), as well as trickle down to their employees. In addition, it indicates the importance of leader self-care with regards to their psychological needs: are they still feeling competent or connected? Do they have enough decision-making latitude? Management books have long advocated for leader self-development *and* self-care in order to be successful (Latham, 2018). Our research indicates that this is also important for employees' perceptions of the LMX quality, their psychological need satisfaction, and, consequently, their success.

Limitations and future research

There are also some limitations to our research design that provide opportunities for future research. First of all, even though we used a multilevel and multisource data, the design was cross-sectional. Therefore, we cannot make actual causal inferences based on our results. LMX might take time to develop, and even though we controlled for tenure at both levels, our cross-sectional design does not take evolution over time into account (Lord, 2019; McCusker et al., 2019). Similarly, it does not permit us to investigate the complex interplay of our focal variables in a dynamic way. Daily differences in how leaders feel may influence daily leader need satisfaction and trickle-down to daily employee need satisfaction. Diary studies or experience sampling could be an interesting future research avenue in order to explore these effects (see e.g. Breevaart et al., 2014; De Gieter et al., 2017; Hetland et al., 2018; Tims et al., 2011; Liao et al., 2019), specifically with regards to fluctuations in leader psychological need satisfaction and the effects on employees.

Second, even though our research context, i.e. an elderly care home in Flanders with a predominantly female staff, provides a stringent test of our hypotheses since it is a highly stressful environment (Decker, 1997; Payne, 2001; Smith, 2014; Tahghighi et al., 2017), it is also quite

specific and does not allow for a large generalization of our results. Future research could aim at replicating our research results in different contexts.

Third, we did to take into account several contextual variables that may have an important influence on our focal variables. For example, we took into account the SPOC, yet did not specifically ask how much contact an employee had with a leader on a weekly basis. In this context, research has indeed indicated the importance of dyadic intensity for LMX agreement (Sin et al., 2009). Although SPOC can be seen as an indirect measure of leader contact possibilities, it can be argued that a small SPOC does not necessarily always indicate more leader contact. Future research could take this into account by controlling for personality and amount of contact measured in either contact moments or contact duration.

In our theoretical research model, we proposed two direct pathways through which leader psychological need satisfaction may influence employee psychological need satisfaction: a behavioral pathway (leader need satisfaction leading to different leader behavior) and an emotional pathway (affective events or emotional contagion influencing the dynamics). Even though our results show that there is indeed a direct relationship between leader and employee psychological need satisfaction, we did not directly assess these proposed mechanisms. Future research could investigate whether leader psychological need satisfaction indeed shapes leader behavior in the ways we have proposed throughout this paper, and whether this is the mechanism through which it influences employee psychological need satisfaction. In addition, future research could delve into the possibility that positive emotions or more general mood as a consequence of leader psychological need satisfaction also composes one of the primary pathways through which leader psychological need satisfaction influences employee psychological need satisfaction.

We also urge future researchers to dive into the complex interrelationships between different psychological needs, especially in light of the unexpected results. Reverse causality or 'trickle-up' effects are also an interesting research avenue (Wo et al., 2019), that can take into account the dyadic effect of LMX, and therefore the effect employees can have on leaders (Uhl-Bien, 2006). In addition, future research may also focus on dismantling gender effects with regards to psychological need satisfaction and leadership: Do female leaders influence psychological need satisfaction differently? Could 'female leadership' hamper employee autonomy? Do female employees interpret their decision-making latitude in a different way?

Final note

Our research shows the importance of leaders' psychological needs for employees. In particular, leader competence need satisfaction was the only need that directly trickled down to employees. Organizations may want to influence employees through increasing leaders' subjective feeling of competence, e.g. through offering courses, coaching or mentoring. In addition, our research indicates the importance of encouraging leaders to develop positive relationships (LMX) with employees.

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PART 3:

ON LEADER ATTENTVE COMMUNICATION

Chapter 5

Leader Attentive Communication:
A new communication concept, validation and scale development

Effective communication is a foundational leadership skill. Many leadership theories implicitly assume communication skills, without investigating them behaviorally. To be able to research leader communication as a building block of effective leader behavior, we propose the new concept, of leader attentive communication which refers to "an open-minded, attentive demeanor while in a conversation with an employee". Instead of focusing on the content or form of the communication, we propose to study the communication skills of the leader from the viewpoint of the employee. For the purpose of construct validation, we use information from 1320 employees and their leaders, in 422 teams, in 3 different datasets. The end result is a 10-item questionnaire with 2 dimensions consisting of general attention (towards the employee) and attention to non-verbal cues. With this questionnaire, we contribute to calls for a more behavioral, detailed view on leader communication behavior.

Introduction

"Are you still listening?" seems to be a common question in this era full of distractions. Communicating well face-to-face may feel like a lost art to some (Murphy, 2020), yet its importance is greater than ever. It is especially important for leaders, for whom a primary activity is communicating with employees in one form or another (Wajcman & Rose, 2011). Many leadership scholars posit that effective and skilled communication is crucial for leadership (Barge, 1994; Fairhurst & Connaughton, 2014; Neufeld et al., 2010; Riggio & Darioly, 2016). Some scholars even go so far as to argue that successful leadership is a consequence of effective communication (Ruben & Gigliotti, 2017). Moreover, communication skills are universally seen as indicators of all positive leadership styles (e.g. transformational and charismatic leadership, see Den Hartog et al., 1999). In addition, as leadership responsibility increases, the relevance of leader communication rises (Hackman & Johnson, 2013). Research has also repeatedly indicated that communication abilities of leaders are related to leader performance (De Vries et al., 2009; Penley et al., 1991; Van Quaquebeke & Felps, 2016), even when there is physical distance between leaders and remote employees (Neufeld et al., 2010). On the other hand, a lack of communication skills can frustrate employee needs (Van Quaquebeke & Felps, 2016). Moreover, a lack of leader attention during communication, e.g. through boss phone snubbing, undermines employee trust and reduces employee well-being as well (Roberts & Williams, 2017).

Therefore, in this paper, we introduce a new communication concept that combines the relevance of leader communication skills and of leader attention for employee well-being. Leader attentive communication is defined as "an open-minded, attentive demeanor while in a conversation with an employee". It is a narrow behavioral approach of actual leader behavior that builds on previous research.

Previous communication research has focused on leader communication styles, i.e. the relevance of preciseness or expressiveness of communication (Bakker-Pieper & De Vries, 2013), and on leader non-verbal behavior, i.e. the effect of positive kinesics and paralanguage (Bellou & Gkorezis, 2016), but there has not been much communication research through the lens of *leader attention*. This is surprising, since recent research has shown that leader attention in general may have a positive effect on the relational quality with employees (Good et al., 2016; Reb et al., 2019) and is related to active listening and interpersonal skills (Jones et al., 2016). Paying attention to employees is an important activity for effective leaders, yet research incorporating this perspective in leader-employee communication research is scarce. From a practical perspective, leader training paradigms or popular leadership blogs also seem to focus more on how to talk to employees or what to say to get results (Cavanaugh, 2019; Insperity, 2020; Miller, 2020), yet effective communication starts with listening and being attentive to responses from employees (Van Quaquebeke & Felps, 2016). If paying attention as a leader during conversations goes beyond mere listening to a broader array of behaviors, then we need a thorough understanding of what it is and how we can measure it to increase the understanding of working mechanisms and support the effectiveness of interventions.

Furthermore, despite the implicit assumption of the importance of leader communication skills in leadership theories, there are large gaps in our understanding of what good communicators actually do. For example, transformational leadership has one dimension, i.e. "individualized consideration" that posits that good leaders give personal attention to employees (Avolio et al., 1999). However, the theory omits information about the leaders' (and employees') underlying nonverbal behavior or what exactly the transformational leader pays attention to. Individualized consideration focuses more on developing employees and whether or not a leader provides individual feedback, but again, the theory does not more fully describe how that feedback would be delivered. In servant leadership, for example, leaders use persuasion rather than power to get things done and the leader is characterized by being more of a steward (van Dierendonck & Nuijten, 2011). Some of the dimensions include empowerment, forgiveness, courage and humility (van Dierendonck & Nuijten, 2011). Also in this theory, 'good' communication is assumed, but not elaborated upon. In sum, several positive leadership styles seem to take it for granted that good leaders are good communicators and attentive listeners, but do not measure or elaborate eon this behavior specifically.

Research on this topic is relevant and timely: leader communication is a crucial aspect of positive leadership (Fairhurst & Connaughton, 2014; Riggio, 2013; Penley et al., 1991). However, there is no validated scale to measure (attentive) leader communication behaviorally which limits

progress on the empirical testing of the effects of this behavior. The lack of focus on actual leader behaviors in this area is problematic, since research has shown that leader behaviors "tend to predict more variance across a variety of effectiveness criteria than do leader traits" (Derue et al., 2011, p. 40).

Our study proposes a new construct and aims to validate a new questionnaire for a specific leader communication behavior. A solid understanding of what being attentive actually is, helps us to pin down the actual behaviors leaders elicit. Therefore, we aim to validate a questionnaire to promote future research on leader attentive communication. In doing so, we add to the literature in several ways. First, as a response to a rapid growth of positive leadership styles, there are calls for considering possible overlap or shared leader behavior across those styles (Derue et al., 2011; Eberly et al., 2013; Rowold et al.,, 2015; Yukl, 2002). The focus on attentive communication helps to bridge this gap, since our proposed positive communication behavior may be shared across different positive leadership styles. Therefore, we add to the leadership literature by focusing on specific, narrow leader behavior. Second, with this new scale, we will be able to quantify whether leader attentive communication actually has an impact on important employee outcomes such as need satisfaction, engagement and performance. Therefore, we add to the well-being literature. Finally, the knowledge about basic building blocks of effective communication are not only relevant for the development of better leadership theories, but also for creating more practical interventions for organizations (see e.g. Antonakis et al., 2011).

Introduction to leader attentive communication (LAC)

Definition development

In order to develop the concept, we first consulted the literature. We identified a number of related constructs (see below), and found that there was nothing similar to LAC, focusing on attentive communication. In addition, leader (and follower) communication typologies (e.g. Hatfield & Huseman, 1982) did not overlap either, since we wanted to capture a specific (attentive) process of communication, rather than *the content* of what is being discussed.

Then, as a next step, we interviewed a small group of leadership experts in our network (N = 5). They all had more than twenty years of experience in the field of leadership consultancy, mindfulness training and therapy. These conversations drove the initial construct and item development. We set out to develop a measure focused on both *what* a leader does (i.e. paying attention while communicating with an employee), as well as *a specific object* to pay attention to (i.e. paying attention to physical characteristics, emotional reactions, facial expressions and body postures, of an employee).

Next, the initial items (20) were presented to a panel of SME's (N = 17). They were following a postgraduate course on HR specifically designed for HR practitioners in a leadership position and they had varying levels of experience as leaders. Based on their expertise and familiarity with several leadership constructs throughout the course, they had a unique position from which to judge the proposed construct. The leader panel had the opportunity to comment on the definition and the items, as well as to propose new items (item total after this session was 28).

In addition, valuable input on the construct and item development were provided by expert scholars during several conferences. All the feedback from both practitioners and scholars improved construct development.

Definition breakdown

Leader attentive communication is defined as "an open-minded, attentive demeanor while in a conversation with an employee". The most important part of this definition is the focus on the quality of communication, i.e. *attentive*, since it can be seen as a building block from which effective leader communication (and behavior) emerges.

Next, the focus on paying attention *open-mindedly* helps to maintain a level of openness from which a comprehensive image of an employee can be formed. This relates to social information processing theory, which is based on the idea that "individuals, as adaptive organisms, adapt attitudes, behavior, and beliefs to their social context and to the reality of their own past and present behavior and situation" (Salancik & Pfeffer, 1978, p. 227). In this context, LAC, and especially a focus on open-mindedness, will help the leader to see the situation clearly, without judgments of others or past experiences influencing his/her perception. For example, in the case where negative information has been spreading about one employee, the leader will be able to maintain a general open and attentive attitude, which helps to facilitate a productive conversation. This relates to putting values, opinions and attitudes aside (Kluger & Nir, 2010), while trying to fully comprehend the message of the employee. The open-minded aspect alone does not guarantee attentive communication itself, but is a necessary precondition nonetheless. It is also important in developing psychological safety in the leader-employee relationship (Leonard, Graham, & Bonacum, 2004).

Third, the nonverbal *demeanor* entails a general conduct in which the leader embodies the principles of attentiveness and open-mindedness in the conversation with the employee. It therefore entails a particular way to attend to an employee's use of words, tone of voice, facial expressions, emotional state, body posture, etc., and an appropriate response to those cues during the conversation.

The *communication* process itself, has been traditionally categorized as a three-part (two-way) process between a leader and employee, in which a message is encoded (with a degree of expressiveness), decoded (through sensitivity for the message) and regulated (controlled; see e.g. Riggio, 2013). One possible definition is "the relational process of creating and interpreting messages that elicit a response" (Griffin, 2012; p. 6). Instead of focusing on the content or form of the communication, we will measure the process of paying attention to an employee while communicating.

Narrow leadership behavior

Scholars have also argued that leadership research should differentiate between broad and narrow leadership operationalizations (Borgmann et al., 2016). This research focuses on a more narrow leadership behavior, i.e. leader attentive communication, which we classify under the relationship-oriented leader behavior category (Yukl, 2012). Based on the categories proposed by Borgmann et al. (2016) (and Yukl, 2002), leader attentive communication is a relationship-oriented behavior that is implicitly assumed in a number of leadership styles, e.g. democratic, empowering or participative leadership. Leader attentive communication may also be relevant for several other leadership styles that include paying attention to individual needs, such as transformational leadership (i.e. through individualized consideration; Avolio et al., 1999) or servant leadership, for which the general focus is on the personal growth of the follower (Greenleaf, 1977; Van Dierendonck et al., 2014). In this sense, leader attentive communication can be seen as a communication-based behavioral building that may be shared across positive leadership styles.

Distinctiveness with other concepts

Based on a review of the current literature, we identified several constructs related to paying attention and communicating as a leader, yet a construct as LAC did not seem to exist. We divided related constructs into three categories: leadership constructs, communication constructs and attention-based constructs. See *Table 1* for an elaborate overview of similarities and differences per construct.

Leadership constructs entail transformational leadership (and specifically the "individualized consideration" dimension; Avolio et al., 1999), servant leadership (Greenleaf, 1977; van Dierendonck & Nuijten, 2011), leader listening (Castro, Kluger, & Itzchakov, 2016) and leader-member exchange (Dienesch & Liden, 1986; Schriesheim, Castro, & Cogliser, 1999). These constructs are similar to LAC in that they all include a(n) (implicit) focus on paying attention to the employee during conversation and occur in a dyadic context, however they are all different from LAC based on their focus: transformational and servant leadership focus on individual employee

needs and serving employees, respectively, while leader listening focuses on listening behavior and LMX focuses on positive exchanges.

Communication constructs entail respectful inquiry (Van Quaquebeke & Felps, 2016), humble inquiry (Schein, 2013), empathy (Cornelis, Hiel, De Cremer, Mayer, & Ross, 2013; Salovey & Mayer, 1990), active-empathic listening (Bodie, 2011) and emotional intelligence (Bar-On, 1997; Mayer, Roberts, & Barsade, 2008). For respectful and humble inquiry no questionnaire we know of has been developed. In general, the constructs in this category are similar to LAC with regards to their focus on communication quality, however they are all different from LAC in terms of communication behavior (respectful and humble inquiry) or the relevance that is placed on understanding or feeling employees' emotions (empathy, active empathic listening and emotional intelligence).

Last, *attention-based constructs* include mindfulness (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Brown & Ryan, 2003; Kabat-Zinn, 2005) and the more recently developed "mindfulness in communication" (Arendt, Pircher Verdorfer, & Kugler, 2019; Arendt, Pircher Verdorfer, & Kugler, 2019). In general, these two constructs share the focus on paying attention, but the operationalization is quite different: LAC focuses on how leaders pay attention to employees and what they notice, mindfulness and mindfulness in communication both focus more on the internal states of the leader related to paying attention. LAC also has a specific object of attention as a subdimension (i.e. focusing on employees' nonverbal behavior).

We propose that LAC is different from these concepts and may even be a basic skill - a behavioral building block – underlying them. See *Table 1* below for an elaborate overview of the construct definitions, as well as differences and similarities with LAC.

Table 1. Related constructs: definition, similarities and differences

Construct category	Definition	Differences		Similarities
		Related construct	*LAC*	
Leadership constructs				
Transformational leadership (dimension individualized consideration)	The leader "focuses on understanding the needs of each follower and works continuously to get them to develop to their full potential" (Avolio, Bass, & Jung, 1999, p. 444).	- General focus on followers' needs - Individual feedback or providing development opportunities. - No explicit focus on open-mindedness	- Specific focus on attentive communication - No specification of communication content or leader responses -Explicit focus on open-mindedness	- Giving personal attention to employees - Leader-Employee relationship context
Servant leadership	No general accepted definition; the core concept seems related to "going beyond one's self-interest" (Van Dierendonck & Nuijten, 2011; p. 250; Greenleaf, 1977); 8 dimensions: empowerment, standing back, accountability, forgiveness, courage, authenticity, humility and stewardship (van Dierendonck & Nuijten, 2001).	- Implicit assumption of communication skills - Different subdimensions - No explicit focus on open-mindedness	- Explicit focus on *attentive* communication skills - Different subdimensions - Explicit focus on open-mindedness	- Focusing on the employee - Leader-Employee relationship context
Leader listening	"A behavior that manifests the presence of attention, comprehension, and good intention toward the speaker" (Castro et al., 2016, p. 763).	- An explicit focus on comprehension - An explicit focus on having good intentions towards the speaker (i.e. the employee) - Listening	- An implicit focus on comprehension of the observed (non)verbal cues - No explicit focus on good intentions - Listening and speaking - Paying equal attention to	- Paying attention during communication - Leader-Employee relationship context

		- A bigger focus on listening to message content	observing nonverbal communication	
Leader-Member Exchange	"the quality of the exchange relationship between leader and subordinate" (Schriesheim et al., 1999, p. 77), comprised of (1) a contribution to the exchange, (2) loyalty and (3) affect (Dienesch & Liden, 1986)	- Quality of the exchange - Positive content or balance of the exchange - General focus on a positive exchange relationship - Positive affect or 'liking' each other as a core aspect -Loyalty as a (possible) core aspect - Implicit focus on attention paid to employees - No focus on open-mindedness - Explicit assumption of differentiation between employees	- Attention paid during the exchange - Attention paid during the exchange regardless of content - Narrow focus on the attention paid and demeanor during conversations - No explicit assumptions concerning (leader/employee) liking - No mention of loyalty - Explicit focus on attention paid to employees -Explicit focus on open-mindedness - No assumption concerning differentiation between employees	- Context: leader-employee dyads
Communication constructs				
Respectful inquiry	"The multidimensional construct of asking questions in an open way and subsequently listening attentively" (Van Quaquebeke & Felps, 2016, p. 6)	- An explicit focus on being respectful - Importance of asking questions - Focus on asking open questions	- Only a focus on being "open-minded" - No restrictions on communication form	- Paying attention during communication - Attentive listening - Leader-Employee relationship context

Humble inquiry	"The fine art of drawing someone out, of asking questions to which you do not already know the answer, of building a relationship based on curiosity and interest in the other person" (Schein, p. 2)	- A focus on humility - A focus on inquiry	- A focus on being "open-minded" - No specific form of communication	- Paying attention - Curiosity (open-mindedness) - Leader-Employee relationship context
Empathy	(1) "The ability to comprehend another's feelings and to re-experience them oneself" (Salovey & Mayer, 1990, p. 194); (2) "The ability to accurately recognize, perceive, and experience another's emotions" (Cornelis et al., 2013, p. 606)	- Feeling or comprehending - A focus on solely feelings or emotions	- Observing - A more broad attention span, i.e. also observing/noting specific nonverbal behavior, message content, employee energy level, ..	- Perception of feelings - Comprehension of feelings
Active Empathic Listening	".. the active and emotional involvement of a listener during a given interaction – an involvement that is conscious on the part of the listener but is also perceived by the speaker" (Bodie, 2011; p. 278); Dimensions = sensing, processing, responding	- Emotional involvement - The conceptualization contains specific listeners' behaviors and communication strategy	- Emotional involvement is not necessary - Communication is operationalized more broadly - Large behavioral differentiations on an item level	- Attentive listening - Suspending judgment is similar to being open-minded
Emotional intelligence	(1) "The ability to carry out accurate reasoning about emotions and the ability to use emotions and emotional knowledge to enhance thought" (ability-based EI; Mayer et al., 2008, p. 511); (2) "An array of non-cognitive capabilities, competencies, and skills that influence one's ability to succeed in coping with environmental demands and pressures" (mixed-based EI; Bar-On, 1997, p. 14)	- Umbrella term - Understanding - Observing, feeling or understanding emotions and feelings - A focus on everyone (including oneself) - Implicit 'open(minded)' and attentive demeanor	- More specific leader behavior - Perceiving - Observing verbal and nonverbal behavior more broadly - A focus on the employee with whom the leader is conversing - Explicit open-minded and attentive demeanor of the leader	- Perception of emotions or feelings - Use of nonverbal sensitivity

Attention-based constructs				
Mindfulness	(1) "The state of being attentive to and aware of what is taking place in the present" (Brown & Ryan, 2003, p. 822); (2) "An open-hearted, moment-to-moment, non-judgmental awareness" (Kabat-Zinn, 2005, p. 24); unidimensional or multidimensional depending on resource; proposed dimensions = observing, describing, acting with awareness, non-judging, non-reactivity (Baer et al., 2006)	- General attention to the present moment (wide attentional breadth) - Explicit focus on being open-hearted and non-judgmental - Depending on the resource, explicit focus on different dimensions	- Paying attention with a specific focus (the employee), during a specific activity (communicating) - Explicit focus on being open-minded - No explicit focus on describing, acting with awareness, non-judging or non-reactivity	- Being attentive or observant - The focus on being *non-judgmental* awareness may be interpreted similarly to being open-minded, although leaders to need to be able to make judgments in the moment, even when communicating attentively
Mindfulness in communication	"leaders' mindfulness when communicating with followers" (Arendt et al, 2019; p. 5); dimensions = (1) present, impatient or only half-listening, (2) open and non-judging and (3) calm and non-impulsive	- Focus on leaders' internal states related to paying attention - No object of attention - Different subdimensions with explicit focus	- Focus on leaders' attention paid to the employee in general and to employees' nonverbal communication - Clear attentional focus; the employee - No explicit focus on being impatient, calm or impulsive	- Paying attention during conversations - Being open

Why leaders invest time and energy in leader attentive communication

Since time, and subsequently attention, is such a scarce commodity for leaders (Hurt & Dye, 2019), why would leaders engage in this behavior in the first place? We propose that leaders are motivated to communicate attentively, since it satisfies psychological needs from employees (Deci & Ryan, 2008) and because it will create the psychological conditions necessary for work engagement and thus well-being (Kahn, 1990). Furthermore, the leaders' time and quality of attention can serve as a reward for the employee (Omilion-Hodges & Baker, 2017). The leaders' need for achievement (Brysbaert, 2006; Sijbom, Lang, & Anseel, 2018) will also be fulfilled, since a leader's prime motivation is to provide conditions in which employees can excel. In this sense, increasing employee well-being, and specifically work engagement, is also in the leaders' best interest, since work engagement has been shown to be crucial for organizational success (Christian, Garza, & Slaughter, 2011; Halbesleben, 2010; Robertson & Cooper, 2011; Salanova, Agut, & Peiró, 2005). Work engagement is related to service climate and customer loyalty (Salanova et al., 2005) as well as employee health, lower turnover intentions and higher performance (Halbesleben, 2010). Below we expand on why we expect LAC to have a positive association with employee well-being and work engagement specifically: we expect LAC to exert its influence through enhancing psychological need satisfaction and establishing Kahn's conditions for work engagement. See *Figure 1* below for a visualization.

Figure 1. Research model
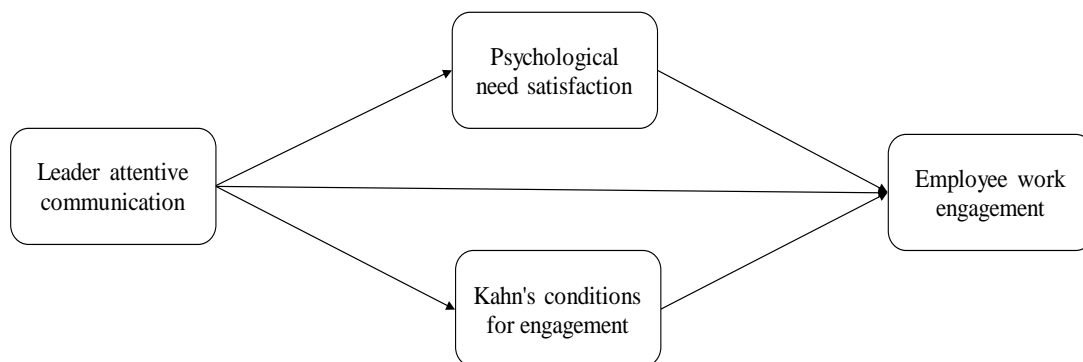
Self-Determination Theory. SDT (Deci & Ryan, 2008) states that fostering three psychological needs, i.e. the need for autonomy, competence and relatedness, will lead to an autonomous, intrinsic motivation at work. Previous research has indicated that general leader distractedness is (negatively) associated with employee need satisfaction and work engagement (Reb, Narayanan, & Chaturvedi, 2014). Since LAC constitutes attention paid to employees during communication, we posit that it will be positively associated with psychological need satisfaction

and employee work engagement. Below we will elaborate on how LAC satisfies the need for autonomy, competence and relatedness specifically.

First, the *need for autonomy* constitutes "experiencing a sense of volition and psychological freedom" during work activities (Van Den Broeck, Vansteenkiste, De Witte, Soenens, & Lens, 2010, p. 981) or "experiencing choice and feeling like the initiator of one's own actions" (Baard, Deci, & Ryan, 2004, p. 2046). LAC may enhance employee autonomy need satisfaction, since it helps the leader to notice what the employee needs and therefore make more effective decisions with regards to the allocation of resources or decision making freedom (Reb et al., 2014).

Second, the *need for competence* refers to "feeling effective" (Van Den Broeck et al., 2010, p. 981) or "succeeding at optimally challenging tasks and attaining desirable outcomes" (Baard et al., 2004, p. 2046). LAC enhances employee competence need satisfaction because it may help leaders to be more supportive (Reb et al., 2014), e.g. through listening to the employee explaining his/her needs directly or through recognizing (hidden) talent or providing timely training opportunities.

Third, since leadership can be viewed as primarily relational (Uhl-Bien, 2006), LAC may impact *relatedness need satisfaction* the most. It can be described as feeling connected to others or being "loved and cared for" (Van den Broeck et al., 2010, p. 981) or: "establishing a sense of mutual respect and reliance with others" (Baard et al., 2004, p. 2046). In a conversation in which the leader takes the time and puts in the effort to pay attention to the employee (in an open-minded way), the employee is likely to feel respected or even cared for (Brown & Ryan, 2003). Research also shows that when a leader is "fully present not only physically, but with their entire being" (Reb et al., 2014, p. 38), employees feel valued and respected, which leads to psychological need satisfaction (Reb et al., 2014). Also, paying attention open-mindedly during the conversation with an employee may reduce reactionary hostility towards bad performing employees (Liang et al., 2016), and help the leader manage his/her negative emotions (Hülsheger, Alberts, Feinholdt, & Lang, 2013), which may increase employees relatedness need satisfaction as well.

Kahn's theory on engagement. Besides SDT, there is also another theory on employee engagement (Kahn, 1990), in which the (momentary rather than static) conditions of psychological availability, safety and meaningfulness are hypothesized to lead to engagement on the work floor (Kahn, 1990). *Psychological safety* is "being able to show and employ one's self without fear of negative consequences to self-image, status, or career" (p. 708). This means that an employee feels safe to express opinions or take actions without fear of recrimination (Roberts & Williams, 2017). Work engagement increases when an employee trusts his/her leader to listen open-mindedly to what they have to say (Kahn, 1990; Li & Tan, 2013). Research on attentive listening behavior has also shown

that it increases psychological safety, which in turn stimulates employee creativity (Castro, Anseel, Kluger, Lloyd, & Turjeman-Levi, 2018).

Furthermore, *psychological meaningfulness*, is "a feeling that one is receiving a return on investments of one's self in a currency of physical, cognitive, or emotional energy" (p. 703-704), or "the feeling that the behavior in question could be worthwhile, valuable, or enhance one's personal and/or professional growth" (Roberts & Williams, 2017, p. 208). LAC may enhance psychological meaningfulness since employees can feel more worthwhile, useful, and valuable (Kahn, 1990) because of the uninterrupted attention and time they get with their leader. A good working relationship, characterized by positive and trust-inducing interactions, can also contribute to a feeling of meaningfulness on the work floor (Roberts & Williams, 2017).

Last, *psychological availability* refers to "the sense of having the physical, emotional, or psychological resources to personally engage at a particular moment" (Kahn, 1990, p. 714). Leaders, especially immediate supervisors, are an important resource for employees (Roberts & Williams, 2017). This can occur through providing access to resources, but also via emotional support. When there is no ambivalence or annoyance about the lack of attention or presence from the leader, this also releases resources for the employee to use in their work (Roberts & Williams, 2017). Through enhancing psychological availability, LAC provides the conditions for employee engagement (Roberts & Williams, 2017). Taken together, we hypothesize:

Hypothesis 1: LAC is positively associated with employee work engagement

Hypothesis 2: Psychological need satisfaction mediates the association between LAC and employee work engagement

Hypothesis 3: The psychological conditions of meaningfulness, availability and safety mediate the association between LAC and employee work engagement

Methodology

To develop a good construct definition and a valid questionnaire, several accepted guidelines were followed (see e.g. Mackenzie, Podsakoff, & Podsakoff, 2011). The validation steps are outlined below and separated into four phases. *Phase 1* details the definition development, the initial scale development and the investigation of the psychometric properties of the initial questionnaire. For this phase, we first reviewed the literature, consulted subject matter experts (SME's) and started the item development. We used the first data-collection in (see below) for the

exploratory factor analysis. In *Phase 2*, we continued the focus on the psychometric properties of the questionnaire based on confirmatory factor analysis. For this phase, we collected two more samples. This data was also utilized for phase 3 and 4. *Phase 3* details the convergent, discriminant and criterion-related validity. In *Phase 4*, we investigated the incremental validity by using semi-partial correlations and by testing the hypotheses, while controlling for related constructs. The appendix also provides a table with an overview of the constructs measured in the different data-collections. Below we expand on the data-collections before we detail the validation phases. Almost every sample was used in each validation step, except the first sample, which was also used to abbreviate the initial item pool.

Data-collections

Sample 1 (validation phase 1-4)

For the first sample, we collected data in employment agencies through distributing a Qualtrics questionnaire. This was part of a larger data-collection that was used for master theses. It resulted in a final dataset of 314 employees and 141 leaders forming 165 teams (not every leader had employees who filled in the questionnaire and the other way around).

Demographics

Employees. 44 employees were male (14%), 14 employees did not report their gender. The average age was 29.34 years old (SD 6.01), average tenure in general was 4.3 years (SD 5.07) and the average tenure with their leader was 1.96 years (SD 2.25). Employees' educational background ranged from no or only education up to 12 years old (0.3%), vocational secondary education (4.1%), technical secondary education (17.6%), general secondary education (9.4%), higher education (44%) to university education (19.7%).

Leaders. 35 leaders were male (24.3%), 2 leaders did not report their gender. The average age was 37 years old (SD 8.01), the average tenure was 11 years (SD 7.54) and the average tenure as leader in their current team was 3.78 years (SD 4.02), ranging from 0 to 23 years. Leaders' educational background ranged from vocational secondary education (2.1%), technical secondary education (16.7%), general secondary education (6.3%), higher education (50%) to university education (23.6%).

Employee measures

All questionnaires (except demographics) were measured on a 7-point Likert Scale from "Totally disagree" (1) to "Totally agree" (7).

Leader attentive communication. In this first data-collection, we administered the 28-item self-report questionnaire. The items were mostly developed in English to receive feedback from SME's

speaking multiple languages. We used a translation backtranslation procedure to obtain the exact Dutch items (Brislin, 1990). Initial Cronbach's *a* was .86.

Work engagement was measured with a 3-item scale (Schaufeli, Shimazu, Hakanen, Salanova, & De Witte, 2017). Cronbach's *a* was .87.

Trust was measured with five items from the cognitive trust in supervisor scale from Yang & Mossholder (2010). Cronbach's *a* was .93.

Psychological need satisfaction was measured with the Work-Related Basic Need Satisfaction Scale (W-BNS). Cronbach's *a* was .89.

Leader-Member Exchange was measured with the eight-item scale based on work by Scandura & Graen (1984) with the adaptations proposed by Bauer & Green (1996). Cronbach's α was .89.

Leader measures

Engagement, burn-out, trust and psychological need satisfaction were assessed using the same self-report questionnaires as described above.

Emotional intelligence. We administered the 28-item Rotterdam Emotional Intelligence Scale (REIS; Pekaar et al., 2018). Cronbach's *a* was .91

Mindfulness. Since there is some debate concerning the underlying structure and measurement of mindfulness (Grossman, 2011; Van Van Dam et al., 2010), we administered two self-report measures with different underlying assumptions. *The Mindful Attention and Awareness Scale* (MAAS; Brown & Ryan, 2003) assumes that mindfulness has a unidimensional structure. Cronbach's *a* was .87. *The Five Facet Mindfulness Questionnaire* (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006) assumes there are five underlying dimensions of mindfulness, i.e. observing, describing, acting with awareness, nonjudging and nonreactivity. We administered the abbreviated 15-item version (Baer, Carmody, & Hunsinger, 2012; Baer et al., 2006; Gu et al., 2016; Veehof, Ten Klooster, Taal, Westerhof, & Bohlmeijer, 2011). Cronbach's *a* was .72.

Transformational leadership was measured using an adapted 12 items from the Multifaceted Leadership Questionnaire (MLQ; Avolio, Bass, & Jung, 1999; Bass & Avolio, 1990). Cronbach's α was .85.

Cognitive empathy was measured with 12 items (Vachon & Lynam, 2016). Cronbach's α was .81.[3]

Sample 2 (validation phase 2-4)

For the second sample, we focused our efforts on a more diverse sample of employees from different industries. The survey was distributed by bachelor students in Business Economics for course credits using Qualtrics (a web-based tool). We mostly used the same measures as in the

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[3] This was much higher in the third sample, where Cronbach's alpha was .94.

first study. Item correlations, means and standard deviations for these measures on both levels can be found in the Appendix. In addition, we measured transformational leadership from the viewpoint of the employee (with the same leader questionnaire we used before; Avolio & Bass, 2004) and we added a newly developed measure for mindfulness in communication (Arendt et al., 2019) to the employee questionnaires (see below).

Demographics

The sector according to employees/leaders was sales (6.5/9.1%), transportation (1.9/2%), IT/Information (6.1/7.8%), media (1.3/0.8%), hospitality (4.4/3.6%), industry (9.4/13.8%), finance (12.6/13.8%), education (3.6/3.2%), government (8/7.5%) and "other" (43.5/35.6%). Leaders also rated how many people their organization employed, which was 2 426.94 on average (SD = 12 213.10), ranging from 1 to 130 000.

Employees (N = 522). 284 employees were female (54.4%), 27 employees did not report their gender. The average age was 38.60 years old (SD 11.24) the average tenure in general was 11.87 years (SD 11.03) and the average tenure with their leader was 5.14 years (SD 6.10). Employees' educational background ranged from no or only education up to 12 years old (0.8%), vocational secondary education (6.5%), technical secondary education (9%), general secondary education (10.3%), higher education (36.4%) to university education (34.7%).

Leaders (N = 253). 72 leaders were female (28.5%) and 35 leaders did not report their gender. The average age was 45.61 years old (SD 10.17), the average tenure was 18.22 years (SD 11.20) and the average tenure as leader in their current team was 7.49 years (SD 7.07). Leaders' educational background ranged from no or only education up to 12 years old (0.4%), vocational secondary education (0.8%), technical secondary education (4.3%), general secondary education (7.1%), higher education (39.9%) to university education (43.9%).

Mindfulness in communication was developed and published during the development of this manuscript (Arendt et al., 2019), so we added it to the questionnaires in this second data-collection. Cronbach's *a* was 0.85.

Sample 3 (validation phase 2-4)

For the third sample, we collected data with paper-and-pencil questionnaires in different middle and high schools in Flanders. The measures were largely the same as in the previous studies. For the employee (teacher) version, we added some additional measures, i.e. Kahn's (1990) psychological conditions for engagement, servant leadership as well as leader listening. For the (school) leader version, we added personality, active-empathic listening and authentic leadership. This data-collection was part of a larger study. For the means, standard deviations and correlations see the Appendix.

Demographics

Employees (N = 484). 304 middle/high school teachers were female (62.8%), 16 teachers did not report their gender. The average age was 39.72 years old (SD 10.27), the average tenure in general was 14.95 years (SD 9.88), the average tenure with their school leader was 5.88 years (SD 5.27). The average number of teaching hours per week was 18.42 (SD 5.45). The actual number of working hours per week was 35.46 (SD 10.74). Teachers' educational background ranged from vocational secondary education (0.4%), technical secondary education (2.3%), general secondary education (0.4%), higher education (56.6%) to university education (37.6%), 13 teachers did not report their educational background.

Leaders (N = 48). 29 school leaders were female (60.4%). The average age was 48.64 years old (SD 8.37), the average tenure as a school leader was 8.24 years (SD 6.48), the average tenure in their current school was 7.23 years (SD 5.92). Most school leaders had a degree in higher education (29.2%) or university education (66.7%), 1 school leader had no education or only education up to 12 years old. The average number of teachers in their school was 81.57 (SD 42.44) and the average number of students was 563.83 (SD 371.89).

Additional measured constructs at the employee-level

Psychological conditions for engagement (Kahn, 1990) were measured with 14 items from May, Gilson, & Harter (2004). Cronbach's *a* was .87.

Servant leadership was measured with 30 items from van Dierendonck and Nuijten (2011). Cronbach's *a* was .94.

Leader listening was measured with 7 items (see Castro et al., 2018; Ramsey & Sohi, 1997). Cronbach's α was .54. A closer look at the factor loadings (principal axis factoring on one dimension) revealed lower factor loadings than .40 for 6 of the 8 items. We decided to omit this scale from further analysis.

Performance. Teaching performance was measured with 10 items from Marsh (1984). Cronbach's α was .86.

Additional measured constructs at the leader-level

Personality was measured with a short 10-item Big Five Inventory (Rammstedt & John, 2007). It is designed to capture as much variance as possible with two items for each personality trait. As recommended for two-item scales (Eisinga et al., 2013), the Spearman-Brown coefficient was calculated: extraversion (r_{SB} = .54, p < .01), openness (r_{SB} = .46, p < .01), neuroticism (r_{SB} = .66, p < .01), agreeableness (r_{SB} = .09, p > .05) and conscientiousness (r_{SB} = .52, p < .01). With two-item scales, lower internal consistency is normal (Eisinga et al., 2013). We omitted agreeableness from further analyses.

Active-empathic listening was measured with an 11-item questionnaire (Bodie, 2011). Cronbach's *a* was .88.

Authentic leadership was measured with a 16-item questionnaire (Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2008). Cronbach's *a* was .80.

Aggregation

In the appendix we wrote down all the means, standard deviations and correlations for the different data-collections. In order to provide the correlations between LAC and leader variables, we aggregated (employee-rated) LAC scores to team-rated LAC. This provides an overall picture of the general perception that teams of employees have of their leaders. In order to investigate whether there is support for aggregation, we performed an ANOVA on the differences between teams. We then calculated the r_{wG}, or the observed variance in ratings compared to the variance of a theoretical distribution representing no agreement (Smith-Crowe, Burke, Cohen, & Doveh, 2014). In sample 1, the ANOVA indicated a significant difference between teams ($F(148,165) = 1.34$; $p = 0.03$) and intergroup agreement on LAC scores ($r_{wG} = .77$). In sample 2, the ANOVA indicated a significant difference between teams ($F(206,303) = 1.54$; $p < 0.001$) and intergroup agreement on LAC scores ($r_{wG} = 0.78$). In sample 3, the ANOVA indicated a significant difference between teams ($F(47,428) = 2.41$; $p < 0.001$) and moderate intergroup agreement on LAC scores ($r_{wG} = 0.53$). Overall this showed support for aggregation.

Results

Validation phase 1: Questionnaire development

Item development

Next to the development of the definition, we also consulted experts to comment on the initial item development. So, to recapitulate: we first consulted a small group of leadership experts to comment on the definition, we then defined LAC as a "a non-judgmental comprehensive observation of an employee while communicating". This initial definition drove the initial item development (n = 28). We developed items designed to measure both *what* a leader does (i.e. paying attention while communicating with an employee), as well as *a specific object* to pay attention to (i.e. paying attention to physical characteristics, emotional reactions, facial …, body postures, of an employee).

We formulated the initial items from the perspective of the employee for several reasons; self-report questionnaire responses could be biased by leaders' own desires (Grossman, 2011); responses might be informed by actually knowing 'the correct' response and answering accordingly, and research indicates that respondents are generally not aware of mind wandering, which is why the employee might be better suited to indicate how they perceive their leaders' attentiveness (Van

Dam, Earleywine, & Borders, 2010). Research also indicates that it is not the leaders' self-perception, but the employee's perception of the leaders that influences employee outcomes (Kopperud et al., 2014). Therefore, it seemed more relevant to measure how "subordinates rate the leaders' communicative behavior than how leaders themselves *think* that they communicate" (Bakker-Pieper & De Vries, 2013, p. 4; Hogan, 2005).

Next, the working definition and initial items (20) were presented to a panel of SME's (n = 17). They were enrolled in a postgraduate course on HR specifically designed for HR practitioners in a leadership position. They had varying levels of experience as leaders. Based on their expertise and familiarity with several leadership constructs throughout the course, they had a unique position from which to judge the proposed construct. The leader panel had the opportunity to comment on the definition and the items, as well as the opportunity to propose new items. Based on their recommendations, several items were added to the item pool with regards to the non-judgmental attitude of the leader and the ability of the leader to accurately describe the message of the employee. We agreed that these items might provide insight into the degree to which a leader was attentive during a conversation.

In addition, valuable input on the definition and item construction were provided by expert scholars during several conferences. This lead to a slightly altered definition, i.e. "*an open-minded, attentive demeanor while in a conversation with an employee*", and an initial item pool of 28 items.

Exploratory factor analysis

For the first data-collection, we administered the initial item pool of the questionnaire (*N* = 28). In order to test whether the data was suitable for factor analysis, the Kaiser-Mayer-Olkin (KMO) Measure of Sampling Adequacy and Barlett's Test for Sphericity were calculated. The KMO measures whether the correlation matrix contains factors or rather chance correlations. Values of .60 or higher have been suggested as appropriate (Tabachnick & Fidell, 2001; Worthington & Whittaker, 2006). The Bartlett's test of sphericity estimates the probability that the matrix correlations are 0, hence it needs to be significant in order to use EFA (Bartlett, 1950). The KMO was 0.93 and Bartlett's Test was significant ($\chi^2(378) = 5840.72, p < .001$), indicating that we could go ahead with the factor analysis.

We used principal axis factoring with an oblique rotation (oblimin with Kaiser Normalization). This method is more robust against violations of the assumption of normality and allows the factors to correlate (Fabrigar, Wegener, Maccallum, & Strahan, 1999; Worthington & Whittaker, 2006). We also followed the Kaiser criterion and searched for factors with eigenvalues greater than one. In addition, we inspected the scree plot to help determine the number of factors to retain (Yong & Pearce, 2013).

We followed a cyclical process to analyze the questionnaire and determine the best (amount of) items. In each round, we inspected the communalities, i.e. the extent to which an item correlates with all other items. When there were items that correlated less than 0.40 with the other items, they became candidates for removal (Costello & Osborne, 2005). Second, we examined the pattern matrix of these items. Items with poor item loadings or a crossloading that exceeded .32 ánd differed less than .20 with the highest loading (Tabachnick & Fidell, 2001) were removed. This way, we had a conservative approach. After three rounds, there were 18 items left that loaded on three different factors. However, the third factor never had the highest loading, and seemed redundant. Therefore, we "forced" the remaining 18 items on two factors. Then, for reasons of parsimony, we deleted the two items that loaded lower than .50, including the one remaining reverse item. When we analyzed the remaining 16 items, we deleted one more low loading item. The final 15-item questionnaire loads on two factors that explained 62% of the variance, i.e. general attention (paid to the employee; 11 items; Cronbach's a = .94) and attention paid to nonverbal cues (4 items; Cronbach's a = .90). The Cronbach's a for the entire questionnaire was 93.2. See *Table 2* for the specific items and item loadings.

However, this was not the last step in identifying the final items for the questionnaire. We returned to the item wordings and discovered we had made a classic mistake in the leadership literature (Decuypere & Schaufeli, 2020; van Knippenberg & Sitkin, 2013); there was some confounding between the item wordings and LAC's intended effects. Specifically, the last five items in the set seemed to have some flavor of an outcome in them; i.e. "My leader considers how I feel.", "My leader makes me feel understood.", "My leader helps me to get clarity.", "My leader provides insight into my issues." and "My leader helps me to come up with solutions". We decided to omit them all from the questionnaire in the name of conceptual clarity. This resulted in a final 10-item questionnaire (Cronbach's a = .90) with a similar two-factor structure that actually improved the amount of explained variance by the items (from 62% to 66%). The factors remained the same: general attention (6 items; Cronbach's a = .91) and attention to nonverbal cues (4 items; Cronbach's a = .90). The Cronbach's alphas reported here are particularly high for a scale with so few items (Pallant, 2011). *Table 2* presents the factor loadings of the 10-item questionnaire for the three data-collections.

Table 2. Exploratory factor analysis

		Factor loadings					
		Sample 1		Sample 2		Sample 3	
	Factor	**1**	**2**	**1**	**2**	**1**	**2**
	General attention						
1*	My leader is perceptive during conversations	.72		.81		.91	
2*	My leader displays a keen awareness during our conversations	.79		.90		.95	
3*	When I talk to my leader, I get his/her full attention	.74		.81		.84	
8*	My leader accurately hears the verbal message I want to convey (for instance through repeating the message, summarizing it or asking additional questions)	.82		.71		.56	.36
9*	When I communicate with my leader, he or she is able to describe my points accurately	.89		.74		.68	
10*	My leader rephrases my intended message accurately	.76		.71		.56	
	Attention paid to nonverbal cues						
4*	My leader notices my facial expressions		.88		.92		.97
5*	My leader notices my body posture		.89		.95		.98
6*	My leader notices the tone of my voice		.92		.86		.97
7*	My leader notices my main/predominant emotions		.59		.70		.82

*Table 2. Factor loadings of the LAC scale with principal axis factoring and oblique rotation (direct oblimin); factor loadings lower than .30 were omitted; *The numbers indicate the best order in which to administer the items. The scale is designed to both increase in difficulty and capture respondents' attention and curiosity until the end by letting the items build on one another.*

Summary of phase 1

Based on multiple rounds of gathering subject matter experts' input, we crafted a definition: LAC is *an open-minded, attentive demeanor while in a conversation with an employee.* We also used SME's input to develop the initial item pool. Based on exploratory factor analysis and secondary content analysis, we conclude that the a 10-item questionnaire with two factors (general attention and attention paid to nonverbal cues), has good psychometric properties and is ready for further testing.

Validation phase 2: Confirmatory factor analysis

Confirmatory factor analysis was performed based on recommended practices (see e.g. Hinkin, 1995; Mackenzie et al., 2011) with Lavaan in R (Rosseel, 2012) on the datasets from the different data-collections. In order to conduct a CFA for the LAC measure, we compared the fit of a single-factor model with 10 items with a two-factor model in which the factors were allowed to correlate. Ideally, the CFI (Comparative Fit Index) and TLI (Tucker-Lewis Index) should be close to .95, the RMSEA (Root Mean Square Error of Approximation) lower than 0.06 and the SRMR (Standardized Root Mean Square Residual) lower than 0.08 (Hu & Bentler, 1999). In addition, we reported Akaikes' information criterion (AIC) and the Bayesian information criterion (BIC) (Akaike, 1987; Schwarz, 1987). Lower values indicate a better fit. The two-factor models in the different samples showed a good fit and were preferable over the single-factor model. See e.g. the CFA results of the first dataset: CFI = .97, TLI = .96, RMSEA = .08, SRMR = .05. All SEM results are presented in *Table 3*.

Table 3. Confirmatory factor analysis

Samples	Fit indices of LAC							
Sample 1	χ^2(df)	AIC	BIC	CFI	TLI	RMSEA	SRMR	Δ χ^2 (df)
Two factors	104.94(34)	7 149.34	7 161.47	.97	.96	.08	.05	
One factor	725.70(35)	7 768.11	7 779.66	.67	.58	.25	.16	620.77(1)***
Sample 2								
Two factors	181.88(34)	10 071.66	10 090.55	.96	.94	.10	.04	
One factor	320(35)	10 619.44	10 637.43	.80	.74	.21	.09	549.79(1)***
Sample 3								
Two factors	481.66(34)	9 319.69	9 339.89	.93	.91	.12	.05	
One factor	1 425.97(35)	10 262.00	10 281.24	.77	.70	.29	.13	944.31(1)***

Table 3. CFA results for the factor structure of the LAC questionnaire in three dataset; in the two-factor model, the factors were allowed to correlate.

Summary of phase 2

For Phase 2 we collected two more datasets in various industries and in schools. Separate confirmatory factory analyses in the three different samples indicated a good model fit for the two-factor model. This shows that the 10-item LAC scale has good psychometric properties.

Validation phase 3: Convergent, discriminant and criterion-related validity

In order to establish convergent, discriminant and criterion-related validity, we mostly relied on correlations. In the appendix we wrote down all the means, standard deviations and correlations for the different data-collections.

Convergent validity

Based on the similarities with other related variables (see *Table 1* above), we hypothesized that some conceptually-related variables would correlate significantly with LAC. This was first tested by inspecting the correlation matrices (see Appendix). In *study 1*, as predicted, LAC correlated significantly with trust in leader ($r = .63$, p < .01) and LMX ($r = .65$, $p < .01$). At the leader-level, the aggregated (employee-rated) LAC scores correlated significantly with leader self-reported transformational leadership ($r = .22$, p < .05), but it did not correlate with leader self-reported emotional intelligence, mindfulness or empathy. In *study 2*, as predicted, LAC significantly correlated with trust ($r = .68$, $p < .01$), transformational leadership ($r = .73$, $p < .01$), mindfulness in communication ($r = .59$, $p < .01$) and LMX ($r = .64$, $p < .01$). At the leader-level, the aggregated (employee-rated) LAC scores correlated significantly with leader self-reported leader empathy ($r = .17$, $p < .05$), but it did not correlate with leader self-reported emotional intelligence, mindfulness or empathy. In *study 3*, as predicted, LAC correlated significantly with LMX ($r = .70$, p < .01), mindfulness in communication ($r = .67$, p < .01), servant leadership ($r = .74$, p < .01) and satisfaction with leader communication ($r = .69$, p < .01). At the leader-level, the aggregated LAC scores correlated moderately with self-reported leader empathy ($r = .38$, p < .01) and did not correlate with active empathic listening ($r = .26$, p > .05).

The differences in the associations between LAC and employee- or leader-rated variables indicate that the assessment of leader (communication) behavior differentiates based on the perspective that is taken. In the correlation matrices in the appendix, it also becomes apparent that (aggregated) employee-rated LAC and leader self-reported LAC do not correlate strongly (study 1: $r = .14$, $p > .05$; study 2: $r = .17$, $p = .02$). This further supports our notion to focus on LAC from the perspective of the employee (if employee-related outcomes are what is of interest, of course).

Differentiation with LAC

Some of the employee-rated constructs were highly associated with LAC, i.e. trust in the leader, LMX, transformational leadership, servant leadership and mindfulness in communication. In order to test whether LAC is sufficiently different from some of these constructs, we conducted additional confirmatory factor analyses using Lavaan in R (Rosseel, 2012). We tested models with two factors (e.g. LAC and LMX items loading on separate factors), that were allowed to correlate, against models with one factor (e.g. LAC and LMX items loading on the same factor). The results

indicated that the (correlated) two-factor models were preferable over the one-factor models in every case. See *Table 4* in the Appendix.

Discriminant validity

To test for discriminant validity, we correlated LAC with presumed unrelated constructs in dataset 3 (schools), i.e. number of teaching hours each week ($r = -.04, p > .05$), number of actual working hours each week ($r = -.06, p > .05$), leader extraversion ($r = .02, p > .05$), leader openness ($r = .02, p > .05$), leader neuroticism ($r = -.02, p > .05$) and leader conscientiousness ($r = .05, p > .05$).

Criterion-related validity

To test for criterion-related validity, we investigated the correlations between LAC and the hypothesized outcomes, i.e. work engagement, psychological need satisfaction and Kahn's conditions for engagement. In *study 1*, LAC correlated significantly with work engagement ($r = .36, p < .01$) and psychological need satisfaction ($r = .39, p < .01$). In *study 2*, LAC correlated significantly with work engagement ($r = .31, p < .01$) and psychological need satisfaction ($r = .40, p < .01$). In *study 3*, LAC correlated significantly with work engagement ($r = .32, p < .01$), psychological need satisfaction ($r = .34, p < .01$) and Kahn's psychological conditions for engagement ($r = .45, p < .01$).

Summary of phase 3

Inspections of correlations clearly indicated convergent validity with regards to employee-rated variables, i.e. trust in the leader, LMX, transformational leadership, servant leadership and mindfulness in communication. In addition, CFA's indicated a differentiation between LAC and these constructs; they do not measure the same thing. Discriminant validity was established based on correlations with organization-based (school) variables and leader personality. Criterion-related validity was established by investigating correlations between LAC and employee outcomes. This supports the proposition that LAC is conceptually different from all the other constructs in the different data-collections (see *Table 1* and the Appendix).

Validation phase 4: Incremental validity

Semi-partial correlations

Through partial correlations, one can calculate a correlation while controlling for other (related) constructs. We focused on the outcome that we used in the hypotheses (see below): work engagement. In *study 1*, when controlling for trust and LMX, LAC still correlated with work engagement ($r = .16, p < .01$). In *study 2*, when controlling for trust, transformational leadership, mindfulness in communication and LMX, LAC still correlated with work engagement ($r = .09, p =$

.05). In *study 3*, when controlling for LMX, mindfulness in communication and servant leadership, LAC was only marginally correlated with work engagement (r = .09, p = .06).

Mediation by psychological need satisfaction

In the introduction, we hypothesized the relationship between LAC and work engagement (hypothesis 1) was mediated by psychological need satisfaction (hypothesis 2) and Kahn's psychological conditions (hypothesis 3). In order to test the mediation hypotheses, while simultaneously testing whether LAC explained variance above and beyond related constructs, we controlled for all variables that correlated highly with LAC. We also controlled for employees' estimates in (1) how well they felt they could score their leaders' behavior ("assessment quality" below) and (2) how much time they spend with their leader ("employee contact" below). We used the SPSS macro from Preacher, Rucker, & Hayes (2007): a bootstrapping method that estimates bias-corrected confidence intervals (CI) for the mediation effect. When the CI does not contain zero, there is a significant association.

In study 1, we controlled for assessment quality, trust and LMX. LAC had a positive, direct effect on work engagement (*b* = .21, SE = .08; 95% CI [.05;.37]). However, there was no indirect (mediation) effect through psychological need satisfaction (*b* = .06, SE = .04; 95% CI [-.01;.13]). In study 2, we controlled for assessment quality, leader contact, LMX, mindfulness in communication, transformational leadership and trust in leader. The results indicated that LAC did not have a direct effect on work engagement (b = .04, SE = .06; 95% CI [.-07;.15]), but there was a positive, indirect effect on work engagement through psychological need satisfaction (b = .9, SE = .04; 95% CI [.02;.16]). This indicates a full mediation. In study 3, we controlled for assessment quality, employee contact, LMX, mindfulness in communication and servant leadership, LAC did not have a direct effect on work engagement (b = .11, SE = .06; 95% CI [-.01;.23]), there was also no significant indirect effect (b = -.01, SE = .03; 95% CI [-.06;.04]).

Subdimensions

The results with regards to hypothesis 2 are inconclusive: we found a direct effect (study 1), an indirect effect (study 2) and no effect (study 3) of LAC on work engagement through psychological need satisfaction. Therefore, we also analyzed the subcomponents of psychological need satisfaction as mediator, controlling for the same set of variables.

In study 1, none of the work engagement subcomponents mediated the relationship between LAC and work engagement (indirect effect autonomy: b = .02, SE = .04; 95% CI [-.06;.11], indirect effect competence (b = .04, SE = .03; 95% CI [-.01;.09], indirect effect relatedness (b = .02, SE = .02; 95% CI [-.01;.06]).

In study 2, there was an indirect effect through autonomy (b = .07, SE = .03; 95% CI [.01;.13]), but no indirect effect through competence (b = .01, SE = .02; 95% CI [-.02;.05]) nor relatedness (b = .04, SE = .02; 95% CI [-.01;.09]).

In study 3, none of the work engagement subcomponents mediated the relationship between LAC and work engagement (indirect effect autonomy: b = -.02, SE = .02; 95% CI [-.08;.02], indirect effect competence: b = .01, SE = .02; 95% CI [-.04;.04], indirect effect relatedness: b = .01, SE = .01; 95% CI [-.03;.02]).

Mediation by Kahn's conditions for engagement

We hypothesized that the relationship between LAC and work engagement was also mediated by Kahn's psychological conditions for engagement. This was tested in study 3 (school data). We controlled for assessment quality, leader contact, LMX, mindfulness in communication and servant leadership We found no direct effect of LAC on work engagement (b = .05, SE = .06; 95% CI [-.06;.16]), there was also no indirect effect on work engagement through Kahn's psychological conditions (b = .05, SE = .03; 95% CI [-.02;.11]).

Subdimensions

These results do seem to be differentiated with regards to the subcomponents of Kahn's conditions, i.e. the psychological conditions of meaningfulness, safety and availability. With the same analyses, thus controlling for the same set of variables, we found that *meaningfulness* did mediate the relationship between LAC and work engagement (indirect effect: b = .10, SE = .04; 95% CI [.02;.17]), whereas this was not the case for safety (indirect effect: b = -.01, SE = .01; 95% CI [-.03;.02]), nor for availability (indirect effect: b = .01, SE = .02; 95% CI [-.03;.04]).

Summary of phase 4

The semi-partial correlations and the hypothesis tests indicated that LAC explains variance above and beyond other related constructs. In addition, the hypothesis tests indicated that LAC may exert part of its influence on work engagement through enhancing psychological autonomy need satisfaction and through enhancing psychological meaningfulness.

Discussion

The main purpose of this paper was to propose a new construct and to create a reliable and valid measure of leader attentive communication behavior. In addition, we wanted to test whether psychological need satisfaction and psychological conditions play a role in how this communication behavior translates into employee well-being. We focused our attention on developing this concept since leader communication is crucial to leadership (Fairhurst & Connaughton, 2014; Riggio, 2013; Penley et al., 1991) and plays a crucial part in creating the meaning, form, and even the "very possibility of organizational life" (Cooren et al., 2011, p.15; Ruben & Gigliotti, 2017). Yet, research

does not seem to look at leader communication through a behavioral lens: positive leadership theories do not go into detail with regards to what good communicators actually do differently. In this paper we have argued for the importance of sustained and open-minded attention for employees during communication. Leader attentive communication quantifies whether an employee perceives a leader as attentive, including and whether (s)he is perceptive to nonverbal employee cues.

We found that leader attentive communication is a construct with two related subdimensions, i.e. general attention paid during conversations and attention paid to non-verbal cues. We also found that leader attentive communication is associated with various aspect of employee well-being, such as work engagement, Kahn's conditions for engagement and psychological need satisfaction. More specifically, we found that LAC may exert part of its influence on work engagement through psychological need satisfaction, particularly through autonomy need satisfaction. This result thus indicates that employees feel more autonomous and perceive more decision making freedom when a leader is attentive and open-minded during conversations. Whether LAC is also associated with more actual workplace autonomy for employees remains to be investigated. In addition, we found that LAC may exert part of its influence through the psychological condition of meaningfulness: a leader communicates attentively, an employee might evaluate the interaction as more meaningful and satisfying, which can also impact psychological engagement on the work floor (Kahn, 1990).

In validating this questionnaire, we have added to the literature in several ways. We add to the leadership literature by answering calls for examining possible shared leader behavior across positive leadership styles (Derue et al., 2011; Eberly, Johnson, Hernandez, & Avolio, 2013; Rowold, Borgmann, & Diebig, 2015; Yukl, 2002) and by focusing on specific, narrow leader behavior. When leadership concepts are translated to specific behavior, they become a more narrow operationalization of what leaders actually do (Borgmann, Rowold, & Bormann, 2016), and behaviors (rather than leader traits) have more potential to explain variance across several leadership effectiveness criteria (Derue et al., 2011). We also add to the well-being literature, by developing a new way to quantify whether leader attentive communication actually has an impact on relevant employee outcomes such as work engagement and burnout. Last, by developing the knowledge about basic building blocks, we also add to relevant practical knowledge that is necessary to develop interventions in organizations (see e.g. Antonakis et al., 2011).

With regards to the specific scientific value of our questionnaire, it is (1) a new (behavioral) questionnaire which focuses on leader attention in the context of communication, (2) it is perception-based rather than self-report, (3) it provides a clear description of the characteristics it

assesses, as called for on a commentary of Grossman (2011) and (4) by focusing on actual leader behavior, this concept may be able to explain more variance in leadership effectiveness than trait theories (Derue et al., 2011).

In addition, attentive communication may benefit leaders and employees in several ways. First, it may enhance single-tasking (i.e. focusing on one thing, not being distracted) while conversing with employees (Levy, Wobbrock, Kaszniak, & Ostergren, 2012), and therefore possibly even reduces burnout (Reb et al., 2014). Second, LAC may enhance leader and follower need satisfaction and their scores for psychological conditions for engagement. In this vain, House and Podsakoff (1994) already observed that "outstanding leaders differ from less effective leaders in their higher consideration of and sensitivity to the needs of their followers" (in Kellett et al., 2002, p. 527). Third, through attentive communication, leaders may be more in tune with their employees, and as a consequence make better decisions with regards to managing their human resources in a more sustainable way (Van Dam, Van Vuuren, & Kemps, 2017), for instance through altering job demands and job resources (see e.g. Schaufeli, 2015). Finally, a great deal of leadership involves the intellectual processing and communication of emotions (Riggio, 2013), which leads to the conclusion that "people skills" or leaders are important. With this in mind, the knowledge of basic building blocks of (effective) communication is not only relevant for the development of better theories, but also for creating more practical interventions for organizations (see e.g. Antonakis et al., 2011).

Limitations and future research

There are several limitations present in this study. First, through aiming at very specific items based on a construct definition, we did not attempt to measure whether or not the leader is able to distinguish between his/her own emotions or perceive his/her own reactions (which would be more similar to emotional intelligence). With this questionnaire, we specifically focus on how the leader is able to pay attention to the employee. One can measure both (1) the attention paid in general and (2) the attention paid to specific nonverbal cues from the employee. Implicitly, however, we do acknowledge the importance of self-knowledge on the part of the leader with regards to being able to communicate attentively and thoughtfully.

Second, even though we use employee-reported ratings of the leader's attention, common method bias (i.e. questionnaire research) may still be a problem, although there has been some research indicating that the claims of inflated results might be exaggerated (George & Pandey, 2017). The possibility for endogeneity bias must also be taken into account (Antonakis, Bendahan, Jacquart, & Lalive, 2010; Jacquart, Cole, Gabriel, Koopman, & Rosen, 2017). Therefore, future research may want to focus on longitudinal designs. In addition, this research did not thoroughly

take into account several aspects of leader personality, which has been related to leader emergence and effectiveness (Zaccaro, Dubrow, & Kolze, 2017).

With regards to theorizing on LAC, we draw on research concerning SDT and Kahn's theory on psychological conditions for engagement to explain why leaders may want to engage in attentive communication, and why it may have positive associations with employee well-being. Specifically, we hypothesized that both psychological need satisfaction and psychological conditions would mediate the relationship between LAC and employee well-being. Our study samples only permitted us to test these hypotheses separately, future research may want to check for a parallel mediation. There are also some boundary conditions to take into account when theorizing on a dyadic process between leader and employee. First of all, when follower need satisfaction is already high, LAC might not be of additional importance (Van Quaquebeke & Felps, 2016). Second, when there are no problems or issues to be discussed, additional attentive communication may not add more to productivity levels, indeed it may hamper efficiency, since more time is consumed to communicate. Third, it will depend in part on the (nonverbal) communication levels of the employee, and the level of emotionality, whether or not the leader accurately perceives the situation, independent of the level of attentiveness. In our definition of LAC, we also stress the importance of an open-minded demeanor. If this is absent, employees might feel uncomfortable with an attentive and perceptive leader.

We see the ability to be attentive when in a conversation with an employee as a behavioral building block, that may be shared across several (positive) leadership styles and may be even seen as an amplifier of their positive effects. Future research may wish to research exactly how much attentive communication is typical of a certain positive leadership style, and whether a training in attentive communication may enhance leader effectiveness. More specifically, future studies could include diary studies, e.g. following the protocol of Breevaart et al. (2014). In this sense, the questionnaire may be modified from "in general" to, "Today, when I communicated with my leader.." or even "During my performance appraisal..". After more research, it may even be possible to develop norms for leader attentive communication (Mackenzie, Podsakoff, & Podsakoff, 2011).

Final note

Leader attentive communication is a new concept intended to study leader communication from a behavioral lens. It can also be a valuable concept for leader training. By focusing on specific behavior, rather than communication styles or strategies, we focus on the building block of effective communication: actually being present with an open mind.

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Appendix

Table 4. Differentiation between LAC and related constructs

Table 5. Overview focal constructs in the data-collections for scale construction

Table 6. Descriptive statistics and correlations sample 1. Employee-level

Table 7. Descriptive statistics and correlations sample 1. Leader-level

Table 8. Descriptive statistics and correlations sample 2. Employee-level

Table 9. Descriptive statistics and correlations sample 2. Leader-level

Table 10. Descriptive statistics and correlations sample 3. Employee-level: LAC and demographics

Table 11. Descriptive statistics and correlations sample 3. Employee-level: LAC and other variables

Table 12. Descriptive statistics and correlations sample 3. Leader-level

Table 4. Differentiation between LAC and related constructs

Datasets			Fit indices of LAC							
Sample 1		χ²(df)	AIC	BIC	CFI	TLI	RMSEA	SRMR	Δ χ² (df)
Trust in leader	Two-factor model	938.01(89)	10 853.97	10 969.80	.77	.72	.17	.11	
	One-factor model	1433.55(90)	11 347.51	11 459.61	.63	.57	.22	.14	495.55(1)***
LMX	Two-factor model	908.66(134)	12 799.06	12 934.98	.77	.74	.14	.10	
	One-factor model	1247.68(135)	12 136.09	13 268.33	.67	.63	.17	.11	339.03(1)***
Sample 2									
Trust in leader	Two-factor model	975.83(89)	15 411.15	15 537.27	.83	.80	.15	.08	
	One-factor model	1678.46(90)	16 111.77	16 233.82	.69	.64	.20	.11	702.62(1)***
Transformational leadership	Two-factor model	1461.81(208)	22 823.98	23 006.75	.83	.81	.12	.07	
	One-factor model	2325.05(209)	23 685.23	23 863.93	.71	.68	.15	.09	863.24(1)***
Mindfulness in communication	Two-factor model	1374.03(151)	20 435.76	20 593.79	.77	.74	.14	.09	
	One-factor model	1798.62(152)	20 856.34	21 010.32	.69	.65	.16	.11	422.59(1)***
LMX	Two-factor model	1022.33(134)	18 683.76	18 833.95	.84	.82	.12	.07	
	One-factor model	1799.68(135)	19 459.10	19 605.23	.71	.67	.17	.10	777.34(1)***
Sample 3									
LMX	Two-factor model	1737.43(134)	19 521.12	16 672.91	.82	.79	.16	.10	
	One-factor model	2680.97(135)	20 462.66	20 610.35	.71	.67	.20	.09	943.55(1)***
Mindfulness in communication	Two-factor model	2032.27(134)	21 628.33	21 780.127	.75	.72	.18	.11	
	One-factor model	2598.66(135)	22 192.72	22 340.41	.68	.64	.20	.12	566.39(1)***
Servant leadership	Two-factor model	4307.05(701)	40 193.02	40 504.71	.70	.69	.12	.10	
	One-factor model	5452.89(702)	41 336.86	41 644.60	.61	.59	.13	.09	1145.8(1)***

CFA results for the factor structure of LAC and related constructs; Two-factor model indicates a model in which LAC and a related construct load on separate factors; one-factor model indicates a model in which LAC and a related construct load on the same factor.

Table 5. Overview focal constructs in the data-collections for scale construction

	Sample 1	Sample 2	Sample 3	Scale reference
N employees	314	522	484	
N leaders	141	253	48	
Employee	X			
Well-being/performance				
Work engagement	X	X	X	Schaufeli et al. (2017)
Need satisfaction	X	X	X	Van den Broeck et al. (2010)
Conditions for engagement			X	May et al. (2004); Kahn et al. (1990)
Performance			X	Marsh (1984)
On leadership				
Trust in supervisor	X	X		Yang & Mossholder (2010)
Leader attentive communication	X	X	X	This study
LMX	X	X	X	Graen & Uhl-Bien (1995)
Transformational leadership		X		Avolio & Bass (2004)
Mindfulness in communication		X	X	Arendt et al. (2019)
Servant leadership			X	Van Dierendonck & Nuijten (2011)
Leader listening			X	Dotan et al. (2018)
Leader				
Characteristics				
Emotional intelligence	X	X		Pekaar et al. (2018)
Mindfulness (FFMQ)	X	X		Baer et al. (2006)
Mindfulness (MAAS)	X	X		Brown & Ryan (2003)
Cognitive empathy	X	X	X	Vachon & Lynam (2016)
Personality			X	Rammstedt & John (2007)
Leadership skills				
Leader attentive communication	X	X		This study
Transformational leadership	X			Avolio & Bass (2004)
Active-empathic listening			X	Bodie (2011)

Overview focal constructs in the data-collections for scale construction. Feedback (develop + performance) = developmental and performance-oriented feedback

Sample 1 (Recruitment offices)
Table 6. Descriptive statistics and correlations sample 1. Employee-level

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. **LAC**	5.66	.75											
Control variables													
2. Gender	.15	.35	-.06										
3. Age	29.34	6.01	.07	-.16**									
4. Tenure	4.30	5.07	.01	-.12	.78**								
5. Tenure with leader	1.96	2.25	-.03	-.07	.44**	.52**							
6. Education	4.59	1.15	-.09	.03	-.07	-.06	.10						
7. Contact	1.41	.67	-.09	-.03	.22**	.16**	.09	.05					
8. Leader knowledge	1.48	.58	-.35**	-.05	-.07	-.07	-.09	.07	.14*				
Employee well-being													
9. Work engagement	5.77	.83	.36**	-.05	.03	.03	-.12*	-.19**	.05	-.10			
10. Need satisfaction	5.50	.65	.39**	-.05	.22**	.13*	.12*	-.06	.04	-.26**	.46**		
On leader(ship)													
11. Trust in supervisor	5.88	.93	.63**	-.09	-.02	-.04	-.12*	-.02	-.04	-.31**	.30**	.26**	
12. LMX	5.55	.80	.65**	-.04	.12*	.07	.07	.05	-.05	-.42**	.33**	.56**	.60**

*p < .05, **p < .01; LAC = leader attentive communication; aut. motivation = autonomous motivation

Table 7. Descriptive statistics and correlations sample 1. Leader-level.

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. **LAC**[1]	5.69	.58												
Control variables														
2. Gender	1.76	.43	.05											
3. Age	36.9	7.99	.07	.22**										
4. Tenure	10.8	7.54	.09	.16	.83**									
5. Team tenure	3.74	3.95	.08	.07	.58**	.54**								
6. Contact with team	1.13	.43	.01	-.06	.16	.16	-.04							
7. Education	4.78	1.05	.12	.07	-.08	-.02	-.05	.13						
Characteristics														
8. Emotional intelligence	5.57	.58	.04	.09	.24**	.21*	.12	-.00	-.19*					
9. Mindfulness (MAAS)	4.81	.91	.10	.01	.05	.07	-.07	.02	-.04	.34**				
10. Mindfulness (FFMQ)	5.10	.82	.10	.11	.11	.14	.13	.06	-.03	.39**	.59**			
11. Cognitive empathy	5.35	.57	.02	.07	.11	.13	-00	-.08	-.25**	.69**	.26**	.25**		
Leadership skills														
12. Transformational LS	5.78	.50	.22*	-.03	.07	.06	.11	-.03	-.29**	.40**	.17	.26**	.41**	
13. LAC self-report	5.95	.48	.14	.05	.02	.01	-.01	-.01	-.20*	.57**	.22*	.23**	.61**	.55**

*p < .05, **p < .01; LS = leadership; ¹employee-rated LAC is aggregated*

Table 8. Descriptive statistics and correlations sample 2. Employee-level.

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. **LAC**	5.35	.90													
Control variables															
2. Gender	.43	.49	.04												
3. Age	38.5	11.2	.02	-.02											
4. Tenure	11.8	11.02	-.03	.04	.79**										
5. Tenure with leader	5.13	6.10	-.03	.03	.40**	.51**									
6. Education	4.83	1.23	.05	.07	-.08	-.11*	-.09*								
7. Contact	1.79	.84	-.11*	-.01	-.05	-.08	-.10*	.09*							
8. Leader knowledge	1.39	.53	-.21**	-.09	-.04	-.06	-.08	.00	.13**						
Employee well-being															
9. Work engagement	5.42	.94	.31**	.01	.08	.05	-.03	-.03	-.03	-.10*					
10. Need satisfaction	5.51	.66	.40**	.03	.15**	.13**	.09*	.07	-.04	.16**	.52**				
On leader(ship)															
11. Trust in supervisor	5.73	.89	.69**	.01	-.03	-.03	-.08	.08	-.08	-.23**	.22**	.26**			
12. Transformational LS	5.34	.85	.73**	-.03	-.20	-.05	-.07	-.01	-.08	-.23**	.36**	.38**	.71**		
13. Mindfulness in communication	4.34	.71	.59**	.08	.04	.07	-.01	.11*	.01	-.14**	.19**	.32**	.48**	.47**	
14. LMX	5.47	.82	.64**	.06	.08	.05	-.03	.03	-.13**	-.34**	.30**	.45**	.67**	.76**	.46**

*p < .05, **p < .01; LAC = leader attentive communication; LS = leadership*

Table 9. Descriptive statistics and correlations sample 2. Leader-level.

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. **LAC**[1]	5.38	.69											
Control variables													
2. Gender	.67	.47	-.05										
3. Age	45.6	10.16	-.07	.03									
4. Tenure	18.22	11.20	-.05	.03	.76**								
5. Team tenure	7.48	7.06	-.17*	.04	.48**	.51**							
6. Contact with team	1.36	.68	-.06	-.04	.01	-.12	-.08						
7. Education	5.25	.88	.08	-.03	.01	-.00	-.012	-.02					
Characteristics													
8. Emotional intelligence	5.18	.60	-.04	-.12	.05	-.00	-.06	-.03	-.08				
9. Mindfulness (MAAS)	4.75	.92	.09	-.17*	.18**	.14*	.08	-.17**	.08	.39**			
10. Mindfulness (FFMQ)	4.72	.67	.07	-.07	.11	.07	.05	-.04	.05	.43**	.68**		
11. Cognitive empathy	5.11	.65	.17*	-10	-.02	-.06	-.03	-.11	.01	.61**	.35**	.31**	
Leadership skills													
12. LAC self-report	5.74	.65	.18*	-.13	.08	.12	.03	-.15*	-.06	.45**	.33**	.31**	.42**

*p < .05, **p < .01; ¹employee-rated LAC is aggregated

Sample 3 (schools)
Table 10. Descriptive statistics and correlations sample 3. Employee-level: LAC and demographics.

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. **LAC**	5.32	1.04										
Control variables												
2. Gender	.65	.48	-.03									
3. Age	39.73	10.27	-.06	-.08								
4. Tenure	14.94	9.88	-.05	-.05	.84**							
5. Tenure with leader	5.88	5.27	-.15**	.07	.30**	.38**						
6. Education	5.32	.65	-.15**	-.00	-.01	.05	.01					
7. Contact	3.57	1.63	.31**	.04	.07	.09	.03	-.01				
8. Leader knowledge	4.70	1.23	.33**	-.10*	.23**	.23**	.10*	-.03	.45**			
9. Lesson hours	18.42	5.45	-.04	-.10*	-.14**	-.14**	-.01	-.15**	-.06	-.06		
10. Actual working hours	35.46	10.75	-.06	-.09	-.19**	-.17**	-.09	.09	.08	-.03	.38**	

*p < .05, **p < .01; LAC = leader attentive communication

Table 11. Descriptive statistics and correlations sample 3. Employee-level: LAC and other variables.

	Mean	SD	1	2	3	4	5	6	7	8	9
1. **LAC**	5.32	1.04									
Employee well-being											
2. Work engagement	5.57	.90	.32**								
3. Kahn's conditions	5.57	.63	.45**	.53**							
4. Need satisfaction	5.30	.76	.34**	.45**	.66**						
On leader(ship)											
5. LMX	5.11	1.20	.70**	.29**	.47**	.41**					
6.Mfn in communication	5.06	1.12	.67**	.27**	.36**	.27**	.51**				
7.Servant leadership	4.86	.78	.74**	.31**	.48**	.41**	.72**	.61**			
8.Communication sat	4.83	1.57	.63**	.24**	.37**	.38**	.64**	.53**	.63**		
9.Satisfaction with leader	5.21	1.29	.69**	.33**	.43**	.36**	.71**	.60**	.73**	.79**	
Performance											
10. Teaching performance	5.46	.65	.20**	.38**	.44**	.31**	.17**	.16**	.16**	.08	.14**

*p < .05, **p < .01; LAC = leader attentive communication; Kahn's conditions = psychological conditions for engagement (Kahn, 1990)

Table 12. Descriptive statistics and correlations sample 3. Leader-level.

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. **LAC**[1]	5.32	1.04													
Control variables															
2. Gender	.38	.49	-.02												
3. Age	48.6	8.36	-.45*	-.10											
4. Tenure	8.24	6.48	-.32*	-.37*	.63**										
5. School tenure	7.23	5.92	-.29*	-.29	.61**	.91**									
6. Number of students	563.82	371.88	-.45**	-.08	.24	.00	.08								
7. Number of teachers	81.57	42.43	-.41**	.03	.23	.00	.06	.88**							
8. Education	5.59	.82	-.17	.07	-.10	.01	.01	.36*	.36*						
Characteristics															
9. Cognitive empathy	5.22	.83	.38**	.29	-.29*	-.37*	-.31*	-.03	.07	-.01					
10. Extraversion	5.03	1.30	.02	.05	-.24	-.10	-.09	-.10	-.04	.13	.45**				
11. Openness	5.30	1.16	.02	.16	.14	.02	.06	.05	.02	-.06	.58**	.18			
12. Neuroticism	2.72	1.16	-.02	.03	.06	.07	.07	.13	.04	.01	-.26	-.04	-.11		
13. Conscientiousness	5.96	.83	.05	.19	-.03	-.22	-.24	-.09	-.06	-.06	.15	.20	-.20	-.02	
Leadership skills															
14. Active-empathic listening	5.39	.69	.26	.38**	-.16	-.25	-.23	-.02	.08	.06	.74**	.51**	.41**	-.10	.32*

*p < .05, **p < .01; [1]employee-rated LAC is aggregated

Chapter 6

Leader attentive communication:
developing and testing an evidence-based training protocol

COVID disclaimer

This chapter elaborates on research concerning a newly developed training protocol designed to improve leader (attentive) communication. During the in-person trainings, the COVID pandemic changed our world. This impacted the research in this chapter as well. Specifically, in-person trainings were cancelled, so we only had an intervention for two training groups. In addition, the after-training focus groups were cancelled, and the data-collection after the two training groups partially occurred during lock-down. For the first training group, leaders and their employees entered lock-down after the second wave of the data-collection, the second training group went in lockdown almost immediately after the training. Of course, this greatly impacts the conclusions that can be formed based on this research. However, in order to get more insight with regards to the impact of COVID-19 on the work situation of our sample, we did add open qualitative questions to the last wave of the data-collection.

This chapter strongly builds on the previous chapter where we validated the leader attentive communication questionnaire and tested whether 1) leader attentive communication was related to employee well-being and (2) whether psychological need satisfaction and Kahn's conditions for engagement mediated this effect. In this training chapter, we mainly followed the same logic and also tested the same hypotheses, as well as developed and pilot tested the training protocol aimed at improving leader (attentive) communication. In what follows, we include all the study information: training development and content, theory development and hypotheses, multilevel data-analysis, quantitative ánd (ad-hoc) qualitative results.

During these challenging times, communication is more important than ever. We developed a two-day interactive communication bootcamp to increase leaders' interpersonal communication skills. Specifically, we focused on increasing leader attentive communication, i.e. "an open-minded, attentive demeanor while in a conversation with an employee". In this paper, we pilot test the communication bootcamp in a longitudinal design (pré, post and 2 months post training) and assess its effects on leader communication, leadership, leader attention and employee well-being. We use multisource data and multilevel analysis. Despite the interference of the COVID-19 pandemic and consequent lockdown during data-collection, we found some positive trends over time in employee-reported leader attentive communication, satisfaction with leader communication, servant leadership and mindfulness in communication, although not in both training groups. Leaders' self-reports indicated no changes. In addition, we found that Kahn's psychological conditions for engagement (availability, meaningfulness and safety) mediated the relationship between leader attentive communication and employee work engagement. Open questions concerning the lockdown revealed that employees' experience ranges from very positive to extremely negative, while leaders indicate that it drastically impacted their communication with their teams and impaired their ability to pay attention to subtle cues.

Introduction

Communication skills are essential for leadership (Cohrs et al., 2020; de Vries, Bakker-Pieper, & Oostenveld, 2010; Fairhurst & Connaughton, 2014). They are associated with perceived leadership performance, regardless of physical distance (Neufeld et al., 2010) or culture (Den Hartog et al., 1999). Through effective (e.g. attentive or person-oriented) communication, leaders are able to develop positive (exchange) relationships with employees (Uhl-Bien, 2006). This leads to several positive outcomes, including job satisfaction (Fix & Sias, 2006), psychological need satisfaction (Van Quaquebeke & Felps, 2016) and in-role and extra-role performance (Reb, Chaturvedi, Narayanan, & Kudesia, 2018).

The necessity of good communication skills, or 'soft skills' in general, for effective leadership has not gone unnoticed: numerous consultancy companies offer their services with the promise of improving leadership skills and turning ineffective leaders into true 'people managers' (Vlerick, 2020a,b; Hudson, 2020). Research shows that there is substantial differentiation between leader development and leader*ship* development training protocols in terms of their design, delivery, implementation and financial return on investment (Avolio, Avey, & Quisenberry, 2010; Martin, Hughes, Epitropaki, & Thomas, 2020). Broadly speaking, both are important, yet leader development is personal, while leader*ship* development may be based more on the organizations' needs (Tate, 2016). Reviews and meta-analyses indicate that leader(ship) training may have positive outcomes that are worth the investment, when they are executed well (Aguinis & Kraiger, 2008; Avolio et al., 2010; Avolio, Reichard, Hannah, Walumbwa, & Chan, 2009; Collins & Ui, 2004;

Lacerenza, Reyes, Marlow, Joseph, & Salas, 2017; Martin et al., 2020). This leads researchers to conclude that "leadership training is substantially more effective than previously thought, leading to improvements in reactions, learning, transfer and results" (Lacerenza et al., 2017, p. 1686). Some of these improvements are related to developing a training program that is characterized by an a-priori needs analysis, the incorporation of feedback, the use of spaced training sessions and face-to-face delivery (not self-administered) (Lacerenza et al., 2017). We took this into account while developing a training protocol specifically aimed at improving a crucial aspect of leadership, i.e. leader communication.

Therefore, in this study, we will focus on developing leaders' communication behavior. This is relevant for several reasons: (1) leaders spend most of their time communicating with employees one way or another (Wajcman & Rose, 2011), (2) effective and skilled communication is crucial for leadership (Barge, 1994; Fairhurst & Connaughton, 2014; Neufeld et al., 2010; Riggio & Darioly, 2016) and (3) meta-analyses point out the need to increase our understanding on how to develop a constructive relationship between leaders and employees (Dulebohn, Bommer, Liden, Brouer, & Ferris, 2012). In addition, and more broadly speaking, developing and testing a training protocol aimed at improving leader communication, and subsequently employee well-being, is also a practical endeavor that addresses calls for more evidence-based HR (Lawler, 2007).

In sum, the main goals of this study are to (1) develop a training protocol for leader (attentive) communication and (2) run a pilot test of the training and (3) to test whether it impacts leader communication, leadership and employee well-being (see below).

Leader attentive communication

Leader attentive communication (LAC) is a recently developed communication construct that can be defined as *"an open-minded, attentive demeanor while in a conversation with an employee"* (chapter 5). It is comprised of two dimensions: it assesses (1) attention paid during conversations *in general* and (2) attention paid to *nonverbal cues*, usually measured from the viewpoint of the employee. Therefore, it is a specific communication behavior that may be shared across different positive leadership styles, i.e. *a behavioral building block* for effective leadership. Research has shown that leader attentive communication is related to transformational leadership, servant leadership and employee well-being (chapter 5).

In order to develop a training protocol that influences leader attentive communication, we differentiated between *leader development*, i.e. communication-related self-awareness at the individual level, and *leadership development*, i.e. practical communication skills at the interpersonal level (Day et al., 2014). Therefore, in the context of this training, we first focused on leader development by working on increasing leader self-awareness and attention in general, as well as by working on self-

awareness with regards to non-verbal communication (from themselves and conversation partners). This mimicked the dimensions from leader attentive communication.

As a second part, we focused on leader*ship* development by including exercises in which leaders could apply leader attentive communication skills during difficult meetings and employee feedback conversations. Consequently, this second training part was also based on research concerning communication biases, giving and receiving feedback and peer mentoring (see 'training content and process' below).

Hypothesis development

In order to test whether the training impacted variables that were related to leader attentive communication, we followed the framework of Decuypere et al. (2019) in which the nomological network of leader attentive communication was divided into three categories, i.e. leadership constructs, communication constructs and attention-based constructs. With regards to *leadership constructs,* we selected servant leadership, since we hypothesized that this might be a positive leadership style that is most associated with leader attentive communication: servant leaders focus on the growth and well-being of employees (Greenleaf, 1977; van Dierendonck & Nuijten, 2011), which amplifies the need to make time to actually pay attention during conversations with employees to discover what those needs are and how to best improve employees' well-being. We also included trust, since it is so closely related to leadership, especially behavior (and personality) from the immediate supervisor (Burke, Sims, Lazzara, & Salas, 2007; Ferrin & Dirks, 2002; Joseph & Winston, 2005; Nienaber, Romeike, Searle, & Schewe, 2015).

With regards to the category on *communication constructs,* we included the recently developed mindfulness in communication measure (Arendt, Pircher Verdorfer, & Kugler, 2019), since it specifically translated mindfulness in a leadership communication context. In addition, we included employee satisfaction in communication (Arendt, Pircher Verdorfer, & Kugler, 2019).

In terms of pure *attention-based constructs*, we included (leader) mindfulness in general (Brown & Ryan, 2003). Based on the focus of the training, i.e. improving leader (attentive) communication, and the association of the constructs from the nomological network with leader attentive communication, we hypothesized the following:

Hypothesis 1: LAC scores increase after the training.

Hypothesis 2: Scores on servant leadership, employee trust, mindfulness in communication, employee satisfaction in communication and leader mindfulness all increase after the training.

In addition, we hypothesized that LAC is positively associated with *employee well-being*, since it satisfies employee psychological needs (Deci & Ryan, 2008) and creates the psychological conditions necessary for work engagement (Kahn, 1990). Below we expand on why we expect this relationship.

Self-Determination Theory

SDT posits that fostering three psychological needs will lead to an autonomous motivation at work, which is related to higher employee well-being (Deci & Ryan, 2008). The *need for autonomy* constitutes "experiencing a sense of volition and psychological freedom" during work activities (Van Den Broeck, Vansteenkiste, De Witte, Soenens, & Lens, 2010; p. 981) or "experiencing choice and feeling like the initiator of one's own actions" (Baard, Deci, & Ryan, 2004; p. 2046). The *need for competence* refers to "feeling effective" (Van Den Broeck et al., 2010, p. 981) or "succeeding at optimally challenging tasks and attaining desirable outcomes" (Baard et al., 2004, p. 2046). *The need for relatedness* can be described as feeling connected to others or being "loved and cared for" (Van den Broeck et al., 2010, p. 981) or: "establishing a sense of mutual respect and reliance with others" (Baard et al., 2004, p. 2046).

We proposed that (1) LAC may enhance *autonomy need satisfaction*, since it helps the leader to notice what the employee needs and therefore make more effective decisions with regards to the allocation of resources or decision making freedom (Reb et al., 2014), (2) LAC may enhance *competence need satisfaction* because it may help leaders to be more supportive (Reb et al., 2014), e.g. through listening and addressing employee needs directly or through recognizing (hidden) talent or providing timely training opportunities, and (3) LAC may enhance *relatedness need satisfaction*, because in a conversation in which the leader takes the time and puts in the effort to pay attention to the employee (in an open-minded way), the employee is likely to feel respected and cared for (Brown & Ryan, 2003).

Kahn's theory on psychological conditions for engagement

Kahn (1990) posited that there are three psychological conditions that need to be fulfilled in order for employees to be able to become fully engaged on the work floor. *Psychological safety* is "being able to show and employ one's self without fear of negative consequences to self-image, status, or career" (p. 708), this means that an employee feels safe to express opinions or take actions without fear of recrimination (Roberts & Williams, 2017). *Psychological meaningfulness* is "a feeling that one is receiving a return on investments of one's self in a currency of physical, cognitive, or emotional energy" (p. 703-704), or "the feeling that the behavior in question could be worthwhile, valuable, or enhance one's personal and/or professional growth" (Roberts & Williams, 2017, p.

208). *Psychological availability* refers to "the sense of having the physical, emotional, or psychological resources to personally engage at a particular moment" (Kahn, 1990, p. 714).

We proposed that (1) LAC increases *psychological safety*, because of the open-minded attitude of the leader (Kahn, 1990; Li & Tan, 2013). Research has also shown that attentive listening behavior also increases psychological safety (Castro, Anseel, Kluger, Lloyd, & Turjeman-Levi, 2018). We also propose that (2) LAC increases *psychological meaningfulness* because uninterrupted attention and time during conversations with their leader will make employees feel more worthwhile, useful, and valuable (Kahn, 1990). A good working relationship, characterized by a positive and trust-inducing interactions, can also contribute to a feeling of psychological meaningfulness (Roberts & Williams, 2017). (3) LAC increases *psychological availability* because a leader scoring high in LAC will minimize distractions to be actually present and cognitively 'available' with employees during conversations, which may inspire employees to also minimize distractions at that time to become psychologically available. In addition, leaders are an important resource for employees (Roberts & Williams, 2017): e.g. through providing access to resources, but also through emotional support, they may help increase employees' sense of having the resources available to engage at their work.

Combined, we hypothesized:

Hypothesis 3: Leader attentive communication is positively associated with employee well-being (i.e. burnout, work engagement, need satisfaction and Kahn's conditions for engagement).

Hypothesis 4: Psychological need satisfaction mediates the relationship between leader attentive communication and employee well-being (work engagement and burn-out).

Hypothesis 5: The psychological conditions of meaningfulness, availability and safety mediate the relationship of leader attentive communication and employee well-being (work engagement and burn-out).

Method and materials

Training development

The evidence-based training was inspired by the theoretical framework concerning leader attentive communication and also founded on empirical and theoretical research concerning attention, communication and leadership. We also based ourselves on research concerning effective training protocols when developing the practicalities (see e.g. Lacerenza et al., 2017). We built up

the training protocol in a logical sequence: we focused first on paying attention in general, then on non-verbal communication, then we moved on to verbal communication and ended with an integration session (see outline of the training below).

In addition, we were advised by a small group of consultants (n = 4) on how to invite organizations for the study (see Appendix), as well as on some of the general principles applied throughout the training in terms of the training set-up and exercise execution. The development of the training protocol was an interactive process in which (1) consultants advised us on general themes with regards to communication training and (2) research was consulted and translated into a cohesive training structure. The actual training itself, including all the exercises, was put together in January 2020.

Training content and process

Content. The general idea for the training was to work on leader attentive communication by first focusing on *leader development* (i.e. at the individual level; Day, Fleenor, Atwater, Sturm, & McKee, 2014) in terms of how to pay attention and by building self-awareness with regards to their own non-verbal communication. In the second phase, we focused on *leadership development* (i.e. at the interpersonal level; Day et al., 2014) by introducing communication concepts and practicing with difficult conversations. This resulted in four building blocks spread out over two consecutive training days.

Building block 1: Working with attention. In this first building block (AM, first day), we focused on evidence-based attention skills. We based ourselves on scientific insights with regards to:

1) *Multitasking and distraction* (see e.g. Adler & Benbunan-Fich, 2012; Carrier, Rosen, Cheever, & Lim, 2015; Gorman & Green, 2016; Levy, Wobbrock, Kaszniak, & Ostergren, 2012; Pikos, 2017; Reinke & Chamorro-Premuzic, 2014; Tigchelaar & de Bos, 2019; Wajcman & Rose, 2011), including effects of phone snubbing (Roberts & Williams, 2017).

2) *Paying attention* as a basis for information gathering, creativity and improved decision making (Arkes & Blumer, 1985; Baas, Nevicka, & Ten Velden, 2014; Carson & Langer, 2006; Hafenbrack, Kinias, & Barsade, 2014; Hülsheger, Alberts, Feinholdt, & Lang, 2013; Karelaia & Reb, 2015; Kiken & Shook, 2011; Langer, 1989; Langer & Moldoveanu, 2000; Murphy, 2020; Reb & Atkins, 2015; Reb, Narayanan, & Ho, 2013; Ruedy & Schweitzer, 2010; Sutcliffe, Vogus, Dane, & Jones, 2016; Weick & Putnam, 2006).

3) *Emotional contagion* with regards to burn-out and work engagement, warranting the necessity of paying attention to catch negative effects early (Bakker, Van Emmerik, & Euwema, 2006; Barsade et al., 2002; Costa, Passos, & Bakker, 2013; Hatfield, Cacioppo, & Rapson, 1994).

This resulted in exercises revolving around noticing (preliminary) judgment and being present and noticing physical sensations (see e.g. Hafenbrack, 2017), as well as exercises revolving multitasking and noticing listening behavior.

Building block 2: Non-verbal aspects of communication. In this second building block (PM, first day), we built on the foundation from block 1 and focused on (paying attention to) nonverbal aspects of communication. We based ourselves on scientific insights with regards to:

1) *Evidence-based conversation techniques* and what they have in common; we specifically incorporated the commonalities of respectful inquiry (Van Quaquebeke & Felps, 2016), humble inquiry (Schein, 2013), feedforward (Kluger & Nir, 2010; Mcdowall, Freemann, & Marshall, 2014), mindful communication (Arendt, Pircher Verdorfer, & Kugler, 2019; Arendt, Pircher Verdorfer, & Kugler, 2019), active-empathic listening (Bodie, 2011) and leader attentive communication (see previous chapter).

2) The importance of *non-verbal communication* (Bellou & Gkorezis, 2016; Bonaccio, O'Reilly, O'Sullivan, & Chiocchio, 2016; Breazeal, Kidd, Thomaz, Hoffman, & Berlin, 2005; Daly, Vangelisti, & Daughton, 1987; Darioly & Mast, 2014; Friedman, Prince, Riggio, & DiMatteo, 1980; Riggio & Darioly, 2016; Stacks & Murphy, 1993; Talley & Temple, 2015; Bollen & Bergen, 2017).

3) *Personal space* and how/when to organize *meetings* (Beaulieu, 2004; Hunsaker & Allessandra, 1981; Lomranz, 1976; Pink, 2018; Bollen & Bergen, 2017).

This resulted in exercises concerning basic attitudes in conversations, on withholding nonverbal communication, observing and mirroring nonverbal communication and how to organize meetings while paying attention to timing and the use of (personal) space.

Building block 3: Verbal communication. In the third building block (AM, second day), we built on the previous day and focused on communication. We based ourselves on scientific insights with regards to:

1) *Communication biases*, e.g. the illusion of transparency and closeness communication bias (Garcia, 2002; Gilovich & Savitsky, 1999; Murphy, 2020; Savitsky, Keysar, Epley, Carter, & Swanson, 2011; Murphy, 2020).

2) *Giving and receiving feedback* (see e.g. Anseel, Beatty, Shen, Lievens, & Sackett, 2015; Anseel, Van Yperen, Janssen, & Duyck, 2011; Anseel & Lievens, 2009; Atwater, 2006; Bezuijen, van Dam, van den Berg, & Thierry, 2010; Fong, Patall, Vasquez, & Stautberg, 2019; Smither, London, & Reilly, 2005; Steffens et al., 2018; Zhang, Qin, & Liu, 2020).

This resulted in exercises concerning giving positive and negative feedback, as well as developing a personal feedback plan. Throughout the course we adopted exercises with maximum

participation and group reflection (see 'process' below). In this communication block, we also added a large exercise concerning 'peer mentoring': the participants (leaders) needed to practice a difficult conversation with an 'actor' (a fellow leader playing and employee) and a 'director' (an observing participant). In the beginning of the exercise, the leader presents the case with as much detail necessary for the actor to envisage how to (realistically) behave, the actor takes on the role of the employee (and usually received negative feedback badly) and the director is in charge of ensuring there is a real-life feeling to the exercise (e.g. moving furniture around, making sure there is a proper 'entrance' into the conversation, etc.), but (s)he is also in charge of stopping the conversation when it is going nowhere, providing meaningful feedback and ensuring optimum practicing and learning for the leader. The goal is to practice a difficult conversation more than once, while receiving feedback from the other participants, so one can build confidence in their approach, practice to stay calm (or deal with anxiety or other emotions productively), and potentially try out different tactics. Surprisingly, this was the exercise labelled as most informative, more emotional or nerve-wrecking than anticipated and most useful of the whole course.

Building block 4: Integration. In the fourth building block (PM, second day), we focused on integration and personal feedback. We based ourselves on scientific information regarding:

1) The importance of *asking for help* and the role of *peer mentoring* (Baker, 2020; Hafsteinsdóttir, van der Zwaag, & Schuurmans, 2017; Janssen, van Vuuren, & de Jong, 2016; Neely, cotton, & Neely, 2017; Petosa & Smith, 2014; Wanberg, Welsh, & Hezlett, 2003).

2) *Transfer of training* (Baldwin & Ford, 1988; Blume, Ford, Baldwin, & Huang, 2010; Cheng & Hampson, 2008; Cheng & Ho, 2001; Ford & Weissbein, 2008).

This resulted in exercises concerning (1) the use of a reciprocity ring (Baker, 2020), (2) developing a personal plan and (3) a large 'hot seat' exercise, in which participants were invited to take place on the 'hot seat' to receive (mostly positive) feedback from the other participants. At the end of this exercise, both the trainer and the training separately took place on the 'hot seat' and received in-depth feedback as well.

At the end, we also provided a reference list with several books worth reading on leadership and related subjects (Audenaert, 2019; Baker, 2020; Bollen & Bergen, 2017; Decramer, 2018; Desmet, 2017; Marichal & Segers, 2015; Murphy, 2020; Ronald E. Riggio, 2019; Stoker & Garretsen, 2018; Tigchelaar & de Bos, 2019).

See *Table 1* on the next page to get an overview of the training content.

Table 1. Training content.

DAY 1	
AM: Working with attention	*PM: Non-verbal aspects of communication*
- Multitasking and distraction - Attention as a basis for information gathering and decision-making - Attention exercises - Check-in to prepare a meeting	- Evidence-based communication techniques - Basis attitude in a conversation - Noticing non-verbal communication - Dealing with personal space

DAY 2	
AM: Verbal aspects of communication	*PM: Integration*
- Communication biases - Giving feedback and having difficult conversations - Dealing with negative feedback	- Integration - Peer feedback - Action plan

Process. We sent out invitations to participate in the training and the study (see Appendix) via LinkedIn. We mostly worked with HR department personnel to organize the trainings and to answer any questions with regards to the data-collection. The organizations themselves sent out invitations to participate to all leaders: the training was not mandatory. For all the trainings we had on-site (and thus familiar) training locations that were still away from the general working area that the participants usually occupied. The training occupied two consecutive days, in which all the leaders were asked not to work and to really commit to occupying themselves only with how to improve their communication behavior.

In terms of the process of the training itself, we doubled-down on experiential learning and refrained from lecturing too much. Where necessary, some core evidence-based concepts were explained, after which we opted for different formats of exercises: in class, solo, in small and larger groups, in different (furniture) settings in the classroom, inside as well as outside of the classroom. The goal was to have a dynamic training setting in which we allowed maximum space for participants' experience. However, the structure of the training, the timing as well as the exercise formats and introductory explanations were kept the same for each training group.

Study method

Study process and context

The invitation for participation in this study (see appendix) was spread on LinkedIn in April 2019. After introductory meetings with HR departments, there were four organizations that were interested in participating in the study, with one or more groups of leaders; two organizations in the private sector and two organizations in the public sector. Late 2019, two organizations dropped

out; one due to different expectations with regards to data-sharing and one due to internal organizations and shifts in priorities. This meant there were two public sector organizations left, who wanted to participate with three groups of leaders. The training sessions were planned for February and March 2020. The data-collection was to be administered one week before the training, two weeks after the training and two months after the training, both by the leaders, as well as their employees. After these data-collections, we planned to organize focus groups.

In terms of data-collection, the HR departments collected the e-mail addresses from leaders who wanted to follow the course, as well as from their employees. The invitations to the online Qualtrics questionnaires were either sent straight to them, or spread by the HR department. After a week, we sent a reminder. A couple days later, we sent the last reminder. The data could not be truly anonymous, since we needed names and/or email addresses to link the data-collections at the different time points. However, after they were linked, email addresses and names were deleted. This procedure was also communicated beforehand to all possible participants of the study. They all signed an informed consent. There was no need for approval from the ethics committee based on university guidelines.

Right after the second training in March, the COVID-19 pandemic 'hit' Belgium and was deemed serious enough to warrant a nation-wide lockdown. As a consequence, the last training was cancelled, as well as all the focus groups. This also meant that the first group of trainees experienced the pandemic between T2 (two weeks after the training) and T3 (two months after the training), whereas the second group experienced the pandemic between T1 (before the training) and T2 (two weeks after the training). We decided to continue the data-collection, with addition of some new questions with regards to how much online contact employees had with their leaders, and with regards to the influence of the pandemic on their work and their working relationships.

Participants

In the end, two groups of leaders ($N = 18$) followed the training. Combined, there were 129 employees who filled out questionnaires at T1 (before the training). However, response rates declined throughout the process, regardless of the promise of a report. See *Figure 1* for attrition rates throughout the process (Employees: N T1 = 129, N T2 = 72, N T3 = 54; Leaders: N T1 = 18, N T2 = 14, N T3 = 10). There were also fewer participants who filled in the questionnaire at the three time points (Employees group 1: $N = 18$; Employees group 2: $N = 27$, Leaders: $N = 9$).

Figure 1. Attrition rates throughout the data-collection process

Figure 1. Attrition rates throughout the data-collection process

Employees were mostly female (74.4%). Their education varied widely; 15.5% had a professional high school degree, 9.3% had a technical high school degree, 10.9% had a general high school degree, 41.9% had a higher education, non-university degree and 22.5% had a university degree. The average age was 43.22 (SD = 10.87). Average tenure at their current position was 12.02 years (SD = 9.91), average tenure with their leader was 5.07 years (SD = 5.51).

Leaders were mostly female (72.2 %), with an average age of 44.22 (SD = 8.21), all with higher education, 9.83 years of tenure as a leader (SD = 5.92), 8.44 years tenure as a leader of their current organization (SD = 5.60) and an average span of control of 16.72 employees (SD = 13.74).

Measurements

The measurements below were administered at the three time points (T1: before the training, T2: two weeks after the training, T3: two months after the training). With regards to employees we measured work engagement, burnout, need satisfaction, Kahn's conditions for engagement, leader attentive communication, trust, mindfulness in communication, satisfaction with leader communication and servant leadership. With regards to leaders we measured personality (only once, before the training), work engagement, burnout, need satisfaction, Kahn's conditions for engagement, leader attentive communication, mindfulness and servant leadership.

Cronbach's alphas (or Spearman-Brown coefficients for two-item measures) were all sufficiently high.

Work engagement was measured with a 3-item scale, which measured each dimension with one item: (1) "At my work, I feel bursting with energy" (vigor); (2) "I am enthusiastic about my job" (dedication); (3) "I am immersed in my work" (absorption) from Schaufeli, Shimazu, Hakanen, Salanova and De Witte (2017).

Burnout was measured with the 5-item emotional exhaustion dimension of the Utrecht Burn-Out Scale (Schaufeli & van Dierendonck, 2001), e.g. "I feel empty at the end of a work day."

Need satisfaction was measured with the Work-Related Basic Need Satisfaction Scale (Van Den Broeck et al., 2010). The scale includes six items for each dimension, i.e. autonomy (e.g. "The tasks I have to do at work are in line with what I really want to do."), competence (e.g. "I really master my tasks at my job.") and relatedness (e.g. "At work, I feel part of a group.").

Kahn's conditions for engagement were measured with 6 items for meaningfulness (e.g. "My job activities are personally meaningful to me.", 3 items for psychological safety (e.g. "I'm not afraid to be myself at work.") and 5 items for psychological availability (e.g. "I am confident in my ability to handle competing demands at work"), based on the work of May, Gilson and Harter (2004)

Satisfaction with leader communication (employees only) was measured with two items, i.e. "My leader uses methods of leadership that are satisfying" and "My leader works with me in a satisfactory way" (Arendt et al., 2019).

Trust (employees only) was measured with ten items from the (cognitive and affective) trust in supervisor scale (Yang & Mossholder, 2010), e.g. "My supervisor follows through with commitments s(he) makes.".

Leader attentive communication was measured with a ten-item questionnaire (Decuypere et al., 2019) with two dimensions, i.e. paying attention (during conversations) in general, e.g. "When I talk to my leader, I get his/her full attention" and paying attention to nonverbal cues specifically; e.g. "My leader notices my facial expressions".

Factor loadings and Cronbach's alphas at the three time points were found to be similar as in the previous chapter, further supporting the reliability of the measure.

Servant leadership was measured with 30 items from the Servant Leadership Survey (van Dierendonck & Nuijten, 2011), e.g. "My leaders gives me the space to make decisions that make the work simpler".

Mindfulness in communication (employees only) was measured with 9 items dimensions (Arendt et al., 2019), e.g. "My supervisor stays calm even in tense situations".

Mindfulness (leaders only) was measured with 15 reverse items from the Mindful Attention and Awareness Scale (Brown & Ryan, 2003), e.g. "I could be experiencing some emotion and not be conscious of it until sometime later.".

General controls questions. We asked employees how well they felt they could assess their leaders' behavior. We asked leaders if they followed any other training protocols after the

bootcamp and whether there were other circumstances that affected their leadership after the bootcamp.

Communication control questions. We also asked how much formal and informal contact there was between leaders and employees. In addition, after the COVID-19 pandemic, we also asked how much online face-to-face contact (using Skype, Facetime, ..) employees had with their leaders.

COVID-19 questions. After the pandemic struck, we also added more questions to the data-collection at T3. Specifically, we asked employees how the pandemic impacted (1) their work(load), (2) the contact with their leader and (3) the leadership of their leader. We asked leaders how the pandemic affected their leadership as well.

Qualitative data. In terms of qualitative data, we will discuss (1) the information from the open-ended questions with regards to the impact of the pandemic on work, work-related communication and leadership, (2) a summary of notes on informal communication during the 'hot seat' feedback section of the bootcamp itself in which both the training and the trainer were evaluated and (3) information from the formal evaluation organized by one of the host institutions.

Results

Balance check

In order to assess baseline differences between both groups before general analyses, we performed some ANOVA's on variables from group 1 and group 2 at T1 (before the training).

Control variables. There were no mean differences between both groups of leaders on gender, age, education or tenure. Employees from the two training groups, however, differed on gender ($F(1,127) = 22.47$, $p < .001$) and education ($F(1,127) = 10.30$, $p < .01$). The men/women ratio was equally split in the first group (group 1 = 51.3%, group 2 = 48.7%), while there were significantly more female employees in the second group (85.6%). There were equal amounts of employees with higher (non)university education in both groups (group 1 = 71.8%, group 2 = 70.1%), but the first group had more employees with a professional and technical high school degree (group 1 = 12.9%, group 2 = 30%). For employee analyses, we therefore controlled for gender and education.

Main constructs. There were no differences between both groups of leaders (each $N = 9$) on baseline levels of core variables. However, the difference between self-reported servant leadership appeared to be marginally significant ($F(1,16) = 4.31$, $p = .05$), with group 1 having a slightly higher mean (5.22) than group 2 (4.95). However, we decided to combine the information from both groups for further analyses (there were also no mean differences between the two groups of leaders at T2 or T3 on any variables).

There were some differences in baseline levels between both groups of employees (N group 1 = 39, N group 2 = 90), i.e. in levels of leader attentive communication ($F(1,127) = 6.66, p < .05$), trust ($F(1,127) = 8.55, p < .05$), mindfulness in communication ($F(1,127) = 5.88, p < .05$) and satisfaction with leader communication ($F(1,127) = 7.66, p < .01$). Also in the amount of informal contact ($F(1,127) = 14.80, p < .001$), amount of formal contact ($F(1,127) = 6.66, p < .05$) and how well employees felt they could assess their leaders ($F(1,127) = 5.09, p < .05$). Therefore, we tested the hypotheses (with these variables) on both groups as a whole, as well as separately.

Analytic strategy for hypothesis testing

To prepare and clean the data, we used SPSS. Since time points ($N = 255$) were nested within employees ($N = 129$), who were nested within teams of leaders who followed the course ($N = 18$), we analyzed the longitudinal data with hierarchical linear modeling. We used R for the multilevel analysis with three levels (see below). Leader data consisted of 42 total time points from 18 leaders (within the two leader groups). See the data structure for the employee data in *Figure 2* below/on the next page. We mostly used the lavaan (Rosseel, 2012) and nlme (Pinheiro et al., 2017) packages in R.

Figure 2. Data structure.
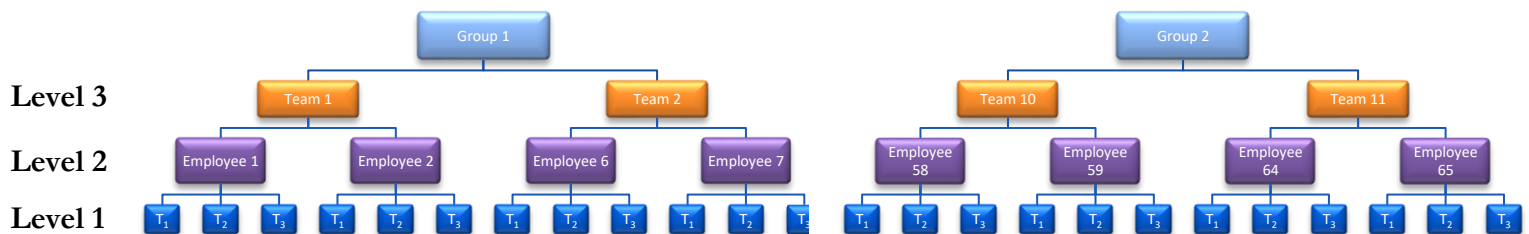
There are two training groups, in which 18 leaders followed the course. Within these teams there are multiple employees (N = 129) who filled in the questionnaire at three time points. In total there are 255 time points.

Hypothesis 1: Does LAC increase after the training?

To answer this question we performed multilevel analyses to look at the effect of time on (employee-rated) LAC. The interrator agreement for LAC at different time points within individuals (level 2) was high ($r_{wg}= .90$). Interrater agreement for individuals within teams (level 3) was rather low ($r_{wg}= .56$), indicating that employees from the same team rate their leader differently. Interestingly, the interrater agreement for employees within teams went up as time went on (r_{wg} T1 = .50; r_{wg} T2 = .65; r_{wg} T3= .77), possibly due to missing data from less satisfied employees.

Intraclasscorrelations (ICC1s) indicated that 61.88% of the variance in LAC was located at the individual level (level 2), 23.52% of the variance of LAC was situated at the team level (level 3),

warranting multilevel analysis. In addition, ICC2 values indicated that individuals and teams could be differentiated reliably in terms of LAC scores (ICC2$_{(individuals)}$ = .91; ICC2$_{(teams)}$ = .86). There was no general effect of time on LAC scores (β = .07, p > .10).

Since the timing of the pandemic measures (lockdown) was different for both groups, and there were mean differences in LAC between employees from groups 1 and 2 at T1 ($F(1,127)$ = 6.66, p < .05), as well as at T3 ($F(1,127)$ = 8.88, p < .01), we also performed this analysis separately for the two groups. ICC for group 1 now showed that that 64.40% of the variance in LAC was located at the individual level (level 2), 26.18% of the variance of LAC was situated at the team level (level 3). ICC for group 2 showed that that 60.33% of the variance in LAC was located at the individual level (level 2) and 21.56% of the variance of LAC was situated at the team level (level 3).

In group 1, there was a marginally positive effect of time on LAC scores (β = .11, p < .10). In group 2, there was no effect of time on LAC scores (β = .05, p > .05). This is partial support for hypothesis 1 (at least in group 1).

For leader-rated LAC, intraclasscorrelations (ICC1s) indicated that 56.68% of the variance was located at the individual leader level (level 2) and 10.78% of the variance of LAC was situated at the group level (level 3), warranting multilevel analysis. We found no effect of time on self-reported leader LAC scores (β = .03, p > .01).

In sum. Since there was a small increase in employee-rated LAC for the employees in group 1, we did find some preliminary support for hypothesis 1. We did not find this for group 2 nor for self-reported LAC scores, but the sample sizes were so small this was not truly expected. Multilevel analyses also indicated that most of the variance could be found at the individual level (level 2). See *Figure 3* for a visualization of LAC scores over time.

Figure 3. Evolution of LAC means (rated by employees who filled in the questionnaire at the three time points).
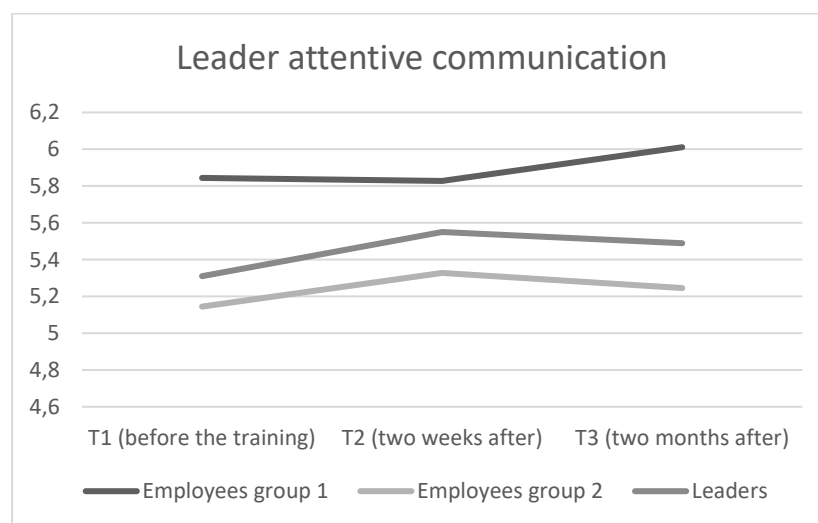
Hypothesis 2: Do other variables increase after the training?

To check whether some of the other variables increased/decreased over time, we performed some multilevel analyses with *time* as a predictor. Since baseline comparisons revealed some differences in each variable, we performed the analyses separately for employees from the two training groups. In employees from group one, there were 89 complete observations (at three time points), nested in 39 employees, within 8 teams. In group two, there were 166 observations, nested in 90 employees within 10 teams. We controlled for gender and education of employees, in addition we controlled for 'assessment quality', i.e. how well employees felt they could assess their leader. See *Table 2* below for a summary of the results of employee-rated leader(ship) variables.

For an easy overview we put all the variables into *Table 2*, i.e. LAC, satisfaction with communication, trust in leader, servant leadership, leader mindfulness in communication, work engagement, burn-out and psychological need satisfaction. One line corresponds with the information from one variable. On the left side, you see the variables, on the right side, you see the impact of the control variables and of time. This means that one horizontal line corresponds with the information from one variable. For easy comparison, we also included the abovementioned results concerning LAC and the results mentioned below (hypothesis 3) concerning well-being.

Table 2. Overview of the changes over time of different employee-rated leader(ship) and well-being variables.

Employee variables	ICC level 2	ICC level 3	Control variables						Effect of time	
			Gender		Education		Assessment			
Leader(ship)			B	SE	B	SE	B	SE	B	SE
LAC										
Group 1	.64	.26	.25	*.27*	.29*	*.12*	.59***	*.10*	.11ᵀ	*.06*
Group 2	.60	.22	-.03	*.31*	-.17*	*.09*	.25**	*.09*	.05	*.07*
Satisfaction communication										
Group 1	.57	.04	-.07	*.28*	.17	*.13*	.74***	*.11*	.21ᵀ	*.12*
Group 2	.57	.24	.22	*.42*	-.09	*.12*	.30*	*.12*	.23*	*.09*
Trust										
Group 1	.83	.09	.19	*.23*	.21*	*.10*	.74***	.09	.13*	*.05*
Group 2	.68	.22	.12	*.36*	-.15	*.10*	.25*	.10	.02	*.06*
Servant leadership										
Group 1	.84	.05	-.07	*.17*	.17	*.08*	.47***	*.06*	.12**	*.04*
Group 2	.73	.16	.29	*.19*	-.07	*.05*	.21***	*.05*	.03	*.03*

	ICC level 2	ICC level 3	B	SE	B	SE	B	SE	B	SE
Leader mindfulness in communication										
Group 1	.44	.37	.54*	*.26*	.24*	*.12*	.21*	*.10*	.26***	*.06*
Group 2	.56	.30	-.14	*.31*	-.18*	*.09*	.06	.09	.09 ᵀ	*.05*
Well-being										
Work engagement	.62	.0001[1]	.08	*.19*	-.09	*.06*	.14*	*.07*	-.01	*.06*
Burn-out	.64	.04	-.14	*.23*	-.03	*.08*	-.20*	*.08*	-.17*	*.07*
Need satisfaction	.69	.04	.13	*.14*	.03	*.04*	.16***	*.05*	.00	*.04*
Kahn	.69	.06	-.01	*.13*	.03	*.04*	.16***	*.05*	.01	*.03*

Table 2. Employee-rated evolutions over time in leader(ship) variables; One horizontal line corresponds with the information from one variable; ᵀ = p <. 10, * p < .05, ** p < .01, *** p < .001; [1] Since there was (almost) no variance at the team-level, we performed a two-level multilevel analysis.

With regards to leader data, we had 42 time points nested within 18 leaders in 2 leader groups. Since they did not differ significantly on any of these variables, we analyzed the information from the two leader groups together. See *Table 3* below for a summary. For easy comparison, we also included the abovementioned results concerning LAC.

Table 3. Overview of the changes over time for different leader-rated leader(ship) and well-being variables.

Leader variables	ICC level 2	ICC level 3	Control variables				Effect of time	
			Gender		*Education*			
Leader(ship)			B	SE	B	SE	B	SE
LAC	.57	.11	.57 ᵀ	*.27*	-.16	*.28*	.03	*.07*
Servant leadership	.47	.08	.23	*.15*	.06	*.16*	.10	*.06*
Mindfulness	.76	.00[1]	.56	*.40*	-.20	*.43*	.20*	*.08*
Well-being								
Work engagement	.32	.00[1]	.62 ᵀ	*.35*	.37	*.37*	-.13	*.16*
Burn-out	.74	.0003[1]	-.83	*.62*	-.53	*.66*	.21	*.14*
Need satisfaction	.66	.0002[1]	.46*	*.21*	.09	*.23*	-.02	*.10*
Kahn	.19	.00005[1]	.38*	*.15*	.05	*.16*	.08	*.06*

Table 3. Summary of evolution over time in leader-rated variables; One horizontal line corresponds with the information from one variable; * p < .05, ** p < .01, *** p < .001; Gender was coded 0 for men and 1 for women; [1] Since there was (almost) no variance at the team-level, we performed a two-level multilevel analysis.

Summary

With regards to employee-data, multilevel analysis showed a positive association of time with leader attentive communication (employee group 1; significant at .10 level), satisfaction with leader communication (group 1 at the .10 level; group 2 at the .05 level), trust in leader (group 1), servant leadership (group 1), mindfulness in communication (group 1; group 2 at the .10 level). Therefore, most changes in time occurred in employees from group 1 (who had less lockdown-time).

With regards to self-reported leader data, we found no effect of time on any of the variables, except an increase in self-reported mindfulness. In sum, there is some preliminary support for hypothesis 2: there are some positive changes in leader(ship) related variables after the training.

Hypothesis 3: LAC is associated with employee well-being.

To test whether (employee-rated) leader attentive communication has a positive association with employee well-being (work engagement, need satisfaction, Kahn's conditions for engagement and burn-out), we first inspected the correlation matrix (see *Table 4*), which showed positive associations between LAC and well-being indicators at all time-points, except work engagement at T2 and T3.

Then we performed some multilevel analyses with LAC (and time) as predictors and gender, education and assessment quality as controls. LAC was negatively associated with burn-out at the .10 level ($\beta = -.13$, $p < .10$) and positively associated with work engagement ($\beta = .14$, $p < .05$), psychological need satisfaction ($\beta = .13$, $p < .01$) and Kahn's conditions for engagement ($\beta = .14$, $p < .001$). Therefore we can confirm hypothesis 3: LAC is associated with employee well-being.

Hypothesis 4 & 5: SDT and Kahn's conditions for engagement act as a mediator

The last hypotheses examined whether psychological need satisfaction (hypothesis 4) or Kahn's conditions for engagement (hypothesis 5) mediated the relationship between LAC and work engagement. Results indicate that the association of LAC with work engagement is fully mediated by Kahn's conditions for engagement. The association of LAC with burnout (at the .10 level), is fully mediated by both Kahn's conditions for engagement and psychological need satisfaction. See *Table 5* for a summary of the regression analyses for the mediation.

Table 4. Means, standard deviations and correlations.

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
T1																
1. LAC	5.06	1.21														
2. Work engagement	5.24	1.06	.30**													
3. Burnout	3.11	1.27	-.23**	-.45**												
4. Need satisfaction	5.16	.73	.34**	.52**	-.50**											
5. Kahn's conditions for engagement	5.36	.69	.36**	.70**	-.24**	.63**										
T2																
6. LAC	5.41	1.02	.78**	.25	-.40**	.41**	.24**									
7. Work engagement	5.19	.93	.16	.65**	-.24**	.35**	.60**	.02								
8. Burnout	2.82	1.11	-.28**	-.39**	.65**	-.37**	-.41**	-.35**	-.48**							
9. Need satisfaction	5.19	.72	.43**	.53**	-.33**	.68**	.51**	.36**	.51**	-.55**						
10. Kahn's conditions for engagement	5.42	.72	.33**	.54**	-.07	.40**	.72**	..30*	.67**	-.46**	.68**					
T3																
11. LAC	5.58	.92	.75**	.22	-.41**	.37**	.32*	.91**	.09	-.42**	.45**	.40**				
12. Work engagement	5.30	1.12	.16**	.38**	-.46**	.16	.34*	.09	.68**	-.48**	.27	.43**	.08			
13. Burnout	2.62	1.21	-.34*	-.31**	.68**	-.35**	-.41**	-.43**	-.24	-.73**	-.35	-.28	-.41	-.52**		
14. Need satisfaction	5.29	.72	.47**	.54**	-.43**	.67**	.50**	.44	.48**	-.56**	.85**	.58**	.50**	.38**	-.52***	
15. Kahn's conditions for engagement	5.59	.70	.57**	.37	-.35**	.45**	.65**	.52**	.58**	-.51**	.59**	.80**	.54**	.53**	-.51**	.72**

*Table 4. Correlations of (employee-reported) LAC and employee well-being over the different data-collections; *p < .05, **p < .01; Including information from participants with incomplete data; LAC = leader attentive communication, T1 = data-collection one (before the training), T2 = data-collection two (two weeks after the training), T3 = data-collection three (two months after the training)*

Table 5. Hierarchical regressions.

	Psychological need satisfaction		Kahn's conditions for engagement		Employee emotional exhaustion		Work engagement	
	β	SE	β	SE	β	SE	β	SE
Intercept	3.57***	.27	3.90***	.39	8.41***	.75	.26	.53
Gender	.15	.13	-.00	.13	-.13	.20	.12	.13
Education	.02	.04	.03	.04	.02	.07	-.12**	.04
Assessment	.12*	.05	.11*	.05	-.05	.07	-.02	.05
Time	-.01	.04	.01	.03	-.14*	.07	-.04	.06
LAC	.13**	.04	.16***	.04	.02	.07	.01	.05
Need satisfaction					-.54**	.13	.15	.10
Kahn					-.42**	.13	.86***	.10
Pseudo $r^2_{level\ 1}$	.19		.20		.21		.39	
Pseudo $r^2_{level\ 2}$	.05		.22		.37		.65	
Pseudo $r^2_{level\ 3}$	.60		.45		.35		[1]	
Total r^2	.11		.23		.32		.22	

*p < .05, **p < .01; [1]There was no variance at level 3 (team level) to explain; Time points were coded as 0-1-2, so the intercept is the score for someone on the first time point (this has no further influence on the analyses); Assessment quality is the answer to the single question concerning how well employees felt they could assess their employees; Pseudo r^2 = (variance of the intercept-only model – variance with predictors) / variance of the intercept-only model; Total r^2 = pseudo r^2_{level1} * (1-ICC$_{level\ 2}$-ICC$_{level3}$) + pseudo r^2_{level2} * ICC$_{level2}$ + pseudo r^2_{level3} * ICC$_{level3}$

Qualitative results

　　Hot seat exercise. The hot seat exercise at the very end of the training was also used to receive feedback on the trainer and training. Feedback on the *trainer* during this exercise was unanimously positive – although perhaps participants were less inclined to utter negative feedback at this time or with this format. Participants particularly mentioned enthusiasm and the ability to use many examples (also from the exercises) during the theoretical explanations. Feedback on the *training* was also unanimously positive. Some participants admitted to being very skeptical at the beginning, yet rather ready to use course content at the end. In the first group, there was also a request for more explicit research examples in the theoretical parts, while the second group unanimously preferred to have had more time for the last in-group peer-feedback exercise.

　　Formal evaluation. The HR-department of the first group also organized formal feedback with an after-training questionnaire. Participants filled it in after leaving on the second day of training. The results were unanimously positive, completely in line with expectations concerning these so-called *smile-sheets* (Brown & Kirkpatrick, 2005; Foxon, 1992).

　　Open COVID-questions. *Group 1.* For this group, the pandemic 'hit' Belgium before the third data-collection. Not all employees answered these open questions as they were optional ($N = 15$). Employees were 50/50 split regarding whether COVID-19 had a positive or negative impact on their (work)life, depending on their singular situations, e.g. having small kids at home was universally named as a stressor. Work that actually required in-person collaboration and thus presented the need for adjustment experienced as stressful. Some employees reported that the pandemic improved their (work)life, since it reduced their workload drastically or because they discovered the advantages of working from home. All employees were in agreement that the leadership of the leader did not change drastically or fundamentally.

　　Leaders ($N = 6$ at T3) from group 1 indicated they were trying really hard to stay in touch with their employees and that they were concerned about them, 30% of them clearly indicated (without being lead on in the question) that it was harder to pay attention to smaller signals in the communication when talking online/via phone, 20% indicated they had more frequent contact with employees and one leader even indicated the resolution to work more from home, since the transition went really well with her team.

　　Group 2. For this group, the pandemic 'hit' Belgium right after the training, so before the last two data-collections. They had more lockdown time when answering the open COVID -19 questions. There were large differences in how employees ($N = 28$) indicated (1) the impact of the pandemic on their work, (2) the contact they had with their leader and (3) the leadership of their leader. Employees were 50/50 split in terms of the negative/positive impact on their stress levels,

as well as 50/50 split on whether or not the content of their work had changed. However, they clearly indicated to have less contact with their leaders. With regards to the impact on the leadership of their leader, the overwhelming majority of employees indicated that the leadership style of their leader remained the same or improved under the circumstances. Only three employees indicated that their leader did worse; one indicated that there was less opportunity to participate in decision making, two indicated that their leader had less of an overview of what was actually happening.

Only a few leaders of the second group answered these open questions ($N = 3$ at T3, or a third of the original group). One leader indicated that (s)he was less involved because (s)he was new in this position and still had to win employees' trust, one leader indicated that the pandemic had a big impact on energy levels, leadership and team strength (even through team members indicated that her leadership remained the same and of high quality). This leader also indicated that watching out for small communication signals was difficult in these times. One leader indicated that there was a high amount of psychological pressure that adds impacted leadership as well as team needs.

Summary qualitative results. The effect of the pandemic on the work environment was different for each employee. About half of them seemed to report that it calmed down their work pressure and improved their lives, while the other half seemed to have had a hard and stressful time. As expected, leaders indicated that the lockdown drastically changed the way they communicated with their team and according to them, this also impacted their leadership.

Discussion

With this research, we mainly set out to pilot test a training protocol designed to improve leader attentive communication (among other facets of leader communication behavior). Due to the COVID-19 pandemic, we were unable to carry out all the scheduled two-day on-site communication training bootcamps. The focus groups were also cancelled. However, the training protocol was tested in two groups of leaders and, based on the commentary from the participating leaders, seemed to be well-received.

The test for hypothesis 1 indicated that there was no difference over time in employee-rated LAC scores, except perhaps a small increase for leaders for the first group, who only had a short amount of lockdown time before the third data-collection. A very hopeful interpretation would be that the training resulted in small, yet noticeable behavioral changes in leader behavior. The larger influence of pandemic-induced stress could explain the absence of an effect in group 2. Sample sizes were also really small, possibly making it difficult to detect positive effects. There are too many confounding factors to make any firm conclusions. Based on what we found, it does not look like the training had a major influence on leader attentive communication scores.

Additional analyses on other relevant variables (hypothesis 2) did reveal some small quantitative trends in the data: there were increases in time in LAC, satisfaction with leader communication, trust, servant leadership and mindfulness in communication. Most changes occurred in employees from the leaders in group 1 (who had less lockdown-time). Since we did not have a control group, it is not sure these (small) changes can be attributed to the training. We also did not find many trends in the leader data, of course, there were also fewer leaders who filled in (all) the questionnaires. Again, this reveals that the training did not have a large impact. We did find some increases in leader mindfulness, which might indicate that the attention-based exercises did have some impact over time. Alternatively, the pandemic may have influenced how present (or absentminded) leaders feel; perhaps their own assessment is that they were more present and attentive in daily life to deal with pandemic-related challenges. As we do not have a control group, this remains speculation.

We also found that LAC had a positive association with well-being as operationalized by work engagement, burnout, psychological need satisfaction and Kahn's conditions for engagement (hypothesis 2). Mediation analyses with work engagement revealed a full mediation of the association between LAC and work engagement by Kahn's conditions for engagement. This shows that Kahn's theory on employee engagement is perhaps a forgotten, yet still relevant theory to understand how employees become engaged.

However, contrary to expectations concerning the impact of the COVID-19 pandemic, there were no big (negative) changes in different focal variables after the training. That is strange, considering we were expecting larger (negative) effects on well-being. Perhaps, this period was less stressful or less impactful on leadership than assumed. Perhaps the consequences of the pandemic suppressed any positive effects we might otherwise have found. In any case, we ended up with a very small sample size, which may also explain, in part, why we did not find any noteworthy effects.

When we compare the quantitative results with the answers to the open-ended COVID questions, it appears that the lack of huge trends in the data may also be explained by the different experiences of employees: about half of them felt a negative impact of the lockdown on their (work)lives, while about half of them indicated that the pandemic positively impacted their (work)life and well-being. These differing experiences may have cancelled each other out. Combined with a small dataset, this may – in part – explain the absence of bigger (positive) results pre- and post-training.

Limitations and future research

The limitations of this study are quite obviously methodological and limit the implications of the preliminary results. First, there is no control group, active or otherwise. We set out to test

the training protocol as a pilot study without a control group, since it became apparent that organizing an active-control group was practically untenable in coordination with the participating organizations. Besides that, of course, the pandemic messed around our schedule and the PhD planning really did not permit us to postpone the remaining training and focus groups to gather more data. However, even if we would have been able to carry out the study as planned, the conclusions based on its data would still be limited due to the absence of a control group. We did manage to gather employee-reports from the participating leaders, which at least turns our set-up into a multisource, longitudinal study. However, as expected, half of the participating employees did not fill in the second or third round of the online data-collection. Based on the data we do have, we can only note some trends and acknowledge that there are multiple explanations and possible interpretations.

Thus, in ideal circumstances, future research with this training protocol should adopt a methodology that involves an active control group (see e.g. Maccoon et al., 2012). This allows for a more stringent test of the training protocol, as it controls for non-specific benefits of a group training like the peer interaction and the time and attention set aside to rethink and work on improving (difficult) conversations with employees. It also controls for placebo, expectancy and training process effects (Martin et al., 2020). Ideally, we also add appropriate selection (removing selection bias) and add randomization to this process, i.e. allocating leaders randomly to the training and the active control group (Martin et al., 2020). However, in practice, this is rarely feasible due to practical restraints (Martin et al., 2020). One solution for the potential lack of feasibility of an active control group may lie in using pre-training data as a control following the protocol of Kersemaekers et al. (2020; 2018): these researchers collect data before the training (t0), at the start of the training (t1) and after the training (t2), after which they compare the evolution of certain variables during pre-training period (t1-t0) with the evolution during the training period (t2-t1). In addition, future research could also use a nonequivalent dependent variable design (see e.g. Frese, Beimel, & Schoenborn, 2003). In such a design, trained behaviors are compared with behaviors that were not trained, i.e. the training should have effects on behaviors that were trained and no effect on behaviors that were not trained (but that are within the same behavioral realm). It is, in fact, a single training group design with two sets of dependent variables. This allows researchers to control for testing effects and Hawthorne (placebo) effects as well, whereas a random control group design with a nontreatment control does not rule these effects out (Frese et al., 2003).

In addition, it would be helpful if to find others ways to boost motivation fill in the questionnaires, either because of a promise to work with the leaders more in-depth, because of a further invitation for personal interviews, or because the questionnaire process is made more 'fun',

e.g. through providing easy-to-access questionnaires for smartphones. The questionnaires should also be as short as possible. Longer questionnaires increase perceived burden and careless responding (Eisele et al., 2020; Goldammer, Annen, Stöckli, & Jonas, 2020). Future research could also include more behavioral measures, such a videotapes of role-playing conversations between leaders and employees recorded at different time points, e.g. at the start of the training as a baseline, at the midpoint after feedback and training and at the end of the training (Frese et al., 2003).

In order to understand the training effects more thoroughly, it would also be helpful to organize either focus group data or semi-structured interviews with both leaders and their employees. This could help interpret the quantitative effects, as well as provide in-depth feedback as to which exercises proved to be the most valuable. Furthermore, employee focus group and semi-structured interviews could shed light on how the leaders' behavior may or may not have changed after the training protocol. In-person open-ended questions may also help capture the possible impact of various exogenous variables influencing study results, such as (personal) stressors, organizational changes, other trainings or work-related conflicts.

Furthermore, with regards to training timing, it may be interesting for future research to investigate periods in time where leaders are supposed to have more in-depth conversations with their employees, e.g. around the performance reviews.

Last, we also acknowledge that it may be too hopeful to assume that a two-day training protocol will actually yield long-lasting effects in terms of leaders' behavior or leadership development (Day et al., 2014), even in ideal circumstances. Human development, and thus leader(ship) development, is a messy endeavor with many contributing factors, both contextual (e.g. organizational) and personal, that also coincide with personal adult development and identity formation (Day et al., 2014; Day, Harrison, & Halpin, 2009; Shaughnessy & Coats, 2019). However, with this training protocol and our choices in training content and process, we aimed at established certain frames of reference and potentially providing experiences that will help leaders work through difficult conversations or change their everyday communication behavior in a small, yet perhaps meaningful, way. Mostly, we hope that in bringing together various leaders struggling in more or less the same ways, we provided them with a useful peer-network for support to work through issues if necessary. Perhaps – fingers crossed – they can help each other to remember some elements discussed and experienced during this training. It is also for this reason that we encouraged participants to stay in touch, or even to organize informal meetings, in which they can coach and support each other.

Final note

In sum, we developed a leader communication training protocol, but were not able to test its effects properly. However, all was not in vein: (1) the training was well-received by attending leaders, (2) our leader attentive communication questionnaire was reliable, (3) several leader constructs seemed to (slightly) improve after the training, including leader attentive communication (4) LAC was positively associated with well-being, as operationalized by burnout, psychological need satisfaction and Kahn's conditions for work engagement.

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Appendix

See the next page for the invitation for participation in the leader communication training (in Dutch) that was sent out via LinkedIn.

EVIDENCE-BASED COMMUNICATION

BOOTCAMP voor leidinggevenden

*Heeft u last van miscommunicatie met enkele van uw teamleden?*

Heeft u moeite om door te dringen tot uw medewerkers of klanten?

Wilt u werken aan soft skills, maar weet u niet hoe?

Wilt u op een productieve manier feedback geven?

Wilt u de klantvriendelijkheid in uw organisatie verhogen?

Met het ***evidence-based communication bootcamp*** spelen we in op de behoefte van leidinggevenden om de communicatielat hoger te leggen. Innovatie kan ook in communicatie, in de manier waarop we verbinding maken met ons team en resultaten bereiken voor onze organisatie. State of the art inzichten en skills maken van ***evidence-based communication*** een bootcamp waarmee u het verschil kunt maken.
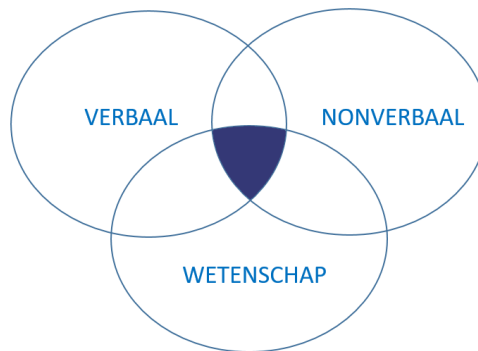
Wat brengt dit bootcamp bij?

Vanuit eigen aangebrachte business cases en concrete oefeningen komen volgende aspecten van evidence-based communication aan bod:

- Nieuwe wetenschappelijke inzichten rond aandachtige communicatie, perceptie en feedback
- Aandachtsoefeningen en "check-ins" die u kan gebruiken voor u aan gesprekken begint
- Impact van multitasken
- Omgaan met onzekerheid en onduidelijkheid in gesprekken
- Wetenschappelijk onderbouwde gesprekstechnieken (e.g. respectful inquiry, humble inquiry, leader attentive communication)
- Observeren van non-verbale communicatie, zowel bij uzelf als bij anderen
- Hoe rekening houden met de nood aan persoonlijke ruimte van uw medewerkers
- Communiceren op een assertieve manier
- Feedback geven en omgaan met feedback ontvangen
- Constructieve vragen stellen
- Vertrouwen opbouwen en houden

- Een constructief gesprek voeren met medewerkers op basis van aandachtige communicatie
- Feedback op uw blinde vlekken op het vlak van (non-verbale) communicatie

Aan het einde van het bootcamp beschikt u over wetenschappelijk onderbouwde tools en methoden om in uw eigen werkomgeving (en daarbuiten) aan de slag te gaan.

Hoe werken we?
- Ervaringsgericht door middel van interactieve oefeningen per twee of in groep
- Zoveel mogelijk met concrete casussen van de deelnemers
- We gaan respectvol met elkaar om
- Discretie staat centraal

Programma
- 2 aaneensluitende dagen verdeeld in 4 dagdelen
- Op locatie (buiten het bedrijf)
- Groepen van 12 tot 14 deelnemers

DAG 1

Blok 1: Werken met aandacht

- Wetenschappelijke inzichten rond multitasking en afleiding
- Aandacht als basis voor informatiegaring en goede beslissingen
- Oefeningen rond zintuiglijke beleving en aanwezig zijn in het lichaam
- Aanleren van "check-in" oefeningen ter voorbereiding van vergaderingen
- Omgaan met ambiguïteit in gesprekken

Blok 2: Non-verbale aspecten van communicatie

- Respectful inquiry: niet wat u zegt maar hoe u iets zegt
- Leader attentive communication: de kunst van aanwezig zijn en waarnemen
- Basishouding in een gesprek
- Opmerken van non-verbale communicatie (inclusief spreektoon)
- Omgaan met persoonlijke ruimte van medewerkers

DAG 2

Blok 3: Verbale aspecten van communicatie
- Evidence-based inzichten rond vergaderen
- Feedbackregels: geven en ontvangen
- Omgaan met negatieve feedback

Blok 4: Integratie
- Integratiemoment
- Feedback op eigen functioneren
- Actieplan

Voorwaarden voor deelname voor leidinggevenden
- U bent leidinggevende van ten minste 1 medewerker
- Afspraak met jouw bedrijf: volledige vrijstelling van taken tijdens bootcamp

Waarde van het evidence-based communication bootcamp (voor 2 dagen)

- Per bootcamp (intern georganiseerd door klant): €2950 (excl. locatie en catering, excl. BTW)
- Per participant (georganiseerd door trainer): €950 pp (excl. BTW)

Deelname aan deze bootcamptraining – een onderzoeksproject van UGent – is GRATIS mits:

- Wederzijdse intentie voor een goede samenwerking gedurende het gehele project
- Coördinatie van het bootcamp door een intern aanspreekpunt
- Vrijwillige deelname van leidinggevenden aan de training
- Verplichte deelname aan online vragenlijsten (voor, na en 3 maanden na training) voor deelnemende leidinggevenden én hun team
- 3 maanden na het bootcamp: deelname aan focusgroep (gesprek van 2 uur)
- Akkoord gaan met het organiseren van willekeurige wachtlijst controlegroepen: alle inschrijvingen worden willekeurig verdeeld in groepen die eerst de training krijgen en groepen die pas na 3 maanden de training krijgen, de controlegroepen vullen verplicht de vragenlijsten in op dezelfde tijdstippen als de eerste groepen
- U voorziet een aangename trainingslocatie met projector en catering buiten het bedrijf

Trainer

- Anouk Decuypere, M.A.
- Organisatiepsycholoog opgeleid in gesprekstechnieken
- Doctoraal onderzoeker aan faculteit Economie, UGent
- LinkedIn profiel: https://www.linkedin.com/in/anouk-decuypere-5846b157/
- Publicaties en academisch werk: https://biblio.ugent.be/person/802001896788
- Boek rond mindfulness mythes: https://www.lannoo.be/nl/mindfulness-goed-voor-alles

Praktisch

Wilt u als leidinggevende deelnemen?
Wilt uw bedrijf deelnemen met een groep leidinggevenden?
Wenst u meer informatie?

Aarzel dan niet om contact om te nemen met de trainer en onderzoeker via
anouk.decuypere@ugent.be of +32 494 40 77 60.

De **GRATIS trainingen** in het kader van het wetenschappelijk onderzoek worden in overleg ingepland vanaf het **voorjaar 2020**.

General discussion

This dissertation investigated the relationship between leadership and well-being, both from leaders as well as their employees. In terms of leadership, we investigated positive leadership styles as well as more narrow leader behavior. Our view on leadership throughout this dissertation was that of a *dynamic and dyadic* influence relationship between leader and employee (Haslam et al., 2018): we do not see leadership as a heroic characteristic that some individuals possess, but rather as a *process* of influence that thus needs two parties, is relational and is based on *complex interactions* between leaders and employees that occur within a system (Ciulla, 2016). As explained in the introduction, in terms of well-being, we focused mostly on employee *work engagement* as our primary employee-level outcome of interest. *Self-Determination Theory* and *psychological need satisfaction* were used as the primary theoretical lens and process (mediating) variables.

This dissertation revolved around three main research questions with two dedicated studies each: *What are the main ways in which positive leadership styles influence employee work engagement?* (chapter 1 & 2), *What is the role of leaders' own well-being in leadership and employee well-being?* (chapter 3 & 4), *How can we study and improve leader communication to increase well-being?* (chapter 5 & 6). In every dissertation chapter, we described each of the findings and study contributions in a detailed manner, below we highlight some of the general conclusions per dissertation part and comment on their significance.

Part 1: Positive leadership styles and work engagement

In the first part of this dissertation, we first researched the theoretical models that could explain the relationship between (all) positive leadership styles and work engagement (chapter 1), as well as empirically investigated this relationship through a meta-analysis and systematic review (chapter 2). Based on this research, we contributed to the literature in several ways: we addressed construct proliferation with regards to positive leadership styles and investigated shared leader behavior across these styles. In addition, we reviewed theoretical as well as empirical constructs and integrated them into testable research models. Therefore, we addressed several research calls with regards to the possibility or even necessity of more integration in the leadership field and thus an investigation of overlap between different positive leadership styles (Avolio et al., 1999; Banks et al., 2016; Behrendt et al., 2017; Derue et al., 2011; Hoch et al., 2018; Meuser et al., 2016; Rowold et al., 2015; Yukl, 2012).

In this first part of the dissertation, we found that there are several *leader behaviors that may be shared* across leadership styles: in chapter 1, we found overlap between several leadership theories in terms of behavior that exemplary leaders would exhibit, in chapter 2 we found that there was overlap between the confidence and credibility intervals concerning the effect of positive leadership styles and work engagement. This last finding means that positive leadership styles result in *the same effect* on work engagement, or, that we cannot say which leadership style is 'the best' to achieve work

engagement. Moreover, it may indicate that leaders from these different positive leadership styles may have some of their behavior in common, and therefore reach the same results with their employees (i.e. higher work engagement).

This line of thought evokes memories of the clinical debate that was held about differences between various therapeutic approaches, in which the common *'non-specifics'* ultimately turned out to be more important than the claimed differences (Chatoor & Krupnick, 2001). Perhaps there is something similar going on here in which the *similarities between the various leadership styles outweigh their differences*, especially when they are translated to a broader category such as employee well-being (or work engagement specifically)[4]. In this sense, *'leadership non-specifics'* may turn out to be more important than the specific nuance that champions of specific positive leadership styles exhibit in their behavior. In the research concerning therapeutic approaches, the therapeutic non-specifics had to do with three things: (1) the therapeutic alliance, i.e. the relationship between therapist and patient, (2) the adherence to the treatment protocols and (3) therapist competence, i.e. actually having some skills, regardless of the specific therapeutic specialization. Perhaps this part of the research findings can also be translated to the leadership field: maybe the '*leadership non-specifics'* also have to do with the general importance of (1) the *leader-employee relationship*, (2) how well they adhere *to general well-established leadership principles* and protocols in their organization and (3) *leader competence*.

There is also some empirical evidence that supports this view. First, with regards to leader-employee relationships, meta-analytic research has already found high correlations between several positive leadership styles and leader-member exchange (Hoch et al., 2018), which can be defined as relationship quality (Dulebohn et al., 2017; Scandura, 1999; Tse et al., 2018). Second, adherence to general leadership principles and (organization-specific) protocols instills a sense of predictability, trust and justice/fairness (if organizational protocols are fair and just, of course), all of which have shown to have positive effects on employee outcomes (Colquitt et al., 2013; Dirks & Ferrin, 2002; Nienaber et al., 2015). Perhaps not surprisingly, these elements also have a positive influence on the leader-employee relationship (Colquitt et al., 2013). Third, research has also indicated the importance of (employee-rated) leader competence (Byun et al., 2017; Huang et al., 2020; Mao et al., 2019). In this sense, perhaps leader competence can also entail some of the (theoretically) shared leader behaviors that were identified in this first part of the dissertation, i.e. having a moral perspective as a leader, role modeling behavior, a focus on follower self-

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[4] Although research indicates that this general conclusion seems to hold, a meta-analytic study from Hoch et al. (2018) also nuances this view and points out that for some narrowly defined employee outcomes, individual positive leadership styles may explain incremental variance. They specifically found that ethical and authentic leadership seem to be generally redundant in comparison to transformational leadership, whereas servant leadership is able to explain employee variance above and beyond transformational leadership. However, authentic and ethical leadership were still useful to explain very specific employee outcomes.

determination and positive social exchanges with employees (chapter 1). We also found that working on employee psychological need satisfaction, trust, resources and organizational level variables were important with regards to leaders' effect on employee work engagement (chapter 2). When leaders can exhibit these shared behaviors and focus on these elements, perhaps also combined with administering self-regulation (see part 2 below) and effective communication behavior (see part 3 below), the necessary conditions for 'good' leadership may be fulfilled and leaders may be able to be their *best self* and accomplish the most in their role. In addition, they will *feel good* doing it (see part 2 below).

In sum, this first part of the dissertation contributed to the investigation of shared mechanisms of positive leadership styles. We also propose that 'leadership non-specifics', i.e. establishing a positive working relationship, adherence to protocol (fairness) and leader competence, may turn out to be more important than the claimed differences, which means that leadership trainers should focus more on these underlying elements, rather than promoting singular leadership styles or theories.

Part 2: Leader well-being

In the second part of the dissertation, we turned toward leader well-being. We first investigated the relationship between leader well-being and leadership. In this dissertation part, we contribute to the literature by integrating several research streams, including a self-regulatory approach with psychological need satisfaction, and the trickle-down literature with psychological need satisfaction and a dyadic perspective on leader-member exchange theory. This way, with the first paper, we contributed to research calls on more research specifically for personal variables that moderate between leader mindfulness and leadership (Pinck & Sonnentag, 2017). With the second paper, we contributed to research calls concerning the necessity to investigate how interactions with employees unfold (Cropanzano et al., 2017) from a dyadic perspective (Gooty et al., 2012; Gooty & Yammarino, 2011; Krasikova & Lebreton, 2002; Tse et al., 2018), taking into account multiple levels of analysis (Batistič et al., 2017). In addition, in the trickle-down field, there is a call for more work on mediating mechanisms and more theorizing (Wo et al., 2019). Specifically, in this dissertation part, we looked at the interplay between mindfulness and high negative affect (neuroticism) through psychological need satisfaction as a precursor to transformational leadership. Second, we investigated the trickle-down effect of leader psychological need satisfaction (chapter 4). Generally speaking, we found evidence for the importance of leader well-being, not only for their own leadership (chapter 3), but also because it has a direct impact on employees' well-being (chapter 4).

These findings underscore the necessity of *leader self-regulation* with regards to well-being. Based on our research, leader self-regulation can focus on mindfulness as emotional self-regulation for neuroticism, as well as on increasing psychological need satisfaction, i.e. levels of autonomy, competence and relatedness. When leaders (or organizations) can ensure that these elements are present within their own experience, our studies indicate that there is an association with higher levels of transformational leadership, as well as with higher levels of employee psychological need satisfaction. In support of this notion, leadership experts have posited that self-care may be "among the most *underrated leadership skills*" (Latham, 2018, p. 137). This connection between leader well-being and their leadership (chapter 3), as well as the connection between leader well-being and employee well-being (chapter 4) makes intuitive sense as well: of course, when leaders feel good this will contribute to doing good, and this will have an impact on how good employees feel. Below, in the practical recommendations for leader self-regulation, we delve deeper into this topic.

In addition, in chapter 4, we also found the possibility of a trickle-up effect (that was smaller than the trickle-down effect). This illustrates how leaders do not operate in a vacuum and that employees can also influence their leaders' psychological need satisfaction. This also gives the potential to employees to install a *positive vicious cycle*: when they increase their leaders' sense of competence or relatedness, this in turn, may influence their own well-being too. Previous research already provides indications for the existence of the opposite, i.e. a negative vicious cycle, when looking into antecedents of abusive supervision. Here, e.g. employee personality characteristics, dissimilarity and employee performance (Henle & Gross, 2014; Tepper et al., 2011; Zhang & Bednall, 2016) have been related to abusive supervision, which, of course, in turn, has negative consequences for employee well-being and performance (Mackey et al., 2017; Zhang & Liao, 2015). Evidence for a positive vicious cycle with employees influencing their leaders was found in a study on follower identity: in a time-lagged study, employees' identity was related to leader-rated OCB (T2) as well as leader identity and affective commitment (T3) (Davidson et al., 2014). Furthermore, the leaders that we investigated in this dissertation were *immediate supervisors*, who are likely to have leaders of their own: taking care of their own well-being, as well as positively stimulating the well-being of their leaders, may increase the likelihood of a positive win-win.

Part 3: Leader communication behavior

In the last part of this dissertation, we finally focus on more narrow leader behavior. Specifically, we looked into communication behavior, i.e. *leader attentive communication* (LAC)*, defined as: "an open-minded, attentive demeanor while in a conversation with an employee". We developed the construct and questionnaire (chapter 5), as well as a general communication training protocol (chapter 6). This dissertation chapter contributes to the leadership and communication literature

in several ways. First, and most obvious, we developed a new theoretical construct and operationalized it for research by validation a questionnaire, which creates the possibility for more of future research. Focusing on narrow communication behavior also addresses research calls for examining possible shared leader behavior across positive leadership styles (Derue et al., 2011; Eberly et al., 2013, Rowold et al., 2015, Yukl, 2012; Behrendt et al., 2017). Second, we developed a training protocol that can be used as a basis for other leader intervention research as well, which answers calls for more evidence-based HR (Lawler, 2007).

In terms of study results, we found that a 10-item questionnaire with two dimensions, i.e. general attention and attention paid to non-verbal cues fits the data best. In addition, we found some evidence (one of the studies) for a full mediation of the relationship between LAC and work engagement by both *psychological need satisfaction* (driven by autonomy need satisfaction) ánd the *meaningfulness dimension* of Kahn's psychological conditions for engagement. These findings were supported by the training study results: there we found that Kahn's psychological conditions fully mediated the relationship between LAC and work engagement, whereas the association between LAC and burnout (at the .10) level, was fully mediated by both Kahn's psychological conditions for engagement and psychological need satisfaction. SDT and Kahn's theory are also relatively straightforward and parsimonious, so they can easily be used to devise practical recommendations from (see 'practical recommendations' below).

The last study in this dissertation focused on a training protocol for leader (attentive) communication, in which we clearly differentiated between *leader* and *leadership* development. For the first part, we focused on working with attention and paying attention to non-verbal aspects of communication, mimicking the dimensions of LAC, but also basing ourselves on other theoretical models and empirical research. In the second part, we focused on verbal aspects of communication, other communication models, communication biases, difficult conversations, peer feedback and integration. Of course, it is quite ambitious to expect a two-day program to both impact leader and leadership development, and even more so because the pandemic reached Belgium right after the first trainings were taught. Human development, and therefore leader(ship) development as well, is a messy endeavor with many contributing factors, both contextual (e.g. organizational) and personal, that also coincide with personal adult development and identity formation (Day et al., 2014; Day, Harrison, & Halpin, 2009; Shaughnessy & Coats, 2019). Therefore, even in ideal circumstances, it might have been too much to expect a two-day training to have a lasting impact. Despite the small sample size and the (potentially negative) influence of the pandemic, we were able to find some trends in the employee-reported data: there were slight increases in scores on

leader attentive communication, satisfaction with leader communication, servant leadership and mindfulness in communication, although not in both training groups.

With the shift towards more working from home in 2020, at least for most people, leader attentive communication (even through screens) may become even more important. Since there is less informal in-person contact, it may be more impactful to let the small online moments count, to pay attention, to be truly present and to work on building good, supportive relationships. Direct supervisors can have a large impact on how and when teams communicate and whether or not this supports the new working (from home) conditions or not (Orsini & Rodrigues, 2020). See the next page for some practical recommendations.

Practical recommendations

Based on the findings in this dissertation, it is possible to formulate practical recommendations. We start with how to improve employee work engagement and continue with how to improve Kahn's conditions for engagement, psychological need satisfaction, social exchanges at work (meetings, feedback, leader attentive communication, ..) as well as how to improve leadership training transfer and working from home. All these recommendations are based on our own findings, or the theoretical principles upon which we based our research design.

Improving work engagement

Based on the studies in this dissertation, there are several ways to improve work engagement: based on theoretical (see chapter 1 & 2), as well as based on our own empirical findings (chapter 1-4). First, based on chapter 1, *JD-R theory,* constitutes the *material pathway* in our model and posits that both job demands and job resources influence work engagement. With regards to demands, it is important that they remain challenging, whereas job (and personal) resources need to be plentiful. Therefore, thinking about a job in terms of demands and resources, and thinking about an employee in terms of how his/her personal resources interact with them, can make it more clear what needs to be changed in order to facilitate work engagement. Some (burnout) coaches refer to this as an 'energy analysis', where employees could look at what elements in their job are draining and what elements give energy. Leaders could also have these kinds of conversations with their employees, even when burnout is not (yet) around the corner. Second, the *motivational pathway* in our model concerned the importance of psychological need satisfaction and the fulfillment of psychological conditions for engagement (we discuss this separately below). Third, the *affective pathway* was based on *emotional contagion theory*. Here, it is important to consider that work engagement, mood, and other motivational-affective states, can be *contagious* and influence performance and leadership ratings (Johnson, 2008, 2009). Therefore, the levels of the leaders' work engagement, and the team's work engagement, can influence employees' work

engagement (Bakker, Van Emmerik, & Euwema, 2006). In this sense, it is important to keep an eye on how everyone surrounding a focal employee is doing as well. It also shows the importance of taking care of one's own levels of work engagement as a leader. As a *direct behavior pathway* we introduced *social learning theory*, which highlights the importance of e.g. role modeling (see below). The *direct cognitive pathway* concerned the (reciprocated) *exchange relationship* between leader and employee and therefore highlights the importance of positive social exchanges for employee work engagement.

Based on the meta-analysis, it becomes clear that there is not a single leadership style that is 'the best' when it comes to achieving higher employee work engagement. However, all the positive leadership styles in our sample were positively associated with work engagement. Based on our meta-analysis, there was no winner in terms of leadership style that was the strongest predictor, as confidence and credibility intervals overlapped. Practically speaking, working on some of the elements they have in common may yield the best results. To recapitulate our findings from chapter 2, these elements may be: having a moral perspective as a leader, role modeling behavior, focusing on follower self-determination (i.e. need satisfaction) and positive social exchanges.

With regards to being (perceived as) a *moral leader*, or having a moral perspective, perhaps it is most practical to focus on justice: procedural, distributive, interpersonal and informational justice (Colquitt et al., 2013; Cropanzano et al., 2007; Graso et al., 2020). *Distributive justice* concerns the appropriateness of outcomes: Is everyone rewarded based on their contributions? Does everyone receive roughly the same compensation? Are there benefits based on personal requirements? *Procedural justice* considers the allocation process: Are all employees treated equally? Are decisions based on accurate information? Is there discrimination of individuals or groups? Do stakeholders have something to say? Is there an appeals process for fixing mistakes? Are the norms for professional conduct being upheld? *Interactional justice* concerns the treatment one is given from authority figures, including the leader: Are employees being treated appropriately, e.g. with dignity, courtesy and respect? *Informational justice* concerns whether all the relevant information is being shared with employees. Of course, there are not always clear-cut answers to these questions, but besides the importance of justice in and of itself, having policies that are considered 'fair' will also boost work engagement (Strom et al., 2014).

Role modeling behavior, in essence, concerns really being cognizant, as a leader, of how your behavior signals what is expected from employees in the organizations, e.g. with regards to (un)ethical behavior (Brown & Treviño, 2014). This is important for more than work engagement alone: since leaders make ethical decisions, and they are role models, they shape the climate and

organizational culture itself (Day et al., 2009). Practically speaking, improving role modeling behavior means that leaders need to behave as if their employees are constantly watching them.

Improving Kahn's conditions for engagement

Kahn (1990) posited that in work engagement, "people employ and express themselves *physically, cognitively, and emotionally* during role performances." (Kahn, 1990, p. 694). The fulfilment of three psychological conditions is necessary for personal engagement. *Psychological meaningfulness* is "a feeling that one is receiving a return on investment of one's self in a currency of physical, cognitive, or emotional energy" (Kahn, 1990, p. 703-704). *Psychological availability* is "the sense of having the physical, emotional, or psychological resources to personally engage at a particular moment" (Kahn, 1990, p. 714) and *psychological safety* is "being able to show and employ one's self without fear of negative consequences to self-image, status, or career" (Kahn, 1990, p. 708). These three psychological conditions are influenced by different elements. In sum, in order to be fully engaged, employees ask themselves three questions: "How meaningful is it for me to bring myself into this performance? How available am I do to so? How safe is it to do so?" (Kahn, 1990, p. 703).

Psychological meaningfulness concerns feeling "worthwhile, useful, and valuable" (Kahn, 1990, p. 704). This relates to feeling like one makes a difference and is not taken for granted. To increase this, one can work on both interpersonal, task and role characteristics.

First, in order to be *meaningful*, interpersonal work interactions need to instill *dignity*, (self-) *appreciation* and a *sense of value* and *connection*. Meaningful interactions meet relatedness needs. In meaningful interactions, there is usually a *looseness of the boundaries* separating both personal and professional elements, so there is an *emotional connection* between individuals as well (Kahn, 1990). In this sense, meaningful interpersonal interactions are characterized by mutual appreciation, respect and also positive feedback. Conversely, when these elements are not present, meaningfulness diminishes (Kahn, 1990). Practically speaking, meaningfulness can be achieved in many ways. For example, leaders could show more appreciation, and have more meaningful, connected interactions (which does not have to take a lot of time). With regards to the last point, simply paying attention to an employee and *not being distracted*, signals that (s)he is worthwhile, respected and valuable. Research has e.g. shown that *boss phone-snubbing*, i.e. "employee's perception that his or her supervisor is distracted by his or her smartphone when they are talking or in close proximity to each other" (Roberts & Williams, 2017, p. 206), negatively impacts psychological meaningfulness (and psychological availability) and work engagement.

Second, in order to increase the meaningfulness of *role characteristics*, Kahn (1990) proposes to take into account the identity, the status and the expectations that are associated with a work role. Whether or not employees like the assumed *identity* and whether or not this fits with how

employees see (or want to see) themselves can increase or decrease the attractiveness and meaningfulness of a work role. Therefore, a good *selection procedure* with realistic and clearly communicated expectations from both sides seems paramount. Psychological meaningfulness is also related to *expectations*: when people feel that little is expected from them, meaningfulness withers (Kahn, 1990). Psychological meaningfulness increases when a work role is associated with *status or influence*. This relates to feeling valued (or having a valued position) and being needed. In order to increase this in low-status positions, it can be impactful to make employees feel that *they are important* and their work has a positive impact, no matter how small. This also relates to the *company narrative* around certain work tasks and roles, and to how leaders treat certain employees: Are entree-level employees treated respectfully? And what about the cleaning or maintenance personnel? Are all employees included in big company communications?

Third, in order to specifically increase the meaningfulness of *task characteristics*, Kahn (1990) advises to design the work tasks so that they are perceived as *challenging*, clearly *delineated* (in terms of routines and procedures), *varied, creative*, and somewhat *autonomous*. Of course, this can be difficult to organize for every job task, but leaders can take these elements into account, e.g. when dividing tasks between team members. Another way to instill meaningfulness is to make sure that tasks are *aligned with personal goals and preferences*, e.g. by providing opportunities to learn skills that one wants to acquire, or by organizing the work based on activities that use employees' talents and are perceived as energizing (or that are at least not draining, see 'psychological availability' below).

Psychological availability concerns having the physical, emotional, or psychological resources to become personally engaged at any given moment. It is influenced by four types of distractions that are experienced as a consequence of being members of social systems. The first distraction concerns a lack of *physical energy* (Kahn, 1990). This may relate to the job itself (e.g. being exhausted at the end of a workday), but also to personal lifestyle (e.g. enough sleep, good quality food, exercise, stress management, work-life balance, ..), and to work-related physical resources: Do employees have all the tools they need? Are the work places designed efficiently with regards to workers' energy expenditure? Are they allowed to take breaks? And for knowledge workers specifically: Are their desks ergonomically sound? Are the physical surroundings optimal for both focused work as well as for having productive (private) meetings? How is the company culture with regards to (self-imposed) overtime to signal productivity? (see e.g. research on the negative effects of overwork climate; Mazzetti, Guglielmi, & Schaufeli, 2020)

For *knowledge workers* specifically, it is important to work efficiently with *mental resources*. In order to support knowledge workers, organizations (and leaders) can work on a number of issues. First, contrary to popular belief, *open offices* are associated with increased distraction and decreased

productivity (Tigchelaar & de Bos, 2019). Research has found that the increased distraction from open offices also reduces perceptions of control, which is associated with lower job satisfaction as well as performance (Van hootegem & De Witte, 2017). Second, *multitasking* is detrimental as well, as it will "result in the cognitive distraction associated with interference and switching costs and will ultimately have negative effects on performance" (Langfred & Moye, 2004, p. 938).

Taking this into account, it can be helpful to devise an *attention-strategy* at different levels, i.e. at a company level, a leader level, and on a personal level. At a *company level* one can investigate the company surroundings and culture: Can we redesign the work place? For example, is there a possibility to have work-areas in which to focus, and areas in which less attention-consuming tasks can be handled (and where it is more okay to be disrupted)? Is there a possibility for a company-wide focus block during the work week? What other ways are there to safeguard focused work time? What tools need to be in place? What needs to be communicated and how, if anything? On a *leader level*, it is important to take into account role-modeling behavior: How are leaders signaling distraction-related and focus-related behavior? For example, are they always multitasking? Are they always looking on their phone during meetings? How do they manage their calendar? Are they always reachable? How fast do they respond to emails or texts? How fast do they expect employees to answer to their messages? On a *personal level*, one can also think about how to organize the workday and manage distractions. A simple way to safeguard focus time can be to book this in a (shared) work calendar, so that can be seen as an actual appointment. However, even when focused work time is being scheduled, one still needs to manage (electronic) distractions: e.g. by not checking email and by putting the cellphone farther away. To this regard, research has shown that the mere presence of a phone may be distracting (Thornton et al., 2014). Therefore, putting the phone in a drawer of another room, may be one of those simple habits that have the potential to support knowledge workers in this increasingly virtual world (for more information also see Crabbe, 2016; Tigchelaar & de Bos, 2019).

Returning to psychological availability; this is also influenced by a second distraction called a lack of *emotional energy* (Kahn, 1990). This can be related to the extent of emotional labor that is necessary for work. To this regard, research has found an interesting dichotomy between *surface acting*, i.e. merely changing facial reactions (or faking it), and *deep acting*, i.e. changing ones feelings, to be in accordance with the work that needs to be done (e.g. in service or teaching jobs). Research has found that only surface acting is stressful and associated with burnout (Grandey, 2003; Mauno et al., 2016; Näring et al., 2007). Therefore, it can be important to learn how to self-regulate and change emotional states. In addition, conflict at work can instill emotional exhaustion as well. In order to safeguard employee work engagement, conflict should not be allowed to fester.

A third distraction for psychological availability is *insecurity* (Kahn, 1990). This can be influenced by levels of confidence in abilities and status, self-consciousness and ambivalence about the fit with social systems. *A lack of confidence* can generate anxiety that stands in the way of becoming personally engaged. This can be particularly so for new low-status members, as they still have to familiarize themselves with the organizational culture and behavioral norms. Here, the onboarding procedure becomes important. *Self-consciousness* concerns how colleagues and leaders may perceive or judge behavior, which also takes away energy that could otherwise be invested in the work. More specifically, employees may perceive themselves "as actors on stages, surrounded by audiences and critics, rather than as people simply doing their jobs" (Kahn, 1990, p. 716). This can also be related to a relatively new phenomenon called *imposter syndrome* "a pattern of behavior wherein people (even those with adequate external evidence of success) doubt their abilities and have a persistent fear of being exposed as a fraud" (Mullangi & Jagsi, 2019, p. 322; Bothello & Roulet, 2019). In this sense, imposter syndrome can be seen as an extreme form of insecurity and self-consciousness that can distract from being engaged. Honest conversations between colleagues can help lift the burdens of imposter syndrome. The *ambivalence about the fit with the organization and its purpose* can also preoccupy employees and take away valuable energy that could otherwise be invested in the work. In order to become psychologically available, and engaged in the work, one needs to experience a fit between the organizational ends (or means) and one's own values. This is something that can be discussed during the selection procedure, so that employees who do not experience a fit with the organization do not end up working there, as this is a lose-lose situation for both parties.

Outside life forms the last distraction for psychological availability. All kinds of non-work life events can preoccupy employees and distract them from becoming fully engaged. Conversely, non-work life events can also infuse one with energy to expend at work. This is the case when work-life balance can turn into work-life integration (Goleman et al., 2017). Organizations can provide support that helps integrate family and work life, e.g. by providing options for working from home, flexible work hours or even childcare facilities near the workplace.

Psychological safety concerns being able to show and employ one's self without fear of negative consequences to self-image, status, or career (Kahn, 1990)[5]. Therefore, psychological safety is related to being able to *trust* in that no harm will come from engaging oneself in the workplace. According to Kahn (1990), situations that promote trust are *predictable, clear, consistent and*

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[5] In this dissertation, and thus also in the discussion of this dissertation, we used Kahn's theory of employee engagement as a guiding theoretical framework. Psychological safety is one of the psychological conditions that influence employee engagement. For more information on psychological safety as a standalone concept, see e.g. Edmondson (2019).

nonthreatening. There are four factors in which this can play out: interpersonal relationships, group and intergroup dynamics, management style and process, and organizational norms.

Interpersonal relationships promote psychological safety when they are open, supportive and trusting, and, most importantly, when there is a possibility to fail without having to fear the consequences. This is particularly relevant in a leadership-employee relationship. It is important that leaders *do not 'kill' ideas* or make a scene when an employee slips up. Moreover, deliberate experimentation and *failure can even be encouraged* as a way to learn (Cannon & Edmondson, 2001, 2004). In addition, it is important for leaders to remain aware of the *power difference* between them and employees: as employees are quicker to withdraw from potential conflict with higher echelons in the organization (Kahn, 1990), it may be important for leaders to encourage *employees to speak their mind freely*, and to contemplate what employees say, even if it goes against the leaders' initial plans or ideas (also see 'autonomy' below). In addition, leaders can help create a supportive environment among colleagues.

Group and intergroup dynamics. People often take up *roles within the group*, e.g. the informal leader, the rebel, the mother, the prankster, .. These (self-appointed) roles can restrict how much room there is for employees to express other parts of themselves, which limits becoming fully engaged. Certain groups also have more (or less) *status within the organization*, granting the members more (or less) ability to safely express themselves. In addition, psychological safety can increase with tenure, based on the *familiarity* with the other team members. In order to increase familiarity (and thus psychological safety) with new team members, leaders can make sure there are enough opportunities for *informal interaction* as a part of their onboarding process. Intergroup dynamics are also associated with the formation of *informal hierarchy*. When one is low within the groups' information hierarchy, speaking up may be intimidating. Therefore, in larger team meetings, leaders should be aware of this dynamic and make sure everyone gets to participate. Moreover, in *brainstorming* exercises, e.g. for strategy development, it is also more productive to let everyone brainstorm 'on their own' first (Paulus et al., 1995). This way, employees don't kill their own ideas out of a lack of psychological safety, and they do not prematurely agree with someone at the top of the pecking order.

The management style and process directly influences psychological safety through the level of support, resiliency, consistency, trust and level of competence (Kahn, 1990). As described above, it is important that leaders remain supportive and open, that they *allow employees to experiment and fail*. Granting *autonomy* is also related to psychological safety: leaders reluctant to loosen control communicate distrust. In addition, it is important that leaders are *competent and secure* enough about their own vision. This will ensure that leaders feel able to let go of control. It will also help them

to not take (small) failures personally. Last, we turn to *leaders' communication* matters: when the *leader's tone* is sarcastic, undermining or ever so slightly derogatory, psychological safety diminishes. In this sense, the leaders' tone should match the message, so that there is *clarity* and there are *no mixed messages*. When a leader *behaves in accordance* with what (s)he says or promises, this contributes to a predictable, psychologically safe environment (see below as well).

Last, *organizational norms* can also contribute (or diminish) psychological safety. This relates to clarity with regards to the norms, as well as the relevance of boundaries. Norms can be defined as shared expectations about the general behaviors of system members (Hackman, 1986). These are also communicated or supported by the leader through role-modeling (see 'role modeling behavior' above). Psychological safety results from everyone behaving within the protective boundaries formed by shared expectations associated with behavioral norms. Deviating from those norms, e.g. by challenging or questioning expectations, can feel psychologically unsafe. When there is a lack of boundaries or norms, people either guard themselves or withdraw (Kahn, 1990), which diminishes work engagement. When leaders cross personal or organizational boundaries, e.g. through abusive supervision, this results in emotional exhaustion, depression, counterproductive work behavior, drops in performance, etc, .. (Mackey et al., 2017).

Improving self-determination

Self-determination revolves around three basic psychological needs, i.e. autonomy, competence and relatedness.

Autonomy need satisfaction can be increased when one feels that one has choices. It relates to having a sense of psychological freedom when carrying out an activity. On the work floor, this can be achieved in big ways and in small ways: leaders can grant employees a *voice* in deciding company goals and policies, but they can also just let an employee have a say in how they arrange their workday, the timing of tasks or how they solve problems. When there is no possibility to grant autonomy, *transparency* is the second-best option: dealing with 'fake' autonomy is worse than accepting a top-down decision (Hunsaker & Allessandra, 1981).

Competence need satisfaction concerns the need to feel a sense of effectivity or competence to achieve goals. Research has shown that getting *feedback* greatly impacts competence need satisfaction (Deci & Ryan, 2000). This, again, can be done in big and small ways: in a formal way during the performance appraisal, but also rather informally by e.g. giving compliments or even positive attention. Even non-verbal behavior like nodding constitutes (positive) feedback. However, feedback does not always yield positive results. Meta-analytic research indicates that although feedback interventions on average improve performance, in 1/3 of the cases it decreased performance (see 'improving feedback' below).

Besides feedback, it can be relevant as a leader to assess whether there are domains in which the employee feels decidedly incompetent and either needs more *mentoring or actual training*. Building up confidence, and making sure an employee knows how to learn (e.g. where to find company-relevant information or who to ask for help) may also be helpful.

Relatedness need satisfaction is satisfied when employees feel like they belong and are cared for. There are many ways in which organizations and leaders can support relatedness need satisfaction. Of course, on an *organizational level*, this has to do with building a sense of community and a positive company culture. If relatedness need satisfaction, and work engagement, are deemed important, this needs to be on the company agenda, and thus ingrained in company practices. This starts with the *selection and onboarding* procedure: How are people received? Do they feel welcome? Is there a system, a procedure, a welcome gift? Is everything in order for them to start working when they arrive? Second, it relates to how the *formal or informal interactions* are shaped: Is there an informal meeting space, e.g. around the coffee machine? Is it inviting? Do people have lunch together? Do they have (online) breaks together? Are there (in)formal activities with the whole team, or with the whole organization? Do employees have agency with regards to how this is organized (see 'autonomy')? Third, it can be helpful for an organization, or for individual leaders, to think about *how success is celebrated*: Do people feel involved? Is there a sense of 'common success'? Is there 'a moment' to congratulate people? How are personal milestones or achievements celebrated? Fourth, it can be relevant to investigate *company stories*, because they are symbolic and provide a roadmap for behavior: What are the (informal) company stories and how do people relate to them? (see e.g. Wilkins, 1984) All these elements can bring employees together and create a sense of community. Finally, a *clear mission, vision and/or goal* can create a sense of community as well. On a *behavioral level*, consistent, small actions are important (Day et al., 2009), because they can become a company culture that is inviting, instills a sense of belonging and leads to higher employee engagement. Both bottom up and top down interventions can create a company culture that fulfills relatedness need satisfaction. In this context, bottom-up interventions constitute employee-driven initiatives, whereas top-down interventions constitute organizational initiatives developed – or at least initiated – by the top level. Company leaders can also *support bottom-up interventions* by providing time and resources, and of course also by openly supporting and taking part in initiatives.

Dealing with negative events. Of course, it is not only important to work on creating a need supporting culture, but it is also key to deal swiftly and effectively with negative events. In this sense, it can be worthwhile to reshape *negative company stories* (Wilkins, 1984) or to cope thoughtfully and sensitively with *organizational trauma* (Bailleur, 2017). In addition, organizations should *not tolerate problematic behavior* from leaders just because there is still a short-term pay-off, e.g.

when there are complaints about a leader, but they still get results. Failing to address this can have a big impact on those leaders' teams, and the adjacent collaborating teams (based on emotional contagion), therefore dissonant behavior needs to be addressed swiftly (Boyatzis & McKee, 2005). In addition, organizations can monitor whether or not there is an *unhealthy culture* with regards to working *overtime and presenteeism* (Hemp, 2004; Johns, 2010; Mazzetti et al., 2020).

It is also important to deal with negative events productively on an *individual level*. This concerns *self-regulation*. Although there are individual differences in self-regulation, it can be improved (see e.g. Baumeister & Vohs, 2004; Day et al., 2009), e.g. through mindfulness (Brown & Ryan, 2003). Self-regulation in the broad sense also concerns having a sense of what activities will help process (negative) emotions. Ultimately, one could argue it also concerns having a plan with regards to whom to contact when self-regulation is not sufficient and one needs professional help. In addition, it can also be important to stay mindful of *the dark side of the need for achievement,* because it can lead to *over-achievement* and exhaustion (Boyatzis & McKee, 2005). Scholars have also warned for the effects of (emotional) exhaustion, ultimately leading to *burnout* (Schaufeli et al., 2017). In this context, the normal rest/recovery cycle is disrupted and long weekends or vacations do not yield the expected benefit (Boyatzis & McKee, 2005). In order to avoid burnout, it is necessary to keep an eye on preventative self-regulation routines (see below).

Self-regulation. In chapter 4, we also found a *trickle-down effect* from leader psychological need satisfaction to employee psychological need satisfaction (through positive social exchanges). Among other things, this shows that leader *self-regulation* with regards to psychological need satisfaction impacts employees directly (also see 'emotional contagion' and 'role modeling behavior' in chapter 1). In this sense, it can be important for leaders to investigate their levels of autonomy (Do they feel like they can make enough decisions?), competence (Do they feel competent at fulfilling challenging tasks? For example, do they feel competent in their own leadership?) and relatedness (Are they connected to their workforce? Do they feel they belong?) and if there are thwarted needs, to develop a strategy to address this. In our research, of the three needs, leader competence need satisfaction had a direct impact on employee psychological need satisfaction, so focusing on that one need may be most important.

Besides practical action, one of the aspects that may be helpful to increase leader self-determination ánd leadership is *mindfulness*. In chapter 3, we found that leader mindfulness is associated with leader psychological need satisfaction and transformational leadership. Mindfulness may influence the three psychological needs in different ways. First, it can impact one's sense of autonomy since it helps to create a *'space' between trigger and response*, in which difficult situations can be adequately assessed and emotional responses can be better managed. Moreover, through the

process of *distancing and (re)perceiving* a particular situation, the leader can become less controlled by thoughts and emotions (Pircher Verdorfer, 2016). This is also shown by neuroscience research indicating that mindfulness helps regulate affect through enhancing prefrontal cortex inhibition of the amygdala (emotional) responses (Goleman & Davidson, 2017). All of this may contribute to a feeling of volition and thus autonomy need satisfaction.

Mindfulness can also enhance competence need satisfaction, and thus feeling effective, since it is directly related to self-rated *job performance* (Mesmer-Magnus et al., 2017), as well as to a *higher leader effectivity rated by employees* (Waldron & Ebbeck, 2015; Wasylkiw et al., 2015) and by leaders' managers (King & Haar, 2017). This effect can be established through several possible pathways: the effect of mindfulness on (emotional) *self-regulation*, *information processing and decision making* will certainly contribute to leader effectivity and consequently the feeling of competence (Karelaia & Reb, 2015).

Last, several other studies have also found that *mindfulness improves relationships with employees* (Mesmer-Magnus et al., 2017; Reb et al., 2014), and thus fulfills relatedness need satisfaction. Mindfulness may help leaders to connect with their employees through being present in the moment and through listening attentively (Ucok, 2006). It helps leaders to *communicate more clearly* and develop trust, which also leads to good working relationships (Frizzell, Hoon, & Banner, 2016; Kearney, Kelsey, & Herrington, 2013). In chapter 3, we also found that neuroticism interacts with mindfulness with regards to relatedness need satisfaction in such a way that when neuroticism was high, the association between mindfulness and relatedness need satisfaction was higher. Or conversely, when neuroticism was low, mindfulness had a smaller (but still positive) impact on relatedness need satisfaction. The relationship with relatedness need satisfaction indicates that high neuroticism (combined with low mindfulness) might intervene with developing solid work relationships, perhaps because a highly neurotic leader may scare off or overburden employees. When a leader scores high on mindfulness, this effect can be mitigated and even lead to a better development of work relationships. Perhaps this is possible because a leader with higher scores on neuroticism, combined with mindfulness, is better equipped to understand emotional reactions and may be more able to be empathic through his/her own experience with emotional reactivity. The combination of neuroticism (emotionality) and mindfulness (positive coping), may then be a good example for (neurotic) employees and lead to better work relationships.

In essence, our research results and the accompanying reasoning indicates that developing a *mindfulness practice* as a leader may be helpful. Of course, working directly on the working mechanisms introduced above will also yield results. With regards to developing a mindfulness practice, some researchers have proposed the use of short exercises throughout the workdays,

called '*on-the-spot' mindfulness* interventions (Hafenbrack, 2017). A meta-analysis on mindfulness interventions on the work floor has also indicated that short interventions may be a valuable tool for managing psychological distress (Virgili, 2015).

Leader self-regulation is of course broader than just monitoring psychological need satisfaction and potentially developing a mindfulness practice. It also concerns other ways that support being able to disengage from work, to manage stress and to build a meaningful, fulfilling life, within and outside of work. Developing ways to practice self-regulation, based on knowledge concerning personal disposition and needs, can be important to be effective and engaged at work. Based on chapter 3 and 4, we posit that leader well-being may also influence employees' work engagement.

Trickle-up. Additionally, in chapter 4, we found the possibility of a small trickle-up effect. This means that employees can have a positive impact on leaders as well. *Giving feedback* to the leader, either positive or negative (brought in a considerate way, see below) can increase relatedness and competence need satisfaction. *Thanking for help*, paying *sincere compliments* or even *offering choices*, e.g. with regards to how to move forward, can improve leaders' psychological need satisfaction, which improves leaders' work engagement and the work relationship, so that both parties can be engaged and experience psychological need fulfillment together.

Improving social exchanges at work

Positive social exchanges can influence work engagement directly (see chapter 1 and 2), but they can also work indirectly through satisfying the need for relatedness. In addition, having positive social exchanges with people that are energizing can be an important part of well-being. Social exchanges concern communication, so below we expand on how to increase leader attentive communication, and on how to improve feedback and meetings in general (based on chapter 6).

Increasing Leader Attentive Communication. LAC has been defined as: "an open-minded, attentive demeanor while in a conversation with an employee" (see chapter 5). It is comprised of two dimensions: paying attention in general and paying attention to non-verbal cues. First, one can improve general LAC by managing proximal external and internal distractions in the moment. *External proximal distractions* have to do with environmental cues that will distract the attention while communicating. One can close the door, close the laptop, put the phone away, etc. Then, one can remove all *internal proximal distractions*: e.g. worries about time management, thoughts about future or past engagements, ... One can take away worries about time management by deciding beforehand how long the interaction will last, so there is a *clear end-point*. One can manage distracting to-do's or thoughts about future (or past) appointments by *writing them down*. This can

be done both before the conversation, to 'clear the mind', or during the conversation, so one does not have to worry about forgetting things (also see Allen, 2001).

There are also *more distal, contextual, factors* that constitute distractions from being available for leader attentive communication. In this sense, we can echo Kahn's classification of four distractions concerning psychological availability for personal engagement, i.e. physical distraction, emotional distractions, insecurity and outside life. First, *physical energy,* and fatigue, dictate how much attention a leader can pay in a particular moment. Second, *emotional energy* influences how much one is willing to invest in a conversation: a leader may still pay attention when emotionally drained, but (s)he may be less emotionally available, which will make the conversation less rewarding. Third, *insecurity* will dictate how much a leader is preoccupied with oneself, e.g. how (s)he is viewed and how well one is doing, which will take away valuable energy and attention that could otherwise be invested in leader attentive communication. Fourth, a preoccupation with *outside life* can also interfere with the ability to pay attention during conversations. When these contextual distractions are too big, and a leader is not really able to be fully attentive during conversations, it may be best to communicate this honestly and reschedule. For smaller interactions, a quick apology may be thoughtful and communicate respect to the employee as well.

Increasing the potential to pay attention. When at least the proximal distractions are dealt with, one can *decide to commit* to paying attention to the employee for as long as the conversation lasts. Sometimes, this will be easy, because the conversation is interesting, the employee is fun or the ideas are engaging. Other times, this will be less so. One way to increase the potential to pay attention, also in less interesting circumstances, is to work on increasing *curiosity*: Where is the employee coming from? Why does (s)he have this viewpoint? Why does (s)he think that way? What can I learn from his/her viewpoint? Another way, is to *start to doodle* or fidget with something, since this can help 'fill up' some brain capacity and help refocus on the conversation (Tigchelaar & de Bos, 2019). Alternatively, one could start *focusing on the details*, for example, by working on the second dimension of leader attentive communication, i.e. paying attention to nonverbal cues, by noticing *facial expressions, body posture, tone of voice and emotional states*. In this respect, paying attention to nonverbal cues does not equate to addressing what one notices in the conversation, but it may inform how to best respond.

Levels of leader attentive communication. Leader attentive communication follows a dimensional structure, much like personality traits, where most leaders score average and few of them excel or do exceptionally poorly on a regular basis. Therefore, it is unlikely that a leader does not pay attention during conversations at all. Rather, most leaders will be quite average at communicating attentively, which also reveals some potential: when they are able to improve and hone in on this

skill just a little bit, general well-being may increase. In this sense, we propose that there are individual differences in LAC, that it can also be practiced with any and every conversation and that most leaders can work on it as a strategy to improve well-being (see chapter 5 & 6).

Online leader attentive communication. When communicating online, e.g. via video calling, most of the same strategies for optimal LAC apply: one can *remove internal and external distractions* as much as possible, one can *decide to commit* to paying attention during the conversation, and perhaps also *increase curiosity* when the motivation to pay attention seems to decrease. One can also practice with zooming the attention in and out with regards to *nonverbal cues* of the employee, but of course, when video calling, one is limited to what one can see and hear on the screen. Below, we expand further on others ways to navigate the transition to working from home.

Improving feedback. The purpose of feedback is to reduce the discrepancy between current understanding or performance and a desired goal (Hattie & Timperley, 2007). Below we summarize evidence-based ways to improve miscommunication, to improve positive and negative feedback as well as to improve feedback opportunities (this is all based on the training protocol developed for chapter 6).

Improving miscommunication. In order to improve communication, one can work on decreasing miscommunication, especially in a virtual world where there are less (nonverbal) cues to pick up. Two communication biases are relevant in this context: the closeness communication bias and the illusion of transparency. *Closeness communication bias* concerns an overestimating of how well we communicate to people we know well. In essence, it involves an expectation that close friends and family understand what we say, even when we barely communicate, almost as if they should be able to read our mind (Murphy, 2020). For example, research shows that friends who had to convey particular meanings with ambiguous phrases overestimated their success in terms of clarity more when they communicating with a friend or partner than with strangers (Savitsky et al., 2011). In essence, one can become lazy and rely more on one's own perspective when communicating with people we think we know very well. Therefore, it is important to stay curious and keep on monitoring whether or not a conversation partner is really on the same page. This relates to the *illusion of transparency*, i.e. the tendency of individuals "to overestimate the extent to which their internal states and intentions are apparent to an outside observer"(Garcia, 2002, p. 133). In this context, the illusion of transparency can result in bad communication by the feedback-giver, based on the false assumption that (s)he is clearly communicating. In this sense, it can be worthwhile to take the time to ask how the feedback-receiver actually interpreted the message and whether or not anything is unclear.

Another source of miscommunication is a *lack of information*. In this case, the leader (or employee) is not transparent and does not disclose 'necessary' information for the other party to develop an accurate picture of what is going on. For example, when information about leaders' time constraints is not communicated, employees may take a lack of time personally. In this sense, people are prone to filling the void of information with their own perceptions, which than leads to made up mental stories that can take on a life of their own.

In sum, leaders can work on maintaining curiosity with regards to the employee, communicating transparently and clearly and on providing (even more than) the necessary information for employees in order to do their job, understand the work environment and the leaders' position and work context. This is especially important in a virtual environment where there are fewer (nonverbal) signals to derive information from.

Increasing positive feedback. Positive feedback constitutes e.g. specific praise, approval statements and positive nonverbal gestures. Praise has been shown to be the least effective form of feedback, however, when aimed at processes or self-regulation efforts, rather than at the self, it can still yield results (Hattie & Timperley, 2007). In addition, research has shown that a high positive to negative ratio for interactions can improve (work) relationships and diminish the negative effect of negative interactions (Sabey et al., 2019). Therefore, leaders can counterbalance the negative effects of negative feedback on the work relationship by increasing positive exchanges.

Improving negative feedback. Negative feedback conversations are usually difficult for both parties. In addition, research has shown that a substantial amount of feedback conversations either yield no effect or result in a diminished performance (Kluger & Denisi, 1996). Moreover, "specific feedback" can actually lead to learned helplessness, and the acceptance of a flaw by the feedback-receiver, whereas "timely" feedback can also demotivate, as the receiver may think it is the leaders' only priority. In this sense, "timely" feedback can also be (perceived as) micromanagement.

There are two possible explanations for the negative effect of feedback on performance. First, *feedback intervention theory* (Kluger & Denisi, 1996) states that receiving feedback takes up a lot of cognitive resources. This lack of resources then interferes with task-focus, learning and improvement. In addition, feedback also affects *self-enhancement motives*, i.e. focusing on favorable information about the self, so that receivers do not process the feedback information, but rather reflect upon how the feedback impacts them. In order for feedback to be effective, receivers should be in *self-improvement mode*, i.e. ready to consider shortcomings, failures and developmental needs (Tsai et al., 2016). The self-improvement motive will only be activated in *psychologically safe environments* (Kahn, 1990). On this note, it can be important to *stimulate feedback-seeking behavior* on a company-wide level, e.g. through role-modeling from leaders.

Content, clarity, composure and context. There are four general themes that can be taken into account when preparing to deliver negative feedback: content, clarity, composure and context. In terms of *content*, effective feedback answers three questions: "Where am I going?" (or Feed Up), "How am I going?" (or 'Feed Back') and "Where to next?" (or 'Feed Forward') (Hattie & Timperley, 2007). These general feedback questions can focus on four different levels: *tasks*, i.e. how well they are understood or performed, *processes*, i.e. the main process needed to understand or perform tasks, *self-regulation*, i.e. self-monitoring, directing, and regulating of actions, and *on the self*, i.e. personal evaluations and effect about the feedback-receiver (Hattie & Timperley, 2007). The focus of feedback influences its effectiveness: feedback about the self is least effective, whereas feedback about processes or self-regulation is most effective. Feedback about the task is only effective, and transferable to other contexts, when the task information is useful for improving processes or enhancing self-regulation (Hattie & Timperley, 2007).

Clarity concerns how well everything is communicated, especially with regards to expectations for the future. In this sense, it may be important that both the feedback-giver and feedback-receiver ask clarifying questions to make sure they are on the same page.

Composure concerns the emotional component of feedback. This can be improved by taking the time to (let someone) process negative information and by being ready to deal with negative emotions, in order to be able to switch back to a focus on self-improvement later. Several evidence-based conversation techniques advocate an attentive, open, respectful, inviting, empathetic, inquisitive and even humble basic demeanor or attitude in order to have productive conversations (Bodie, 2011; Kluger & Nir, 2010; Schein, 2013; Van Quaquebeke & Felps, 2016).

Context concerns the general context of the conversation that can impact how the feedback is delivered, how much stress it evokes and what the consequences are for both parties. Depending on previous conversations, expectations, power dynamics or possible consequences, it may be important to clarify the context during the conversation. Context-related preparatory questions include, but are not limited to: What are the feedback expectations? Have there been (documented) previous conversations to fall back onto? Has the employee been 'warned' about the nature of the conversation? What are the power dynamics at play? What are the consequences associated with negative feedback? What are the dispositional characteristics of the feedback-receiver and feedback-giver? Is there a necessity to have a neutral third-party present?

Improving feedback opportunities. "It seems that everyone wants to learn, but nobody wants to be wrong" (Day, Harrison, & Halpin, 2009, p. 151). However, in order to learn effectively, there needs to be an opportunity and willingness to fail (Sitkin, 1992). In addition, company decision makers often do not have the opportunity to directly experience the consequences of their

decisions, for example because the learning horizon for decisions with strategic implications is too distant (Day et al., 2009). Yet, there are several things that organizations can do in order to increase feedback and learning opportunities. First, organizations can gather more data to evaluate (evidence-based) company-wide decisions in order to increase feedback-opportunities of strategic decisions. They can also encourage experimentation. Second, leaders can role-model feedback seeking and self-improvement. Last, employees can also learn from company stories, e.g. concerning dilemmas, trials and tribulations or difficult decision-making. The added benefit is that this evokes a less critical (or self-protective) attitude from listeners (Day et al., 2009; Sitkin, 1992).

Improving meetings. Whereas feedback conversations constitute a specific form of meetings, there are also general ways in which meeting efficiency can be improved. This is relevant, since employees spend 15% of their time in meetings and leaders up to 50% (Anseel, 2019). Meeting load, i.e. frequency and time spent, also has a significant negative influence on well-being (Luong & Rogelberg, 2005). In addition, according to self-reports from participants, approximately 35% of our time in meetings is wasted (Elsayed-Elkhouly et al., 1997). There are several ways in which meetings can be improved, so that they are more effective, less time consuming, and their negative impact on well-being is mitigated.

First, companies can *assess the time investment and ROI* (return on investment) of meetings, so that only effective and efficient meetings continue to be scheduled (Rogelberg et al., 2012). In this sense, a clear meeting agenda at the beginning, and clear agreements at the end can increase meeting effectiveness. In addition, most meetings are not only irrelevant, but also attended by too many people who do not contribute (Anseel, 2019). Therefore, a thorough investigation of *who should be present*, and an individual preparation for each meeting, could mitigate some of the negative effects on well-being. Relatedly, decreasing the unnecessary attendance could also decrease the negative impact of *uncivil meeting behaviors* (UMBs), e.g. showing disinterest, interrupting the speaker, arriving late or generally being rude. UMBs are associated with the meeting purpose and meeting norms, as well as with individual differences such as agreeableness, narcissism and psychopathy (Odermatt et al., 2018). Therefore establishing a clear meeting purpose, as well as respectful meetings norms, could decrease the incidence of UMBs. Selection procedures could also focus more on not hiring personnel high on Dark Triad traits (narcissism, marchiavellism and psychopathy). In addition, it could be encouraged to plan in some time *after each meeting* to take action, as this can increase focus and decrease the chance of to-do's slipping through the cracks.

Furthermore, one could assess the *timing* of meetings: on average, mornings have been shown to be more suited for activities that require concentration and analytical skills, whereas the afternoon is more suited for less straining and more social interactions (Pink, 2018). In order to

decrease time spent in meetings, one can install a clear time-constraint (Pink, 2018), have stand-up meetings, or have meetings before lunch, as hungry team members are more likely to end meetings on time (Stray, Moe, & Sjoberg, 2020). This can also have the added benefit of having lunch together, which can stimulate team cohesion (Stray et al., 2020).

In addition, especially with online meetings, it can be worthwhile to make sure that no one dominates the conversation unnecessarily and that every attendee has an opportunity to pitch in (Anseel, 2020).

Improving the impact of leadership training

As companies spend huge amounts of money on developmental trajectories for leaders, it is important to improve the potential for impact and training transfer. Research has shown that training transfer is related to an a-priori *needs analysis*, the incorporation of *feedback*, the use of *spaced training sessions* and *face-to-face* delivery that is not self-administered (Lacerenza et al., 2017). In addition, training should be *context-specific* (Day et al., 2009). This can also be achieved by letting participants work on specific and personal work-related difficulties as much as possible during the training protocol. In addition, learning from experience only occurs when there is room for *reflection* (Day et al., 2009). There can be room for reflection during training, but organizations can also provide opportunities for reflection after the training, e.g. by reducing workload (thus removing time-constraints) or by organizing peer mentoring sessions or post-project evaluations. In addition, training transfer can be improved when there are *post-training sessions* where trainees can share experiences and reflect. Last, to provide an incentive for training transfer, (informal) *reward systems* of organizations should also support the behavioral change they want to see in employees.

Improving working from home

As the Covid-19 pandemic drastically increased virtual work, at least for knowledge workers, we discuss some of the ways in which (the transition to) working from home can be improved based on the findings in this dissertation. We will mainly focus on the framework developed in chapter 1, concerning the different pathways in which employee well-being can be achieved. In this framework, we have proposed five different pathways that run from leader behavior to employee well-being (Decuypere & Schaufeli, 2020), i.e. the material, motivational, affective, behavioral and cognitive pathway. Below we discuss them in detail, applied to working from home.

The material pathway is an indirect process that concerns work characteristics. Leaders can provide several practical job resources that are necessary for working from home: e.g. laptops, (standing) desks, monitors, headsets, etc., as well as all the software required for easy communication and data sharing. In addition, leaders can provide resources that support the

transition to working from home, e.g. workshops on how to use new technology, how to manage work-life balance, … In terms of job demands, leaders can revise the work load to support the transition process. In addition, some core tasks may be less easy (or easier) to do, depending on the circumstances. Leaders can alter job resources and demands and adapt them to new circumstances to ensure that there is a well-balanced workload (Demerouti et al., 2001; Schaufeli, 2015).

The motivational pathway, is an indirect interpersonal process that concerns psychological need satisfaction (autonomy, competence, relatedness) and establishing psychological conditions (availability, meaningfulness, safety) necessary for optimal well-being. In terms of *autonomy need satisfaction*, leaders can let go of virtual control and give employees the autonomy to arrange their workday in accordance with other (family-related) activities or with their own rhythm (Pink, 2018). This way, employees are granted the freedom to work in a way that is optimal for them. Research has shown that (task) autonomy is generally related to performance, although there are a number of mediating processes that can mitigate the effect on performance, i.e. the need for autonomy and need for achievement, perceived utility of autonomy, self-efficacy, information asymmetry, cognitive distraction due to autonomy (in terms of decision making and evaluation), task interdependence, task variability and task formalization. Based on these motivational, informational and structural mechanisms, leaders can decide when autonomy is necessary and helpful, and when it is likely to reduce performance (Langfred & Moye, 2004).

In terms of *competence need satisfaction*, leaders can make sure that all the hindrances that get in the way of employees feeling effective are dealt with as much as possible. This may include providing training, providing feedback, providing clear goals or decreasing administrative burden (George et al., 2020). In addition, leaders can support or organize informal meetings where employees can share information with regards to technology use, work-life balance, education or discipline-specific issues.

In terms of *relatedness need satisfaction*, leaders can increase virtual connection and a sense of belonging in various ways. First, leaders can send out regular updates on team or company decisions or achievements, so that employees 'stay in the loop'. Second, they can ensure there is regular personal contact with employees, through email, phone and/or video calls. At a group level, leaders can ensure the development of an online team presence, e.g. through video calls, social media or a permanent teamwork collaboration platform. This way, teams can share knowledge or simply catch up. In this sense, replacing daily informal coffee breaks in an online format may be helpful in some contexts as well. Last, leaders can also be helpful simply by supporting bottom-up initiatives. This can be done by simply uttering support, or by providing the means necessary for these initiatives,

e.g. in terms of time or budget. Of course, employees also differ in their need for disconnection (Orsini & Rodrigues, 2020), which can be respected and supported by leaders, e.g. by making informal meetings volitional.

In terms of increasing *psychological meaningfulness*, leaders in an online world can specifically zoom in on the meaningfulness of the virtual conversations. In this sense, it can be even more impactful to decrease distractions and pay attention during conversations (see 'improving leader attentive communication'). In addition, it may be even more important to communicate clear (project) goals. The impact of clear goals on perceived meaningfulness is greater when they are aligned with employees' personal goals and preferences (Kahn, 1990). Therefore, leaders can check in and monitor whether or not working from home is still aligned with employees' preferred work identity and expectations. Of course, during a pandemic, there may not be another way.

In terms of increasing *psychological availability*, leaders can support employees while they sort out different distractions. First, as big changes and transitions require energy, leaders can alter the work load temporarily, in order to decrease the distraction by fatigue. Second, leaders can manage emotional distractions by making sure that (the potential for) miscommunication or team conflict is managed swiftly and with care. Third, leaders can help decrease leaders' insecurity and self-consciousness by providing support and helpful performance feedback. Last, leaders can help employees deal with distractions from outside life by providing the autonomy to be able to rearrange their workday.

In terms of increasing *psychological safety*, leaders can continue to focus on creating an atmosphere where boundaries are respected, norms are clear (e.g. with regards to typing while video conferencing, looking on the phone etc, ..), where employees are allowed to experiment, fail and learn from failures, and where employees are supported to speak their mind, without negative consequences. Specifically related to the virtual world, leaders can focus on making sure that every employee has the possibility to contribute to online conversations, either asynchronously, e.g. through email preparations, or synchronously, either through speaking up during virtual meetings or by using chat functions. Next, leaders can make sure that every idea is considered or politely declined, rather than ignored or ridiculed.

The affective pathway is a direct process through *emotional contagion*. In a virtual world, emotional contagion may be harder to achieve. However, when online interactions are positive, meaningful and engaging, this can have spillover effects that lead to higher general employee well-being (Pierce et al., 2015).

The behavioral pathway is a direct process through *social learning*. With regards to working from home, employees can learn from their leaders by watching how they behave online, how

responsive they are, how they deal with maintaining boundaries between work and personal life, which tools they use, etc. In sum, with regards to the specific challenges of virtual work, leader role-modeling remains important.

The cognitive pathway is a direct process through *social exchange*. According to social exchange theory, the exchange relationship between supervisor and employee is maintained through a state of interdependence where there is an expectation of reciprocation of favors, work, or support (Shore et al., 2006). Leaders can directly influence employees' well-being by continuing to invest in the relationship with employees, also when working online. Perhaps virtual work has the potential to increase the efficiency of meetings (Anseel, 2020), but it also remains important that leaders take the time to stay connected with employees.

In sum, there are many ways in which working from home can be improved. One way, based on the research in this dissertation, is using the different pathways to work engagement as inspiration: i.e. the material, motivational, affective, behavioral and cognitive pathway.

Dissertation limitations

All the study-specific limitations (and ideas for future research) are discussed in the previous chapters, but there are some general trends throughout this dissertation that we will address here. The limitations can be divided into two categories: data-collection and research design, and content.

Data-collection and design

First, most of the data-collections were *cross-sectional* (chapter 2, 3, 4, 5), which means we cannot establish causality. In chapter 4, 5, and 6, we also gathered multi-source data (from leaders and their employees), but the data was still just collected at one time point. In chapter 6, we collected data over three time points, but here the pandemic interfered and constituted a large exogenous influencing factor. In future research, it would be better to continue to collect multi-source data, but with a gap between the measurement of predictors and outcomes (see e.g. Wang & Seibert, 2015), or to gather longitudinal data, e.g. via an experience-sampling diary-study protocol (see e.g. Kelemen, Matthews, & Breevaart, 2020).

In addition, most of the studies were based on data collected with Likert-scale questionnaires. Using only questionnaires limits the possibility of *capturing the complexity* of certain phenomena. In this sense, it would be helpful to *add qualitative data*, either as a way to understand leaders' and employees' experience and viewpoint at the start of a study, or to understand and explain some of the trends that were found at the end of a study.

Finally, data were collected in *various contexts and industries*, which in the context of this dissertation, counter-intuitively, may limit generalizability. First, the samples for the research on leader well-being were collected in nursing homes. We cannot be certain that we would have found

the same results in other contexts. Second, the three samples for the validation of leader attentive communication came from employees and leaders in recruitment offices, various industries and schools. On the bright side, did find the same factorial structure for the questionnaire in each of the samples, which supports validation. However, we find different results with regards to the mediation hypotheses in each of the samples, ranging from no to full mediation by psychological need satisfaction. Therefore, we cannot be sure whether or not these mediating mechanisms are more important in one or the other context. Based on this research, we can only conclude that LAC is associated with various forms of well-being and some of the results indicate that this may be mediated by either psychological need satisfaction or Kahn's conditions for engagement. So, even though the research questions of this dissertation were not specifically focused on context, failing to take this into account is an important dissertation limitation (Johns, 2006, 2017). Last, the training protocol was only administered to leaders from a specific government branch, which also limits generalizability.

Research content

There are two major ways in which research context presents a limitation. The first dissertation limitation in terms of research content is its *broad focus*. We investigated the relationship between leadership and employee work engagement, as well as the effect of leader well-being on both leadership and employee well-being, after which we developed a new communication construct and training. This means there was a broad focus on well-being from both leaders and their employees, as well as on positive leadership styles and more narrow leader behavior. On the bright side, this renders a more complete picture because it takes into account multiple perspectives and their interaction, but at the same time, a broad scope limits the depth that can be reached.

Last, we did not take into account the broader *organizational context*. In this sense, we studied leadership and employee and leader well-being in different organizations, without taking into account all the various team or organizational characteristics that may influence the leader-employee dynamic. In study 1 and 2, we did mention the impact that larger contexts may have. For example, in study two, we found that there were different moderating and mediating variables for the relationship between positive leadership styles and work engagement, such as organizational identification and uncertainty (de Sousa & van Dierendonck, 2014), organizational justice (Demirtas, 2015), supportive culture (Arfat et al., 2017) or group identification (Mayr, 2017), to name a few. However, in the subsequent empirical studies, we did not focus on these mechanisms.

<div align="center">

Future research propositions

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Part 1 of this dissertation focused on the effect of leadership (or leader behavior) on employee well-being by mainly focusing on the five 'most popular' positive leadership styles in

terms of research with regards to work engagement, i.e. transformational, authentic, ethical, servant and empowering leadership. In order to address which leadership style has the largest association with work engagement, future (meta-analytic) reviews could include more studies, as well as studies based on other positive leadership styles. In addition, based on the meta-analysis, we could not draw firm conclusions with regards to the influence *moderating mechanisms*, such as organizational or team context, which also illustrates the need for more research. Future (theoretical) research could also focus more on *integrating existing theoretical frameworks* through investigating overlap or shared working mechanisms. In the same vein, it can be worthwhile to investigate different *narrow leader behaviors* and their effects in an experimental setting (see e.g. Robinson & Boies, 2016).

In this respect, there has been an interesting innovation with regards to the measurement of leader behavior, i.e. *the too little/too much scale* (TL/TM scale; Vergauwe, Wille, Hofmans, Kaiser, & Fruyt, 2017). The scale rates behavior from 'much too little' (-4) to 'the right amount' (0) to 'much too much' (4). This way, researchers can investigate curvilinear, (inverted) U-shaped relationships, with regards to the effect of established leadership styles or more narrow leader behavior on employee outcomes. Traditional Likert scales can detect variance with regards the 'too little' range of a certain leader behavior, but not with regards to the 'too much' range, as they only assess whether or not a behavior is present. Therefore, the TL/TM scale allows researchers to capture more variance and introduce more nuance with regards to 'the right amount' of a certain behavior. Future research may want to include this scaling method when studying leader behavior.

Part 2 of this dissertation focused on leader well-being. Future research may want to focus more on the *effects of leader well-being on leadership*, as this may have a large impact on the potential for positive leadership. In addition, future research may want to take into account information from multiple sources (e.g. other-rated mindfulness?). Mindfulness, as work engagement, can be seen as a private, internal, event that can best be assessed by the focal employee (Conway & Lance, 2010). However, there are also multiple drawbacks to self-report measures that other-rated work engagement may address, e.g. social desirability, fear of negative consequences and dispositional characteristics. In addition, work engagement has already been shown to transfer from one employee to another (Bakker et al., 2006), especially on days where there is more frequent interaction than usual (Bakker & Xanthopoulou, 2009), which makes *multi-rater assessment* even more relevant. Therefore, future research can focus more on including other-rated measures, as was done in the study from Mazzetti, Schaufeli and Guglielmi (2018). In addition, future research may want to investigate *dynamic changes* in leader well-being, mindfulness and behavior by using *diary-study protocols*. Last, new trickle-down studies could also investigate the trickle-down effect of other variables such as leader mindfulness, leader mindfulness in communication or leader attentive

communication, as well as focus more on the impact of employees on leaders through *trickle-up effects*, see e.g. Davidson et al. (2014).

Part 3 of this dissertation focused on leader communication behavior by developing and validating a questionnaire, as well as by developing a training protocol for leader attentive communication. Future research may focus on the *continuation of the validation* efforts by testing the questionnaire in different languages and cultures, and by using different techniques, e.g. via video validation (Podsakoff et al., 2013). Future research may also continue research on *other leader communication protocols*, such as mindfulness in communication (Arendt et al., 2019), the feedforward interview (Mcdowall et al., 2014) or respectful inquiry interventions (Van Quaquebeke & Felps, 2016). In addition, future research may want to focus more on the *content* of leader communication, specifically with regards to online communication. Some interesting research has emerged concerning nonverbal communication using computer-mediated cues, such as emoticons or the use of 'backchannel sounds' (like 'oh') (Darics, 2020). Training protocols that take this into account, may help leaders navigate communication when working virtually.

With regards to our study concerning the communication training protocol, including an *active control group* would greatly improve the methodology to test its efficacy (see e.g. Maccoon et al., 2012). In addition, the program could also be *adapted for optimal transfer* by including the organization of monthly small-group sessions to review and prepare training applications on the work floor, so that there is an opportunity for peer-mentoring and a higher chance of lasting behavioral change. Future research may also want to take into account the changing landscape due to COVID-19, and translate the training format so that it is suitable for *online training*. This could also incorporate how to improve LAC when working from home. In addition, in this increasingly virtual world, it may be worthwhile to focus more on *video experiments*. For example, Robinson and Boies (2016) compared the effects of intellectual stimulation and contingent reward leadership on employee outcomes by letting participants view a video and then perform an in-basket exercise. The researchers performed the study in different sessions for participants, but the study protocol can also be programmed into data-collection software so that it works without physical access to a research lab.

In sum, there are various ways in which future research could improve knowledge in the field, both by posing new research questions, as well as by using new innovations and methods, such as the too little/too much scale, multi-rater assessments of e.g. work engagement and online video experiments. In addition, as the leadership field has progressed from a focus on leaders to a focus on followers(hip), the next trend may also be a bigger focus on organizational contextual factors that support leadership and optimal cooperation in organizations.

To conclude

This dissertation aimed to answer three research questions. First, we looked into the main ways in which positive leadership styles influence employee work engagement. Second, we looked into the role of leaders' own well-being and third we looked into how to study and improve leader communication to increase (leader and employee) well-being.

We have found that 1) leadership is associated with work engagement through various pathways, 2) that all positive leadership styles have an influence on work engagement, there is no 'winner' or 'best style' (yet), 3) that leader well-being matters for both leadership and employee well-being, 4) that leader need satisfaction trickles down to employee need satisfaction, and 5) that being open-minded and attentive while in a conversation matters: leader attentive communication is related to employee well-being.

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