

Hudecek, Matthias F. C.; Grünwald, Klara C.; von Gehlen, Johannes; Lermer, Eva; Heiss, Silke F.

## Article

# You may fail but won't quit? Linking servant leadership with error management culture is positively associated with employees' motivational quality

Cogent Business & Management

## Provided in Cooperation with:

Taylor & Francis Group

*Suggested Citation:* Hudecek, Matthias F. C.; Grünwald, Klara C.; von Gehlen, Johannes; Lermer, Eva; Heiss, Silke F. (2024) : You may fail but won't quit? Linking servant leadership with error management culture is positively associated with employees' motivational quality, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 11, Iss. 1, pp. 1-23, <https://doi.org/10.1080/23311975.2024.2406361>

This Version is available at:

<https://hdl.handle.net/10419/326578>

### Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

### Terms of use:

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



<https://creativecommons.org/licenses/by/4.0/>

## You may fail but won't quit? Linking servant leadership with error management culture is positively associated with employees' motivational quality

Matthias F. C. Hudecek, Klara C. Grünwald, Johannes von Gehlen, Eva Lerner & Silke F. Heiss

To cite this article: Matthias F. C. Hudecek, Klara C. Grünwald, Johannes von Gehlen, Eva Lerner & Silke F. Heiss (2024) You may fail but won't quit? Linking servant leadership with error management culture is positively associated with employees' motivational quality, Cogent Business & Management, 11:1, 2406361, DOI: [10.1080/23311975.2024.2406361](https://doi.org/10.1080/23311975.2024.2406361)

To link to this article: <https://doi.org/10.1080/23311975.2024.2406361>



© 2024 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 09 Oct 2024.



Submit your article to this journal [↗](#)



Article views: 1348



View related articles [↗](#)



View Crossmark data [↗](#)



Citing articles: 3 View citing articles [↗](#)

# You may fail but won't quit? Linking servant leadership with error management culture is positively associated with employees' motivational quality

Matthias F. C. Hudecek<sup>a</sup> , Klara C. Grünwald<sup>a</sup>, Johannes von Gehlen<sup>b</sup>, Eva Lermer<sup>c,d</sup> and Silke F. Heiss<sup>e</sup>

<sup>a</sup>Department of Experimental Psychology, University of Regensburg, Regensburg, Germany; <sup>b</sup>HNU University of Applied Sciences, Neu-Ulm, Germany; <sup>c</sup>Center for Leadership and People Management, LMU Munich, Munich, Germany; <sup>d</sup>Department of Business Psychology, Technical University of Applied Sciences Augsburg, Augsburg, Germany; <sup>e</sup>FOM University of Applied Sciences Munich, Munich, Germany

## ABSTRACT

Research on positive associations between servant leadership, basic need satisfaction (BNS), and employees' work motivation is well-established. From a self-determination theory perspective, we argue that servant leadership behavior is not only positively associated with BNS but also with how errors are perceived and managed in an organization. In previous studies, error management culture (EMC) was shown to positively affect firm performance. However, research on antecedents of EMC in organizations is scarce. Thus, we conducted two studies and tested a research model (total sample size  $N=1,306$ ) proposing a serial mediation of EMC and BNS for the relationship between servant leadership and five forms of employee motivation according to self-determination theory. Results replicate previous research on the positive association between servant leadership and BNS. Expanding existing findings, we found evidence for a positive relationship between servant leadership and EMC. In addition, the relationship between servant leadership and three different motivation types (i.e. amotivation, identified, and intrinsic motivation) was serially mediated by EMC and BNS in both studies. These findings offer important practical implications, as previous studies on error management mainly focused on the outcomes of EMC but did not investigate the relationship between EMC and servant leadership or BNS. In addition, the results suggest that an organization should be considered as a whole. Besides the leadership style, EMC should be taken into account since it turned out to be a relevant predictor of BNS, too.

## ARTICLE HISTORY

Received 5 December 2023  
Revised 8 August 2024  
Accepted 14 September 2024

## KEYWORDS

Error management culture; basic need satisfaction; servant leadership; self-determination theory; autonomous motivation; serial mediation

## SUBJECTS

Work & Organizational Psychology; Applied Social Psychology; Leadership; Motivation; Work Motivation

## Introduction

The business world has been facing significant economic and organizational challenges, especially since the COVID-19 pandemic. While the pandemic appears to have ended (Mishra, 2022), new crises emerged, such as the war in Ukraine, inflation or supply and energy shortages. These crises pose direct challenges for companies, as, for example, higher prices must be paid for purchasing goods and power (e.g. gas prices increased tenfold for a manufacturing company in 2022 compared to the previous year (Bakir, 2022)). In addition, concerns and uncertainties are rising among employees (Hite & McDonald, 2020; Usman et al., 2023). Especially in these times, high motivation of employees is a significant factor for a company's success, as studies have shown that high motivation quality is associated with stronger performance, more innovation, and greater commitment (Rigby & Ryan, 2018). However, the recent State of the Global Workplace report by Gallup, providing insights on responses of 122,416 employees from more than 160 countries, shows that less than a quarter of these employees are actively engaged and thriving

**CONTACT** Matthias Hudecek  [matthias.hudecek@ur.de](mailto:matthias.hudecek@ur.de)  Department of Experimental Psychology, University of Regensburg, Universitätsstr. 31, Regensburg 93053, Germany

© 2024 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

at work worldwide. The majority (59%) of employees are not engaged ('quiet quitting'), whereas almost every fifth employee (18%) is actively disengaged. Gallup estimates that these low engagement rates result in tremendous costs for the global economy, equaling 8.8 trillion US dollars (Gallup, 2023). In addition, this report points out that the proportion of employees watching for or actively seeking a new job is almost 50% higher among actively disengaged employees compared to their engaged counterparts. Thus, apart from the economic perspective, companies and organizations face even more negative consequences. Interestingly, most 'quiet quitting' employees have a relatively clear idea of what they would like to have changed about their workplace. Here, more than 40% directly refer to organization culture or leadership, for example, wishing their managers to 'be more approachable' or granting 'more autonomy' (Gallup, 2023, p. 9). This raises the question of how companies can maintain or promote high employee motivation. Therefore, the current research aims to provide insights into how employees' motivational quality can be maintained or improved. Drawing on self-determination theory as one of the leading meta-theories of human motivation (Ryan et al., 2022), employees' basic need satisfaction (BNS) is essential for high-quality motivation. Previous studies have already established some antecedents of BNS, such as autonomy-support leadership style (Hardré & Reeve, 2009), compensation (Olafsen et al., 2015), and job demands (Van Den Broeck et al., 2008). In our research, we focused on servant leadership (Greenleaf et al., 2002; Van Dierendonck, 2011) and error management culture (EMC; Frese & Keith, 2015; van Dyck et al., 2005) for the following reasons: First, as servant leadership concentrates explicitly on the people and the satisfaction of their needs as well as their empowerment (e.g. Verdorfer & Peus, 2014), this style is naturally related to BNS from a self-determination theory perspective. In addition, servant leadership goes beyond mere autonomy-support (e.g. Hardré & Reeve, 2009) as it requires need satisfaction in general and not only focuses on the need of autonomy. In addition, it comes very close to what participants of the State of the Global Workplace report pointed out as their most pressing need to improve motivational quality. Second, EMC addresses a research gap in the context of servant leadership and BNS. In total, our research is essential since it provides evidence-based (Briner & Rousseau, 2011) practical considerations for improving the quality of employee motivation by combining two potential antecedents of BNS into one model. Previous research has only examined simple associations between servant leadership and BNS or servant leadership and EMC. Combining all constructs contributes to a better understanding of relevant antecedents of employees' BNS which in turn is crucial for designing work environments that foster high-quality employee motivation.

### **Employee motivation**

Self-determination theory is one of the most established meta-theories of human motivation and has a solid empirical basis for the organizational context (Ryan & Deci, 2000; Van den Broeck et al., 2021). It proposes that basic need satisfaction (BNS) is crucial for obtaining high-quality motivation (Van den Broeck et al., 2016). Autonomous motivation can be maintained or promoted only if the three basic needs, namely autonomy, competence, and relatedness, are continuously fulfilled and not frustrated (Deci & Ryan, 2000). In addition, self-determination theory suggests a more nuanced differentiation of five motivation types. These form a continuum in terms of quality (from very low to very high) and can also be classified according to their degree of self-determination (Gagné et al., 2015). At the lowest end is amotivation which is contrasted at the other end by intrinsic motivation, characterizing the highest quality level. In between are three forms of extrinsic motivation (external, introjected, and identified regulation). A typical distinction along this continuum is to differentiate between controlled and autonomous motivation. Controlled motivation results from external or internal pressure, whereas autonomous forms of motivation stem from identifying with or endorsing a particular activity (Manganelli et al., 2018). In general, autonomous forms of motivation are connected to psychological well-being and favorable health outcomes (Ng et al., 2012). Regarding the organizational context, autonomous motivation is positively correlated with employee well-being (Van den Broeck et al., 2016), favorable attitudes (e.g. job satisfaction; Van den Broeck et al., 2010), and work-related behavior (e.g. performance; Cerasoli et al., 2014; Slemp et al., 2018) compared to controlled motivation performance. The degree to which the three basic needs of autonomy, competence, and relatedness are fulfilled depends on various factors, such as leadership behavior (Jensen & Bro, 2018; Leroy et al., 2015; Rahmadani et al., 2019), among others.

## ***Servant leadership***

In general, leaders have a crucial role in managing and overcoming these times of crisis (Balasubramanian & Fernandes, 2022), as their decisions affect the organizational climate as well as the interests and needs of the employees (Dirani et al., 2020). As of today, there are numerous leadership styles with a sound theoretical and empirical basis. For this research, we decided to use servant leadership for the following three reasons: First, servant leadership is a well-established leadership style (Langhof & Guldenberg, 2020) that was shown to be positively associated with performance (Hu & Liden, 2011), including other constructs such as organizational citizenship behavior (OCB; van Dierendonck et al., 2014), work engagement (De Clercq et al., 2014; Zeeshan et al., 2021), and service quality (Grisaffe et al., 2016). Thus, servant leadership meets the basic requirements of a successful leadership style. Second, a core characteristic of servant leadership is the clear focus on employees and their need satisfaction. Servant leaders first emphasize the empowerment and growth of individuals instead of putting the organization's goals, for instance, finishing projects in a given period or increasing sales figures, before the success and well-being of individuals (Gandolfi et al., 2017). Thus, the individual's success becomes the success of the organization as a whole. And it pays to put your employees' needs ahead of your own: When employees' well-being and growth are prioritized, they become more engaged and effective in their work (Eva et al., 2019). It is not a turn from performance expectations but from sacrificing people for profit, which has not been proven very profitable in the long term (Sendjaya, 2015). Focusing on followers first differentiates servant leadership from other leadership styles (Stone et al., 2004). Other than, for example, transformational leadership, which focuses on providing a vision and transforming employees to increase productivity and performance (Allen et al., 2016), servant leadership primarily concentrates on the people within a team or an organization. Previous studies have shown that enhancing employees' needs is indeed a central element of servant leadership, distinguishing it from transformational leadership (van Dierendonck et al., 2014). Therefore, servant leadership seemed to be an obvious choice for our study to function as a predictor of employees' BNS. Third, servant leadership was also shown to be associated with organizational culture (Sihombing et al., 2018). Thus, we assume that servant leadership cannot only be a predictor of BNS, but we also expected it to be positively associated with EMC. Some studies showed that servant leadership contributes to increasing the climate of trust (Joseph & Winston, 2005; Sendjaya & Pekerti, 2010), psychological safety (Ahmed et al., 2023; Brohi et al., 2018), or improving knowledge-sharing (Song et al., 2015). These are essential prerequisites for a positive error culture (e.g. Cusin & Goujon-Belghit, 2019). In total, servant leadership is a well-established leadership style that is linked to important outcome variables of companies' success as well as need satisfaction and organizational culture. Thus, the effects of servant leadership on BNS and EMC were tested in this research.

## ***Error management culture***

Besides leadership, other aspects can also influence BNS in the workplace. These include personality traits like extraversion or neuroticism (Andreassen et al., 2010; Sulea et al., 2015), sociodemographic factors such as age (Lataster et al., 2022), and organizational aspects like job demands (Desrumaux et al., 2015; Van Den Broeck et al., 2008), social support (Kassis et al., 2019) or organizational politics (Rosen et al., 2014). In the present study, we examine the effects of dealing constructively and positively with mistakes in an organizational context. We choose this focus for the following reasons: First of all, from a practical perspective, dealing with errors constructively is highly relevant for successful companies (Edmondson, 2011; Putz et al., 2013). Making mistakes is part of everyday life in companies. Thus, in recent years, more and more organizations are addressing the question of how to deal constructively with errors. Second, especially in times of crisis, when perceived uncertainty increases (Lermer & Hudecek, 2022), it is crucial to deal with errors in a positive way to avoid promoting further uncertainty and fear among employees. Third, making mistakes is part of many learning and innovation processes (Edmondson, 2019). Since continuous learning is an essential factor, particularly in modern companies and with new forms of work (van Breda-Verduijn & Heijboer, 2016), it is crucial to establish a culture that ensures dealing constructively and transparently with errors.

In this context, previous research has examined two error-handling strategies: On the one hand, error prevention, i.e. individual errors are considered as a source of blame (Cusin & Goujon-Belghit, 2019). Thus, employees within an organization focus on preventing the occurrence of errors in order not to suffer negative consequences (Frese & Keith, 2015). Intuitively, preventing errors is the best possible strategy for an organization. However, research has shown that focusing solely on avoiding errors can have adverse effects. Errors are hidden as a consequence, and potential learning experiences based on errors are reduced, as are psychological safety and job performance (Edmondson, 1999; Edmondson & Moingeon, 1996; van Dyck et al., 2005). On the other hand, error management is discussed as an alternative concept. This strategy suggests ‘to accept errors as a part of life, and invest one’s effort in minimizing their negative consequences’ (Dimitrova et al., 2017, p. 658). Thus, employees are encouraged to focus on increasing the positive consequences of errors, communicating about errors, and sharing error knowledge (van Dyck et al., 2005). This is understood as a positive error management culture (EMC). It implies the acceptance of people making errors. EMC uses ‘organizational practices related to communicating about errors, to sharing error knowledge, to helping in error situations, and to quickly detecting and handling errors to deal with errors’ (van Dyck et al., 2005, p. 1229). In addition, it is crucial that employees feel the social backing and integration in a valuing team to communicate errors. For this, however, a communicative discourse about errors must be established; the precondition is a high level of trust among the workforce and all hierarchy levels (Rami & Gould, 2016). If such an EMC can be established, individual and organizational learning from error is possible, which is supported by several studies. A good EMC raises, for instance, the individual and organizational innovative capability (Fischer et al., 2018; Kruse & Wegge, 2024) and an organization’s performance and economic success (Keith & Frese, 2011; van Dyck et al., 2005).

Regarding BNS, we assume a relationship with EMC. Positive EMC should be positively associated with BNS, whereas dealing with errors in a blaming manner should deteriorate BNS. Imagine an employee has been working on a project, and a mistake has been made. Although blaming them might be a common tendency of managers—and most human beings (Skarlicki et al., 2017)—such behavior might frustrate the employee’s basic needs. Autonomy might be compromised as the employee is less confident about taking risks or making their own decisions in the future. Competence could also be affected if the employee feels they have not done a good job. Lastly, relatedness could also be compromised if the employee feels exposed by the manager’s reaction. In fact, research has shown that employees’ perceived organizational error tolerance positively impacts their psychological well-being (Wang et al., 2020) and is positively associated with individual and organizational innovativeness (Fischer et al., 2018). Thus, leaders should support and facilitate their employees as best as possible. Instead of abusive leadership (Ali et al., 2022) and establishing a blaming culture (Provera et al., 2010), errors should be handled constructively. Here, we argue that managers not only affect BNS through their behavior but also influence the EMC in their teams. Servant leadership should have a positive impact, as servant leaders encourage their employees to come up with new ideas, give them room to make their own decisions, and prioritize forgiving past mistakes (Verdorfer & Peus, 2014). Previous studies have shown that authentic (Farnese et al., 2019) and humble (Zhang & Song, 2020) leadership have positive effects on positively and constructively dealing with errors. To the best of our knowledge, no studies have addressed the relationship between servant leadership and error management culture.

### ***Aims of the current study and research hypotheses***

In the present study, we examine the association between servant leadership, EMC, and BNS on the motivational quality of employees. We want to investigate if and how servant leadership contributes to creating a positive EMC and how these two factors are associated with BNS to keep employees motivated, particularly in times of crisis. To test these associations, we propose a research model that includes a serial mediation of EMC and BNS for the relationship between servant leadership and employee motivation (see Figure 1). In total, we test seven hypotheses: According to previous studies, in our first hypothesis (H1), we expect servant leadership to influence work motivation positively (Bande et al., 2016). In addition, we expect servant leadership to predict BNS (Hypothesis H2) since it focuses first on the empowerment and growth of individuals (Gandolfi et al., 2017). Regarding error

management, we hypothesize that servant leadership predicts a positive EMC (Hypothesis H3). As of today, there is only little research on the influence of leadership style on EMC. However, authentic (Farnese et al., 2019) and humble (Zhang & Song, 2020) leadership, two constructs closely associated with servant leadership (Hoch et al., 2018), contribute positively to EMC. In addition, any cultural change or intervention is formed and influenced by the leadership of an organization (Ford & Ford, 2012). We also hypothesize a positive association between EMC and BNS (Hypothesis H4). Lastly, our model suggests a positive association between BNS and employee motivation (Hypothesis H5). Referring to self-determination theory, we differentiate different types of motivation, as previous studies have highlighted the importance of considering the various kinds of motivation separately when comparing favorable work-related outcomes (Van den Broeck et al., 2021). Consistent with previous research (e.g. Gagné et al., 2015), we expect BNS to be more strongly (and positively) associated with autonomous forms of motivation than with controlled forms of motivation. Regarding amotivation, we expect a negative association. Lastly, as Hypothesis 7 (H7), we propose a serial mediation of EMC and BNS for the relationship between servant leadership and employee motivation. Our complete research model is illustrated in Figure 1.

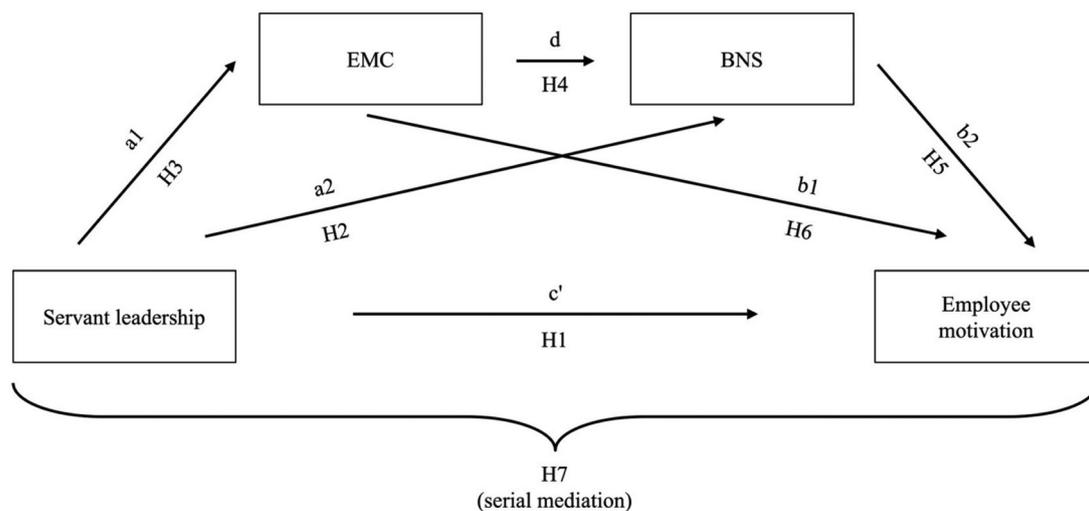
## Study 1

### Method

#### Sample

We conducted an online survey shortly after mitigating the first lockdown in Germany due to the COVID-19 outbreak in 2020 (May 17 to June 24). Participants were 620 (73% female) undergraduate students from the FOM University in Germany ( $M_{age}=26.40$ ,  $SD_{age}=4.03$ ,  $Range_{age}=19-52$ ). As study programs at this university are designed to combine study and work, 93% of the participants worked at least part-time (average weekly working hours  $M=32.43$ ,  $SD=9.00$ ,  $Range=0-60$ ). 19% of the participants were on short-time work due to the Coronavirus pandemic, with nearly half (43%) working from home (6% of the sample worked from home before the outbreak of COVID-19). Participants were rewarded with course credits for their participation.

All participants were fully informed about the study and gave informed consent to participate by clicking a specific button at the beginning of the online study stating 'I hereby confirm that I am at least 18 years old, have read and understood the declaration of consent, and agree to the participation conditions stated above'. In doing so, they were explicitly informed that all data would be kept confidential and that they could withdraw from the study at any time without giving a reason.



**Figure 1.** Research model to test serial mediation.

Note: BNS: basic need satisfaction; EMC: error management culture; H1 to H7 refers to the research hypotheses.

## Measures

All study materials, as well as the data, can be found in an online repository (<https://osf.io/nmuby/>). BNS was measured with a German adaptation (Grünwald et al., 2024) of the Work-related Basic Need Satisfaction scale (W-BNS) of Van den Broeck et al. (2010). A total of 18 items (six items for each need) on a 6-point scale (1 = *totally disagree* to 6 = *totally agree*) were used to capture autonomy (e.g. 'I feel free to do my job the way I think it could best be done'), competence (e.g. 'I really master my tasks at my job') and relatedness ('At work, I feel part of a group'). All 18 items were averaged to an index of BNS. As in previous studies (De Cooman et al., 2013), the internal consistency of this scale was good (Cronbach's  $\alpha=.86$ ).

Different motivation types related to self-determination theory were measured using the German version of the Multidimensional Work Motivation Scale (MWMS) of Gagné et al. (2015). Participants had to complete nine items regarding the question 'Why do you or would you put effort into your current job?' on a 7-point Likert scale (1 = *not at all* to 7 = *completely*). Sample items are: 'I don't know why I'm doing this job, it's pointless work' (amotivation,  $\alpha=.84$ ), 'Because others will reward me financially only if I put enough effort in my job (e.g. employer, supervisor ...)' (external regulation,  $\alpha=.70$ ), 'Because it makes me feel proud of myself' (introjected regulation,  $\alpha=.67$ ), 'Because putting efforts in this job has personal significance to me' (identified regulation,  $\alpha=.84$ ), and 'Because what I do in my work is exciting' (intrinsic regulation,  $\alpha=.94$ ).

In order to assess leadership behavior, the German version of the Servant Leadership Survey (SLS) was used to assess the perceived leadership style from the employees' perspective (Verdorfer & Peus, 2014). Thirty items (e.g. 'My supervisor seems to be more excited about the success of colleagues than his own') were rated on a 6-point Likert scale (1 = *never* to 6 = *always*) and averaged to form a single factor ( $\alpha=.93$ ).

Error management culture was measured with the German version of the Error Management Scale (van Dyck et al., 2005). Thus, 17 items (e.g. 'For us, errors are very useful for improving the work process') on a 5-point scale (1 = *not at all* to 5 = *completely*) capture the degree to which errors made within an organization are perceived as something useful or as an opportunity to learn. All answers were averaged to form a single factor ( $\alpha=.89$ ).

## Results

As expected, there were significant positive correlations between servant leadership and autonomous forms of motivation. Regarding amotivation, we found significant negative correlations. Also, there were significant correlations between servant leadership and controlled forms of motivation. However, these associations were weaker compared to autonomous forms of motivation. Similar patterns were found for the relationships between BNS or EMC, respectively, and the different forms of motivation (see Table 1).

## Mediation analyses

In order to analyze the hypothesized relationships between servant leadership style and the different motivation types, we ran five serial mediation analyses following Hayes, (2018) proposed steps. Mediation analyses were performed using R Studio and the lavaan package (Rosseel, 2012). Confidence intervals for indirect effects were calculated using Bootstrap with 5,000 estimations. The results are displayed in Table 2.

## Amotivation

Servant leadership had a significant negative effect on amotivation ( $b=-.63$ ,  $t(618)=-11.04$ ,  $p<.001$ ). As theorized, this effect was serially mediated by EMC and BNS. The indirect pathway of the impact of servant leadership on amotivation via EMC and BNS was significant (indirect effect<sub>X-M1-M2-Y</sub> =  $-.09$ ,  $z=-5.09$ ,  $p<.001$ , 95% CI =  $[-.13;-.06]$ ). In addition, the indirect pathways of servant leadership on amotivation via EMC (indirect effect<sub>X-M1-Y</sub> =  $-.10$ ,  $z=-2.78$ ,  $p=.005$ , 95% CI =  $[-.16;-.03]$ ) and via BNS (indirect effect<sub>X-M2-Y</sub> =  $-.20$ ,  $z=-5.81$ ,  $p<.001$ , 95% CI =  $[-.28;-.14]$ ) were significant. All indirect effects partially accounted for the overall impact of servant leadership on amotivation, with the direct effect being significantly reduced ( $b=-.24$ ,  $SE=.07$ ,  $p<.001$ ).

**Table 1.** Means, standard deviations, and correlations with confidence intervals.

Variable	M	SD	1	2	3	4	5	6	7	8
1. SL	3.96 [4.07]	0.80 [0.81]		.50** [.44, .56]	.50** [.44, .55]	-.41** [-.47, -.34]	.03 [-.04, .11]	.16** [.09, .23]	.34** [.28, .41]	.46** [.39, .51]
2. BNS	4.24 [4.28]	0.57 [0.58]	.49** [.43, .55]		.36** [.29, .42]	-.52** [-.58, -.47]	-.05 [-.12, .03]	.15** [.08, .23]	.46** [.40, .52]	.62** [.57, .66]
3. EMC	3.81 [3.84]	0.54 [0.53]	.52** [.46, .58]	.46** [.40, .52]		-.26** [-.33, -.19]	.10** [.03, .17]	.17** [.10, .24]	.22** [.15, .29]	.26** [.19, .33]
4. Amotivation	2.07 [1.96]	1.25 [1.18]	-.41** [-.47, -.34]	-.53** [-.58, -.47]	-.38** [-.45, -.31]		-.11** [-.19, -.04]	-.34** [-.40, -.27]	-.65** [-.69, -.61]	-.66** [-.70, -.62]
5. External	4.22 [4.15]	1.02 [1.11]	.09* [.01, .17]	-.01 [-.09, .07]	.08* [.00, .16]	-.02 [-.10, .05]		.48** [.42, .54]	.18** [.11, .25]	.07 [-.00, .15]
6. Introjected	4.95 [4.90]	1.07 [1.13]	.17** [.09, .24]	.11** [.03, .18]	.20** [.12, .27]	-.31** [-.38, -.24]	.43** [.36, .49]		.55** [.50, .60]	.30** [.24, .37]
7. Identified	5.45 [5.44]	1.17 [1.20]	.37** [.30, .43]	.47** [.41, .53]	.38** [.31, .44]	-.61** [-.65, -.55]	.17** [.09, .25]	.53** [.47, .58]		.64** [.59, .68]
8. Intrinsic	4.53 [4.60]	1.52 [1.52]	.48** [.42, .54]	.63** [.58, .67]	.37** [.30, .43]	-.61** [-.65, -.55]	.08* [.00, .16]	.28** [.21, .35]	.62** [.57, .66]	

Note: Values below the diagonal correspond to the results of study 1, values above to the results of study 2, respectively. Values of *M* and *SD* in brackets correspond to the results of study 2. *SL* = servant leadership; *BNS* = basic need satisfaction; *EMC*: error management culture. *M* and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). \* indicates  $p < .05$ . \*\* indicates  $p < .01$ .

**Table 2.** Results of serial mediation for study 1 between servant leadership and different types of employee motivation with EMC as mediator 1 and BNS as mediator 2.

Motivation type	a1 [EMC]	a2 [BNS]	b1 [EMC]	b2 [BNS]	d	c'	c	a1*b1 [EMC]	a2*b2 [BNS]	a1*d*b2 [serial]	Result
Amotivation	0.354**	0.239**	-0.270**	-0.892**	0.299**	-0.230**	-0.632**	-0.095**	-0.213**	-0.094**	SM; PM EMC; PM BNS
External	0.354**	0.239**	0.135 ns	-0.162 ns	0.299**	0.123 ns	0.115*	0.048 ns	-0.039 ns	-0.017 ns	No mediation
Introjected	0.354**	0.239**	0.305**	-0.021 ns	0.299**	0.126 ns	0.226**	0.108**	-0.005 ns	-0.002 ns	FM EMC
Identified	0.354**	0.239**	0.339**	0.703**	0.299**	0.175**	0.537**	0.120**	0.168**	0.074**	SM; PM EMC; PM BNS
Intrinsic	0.354**	0.239**	0.029 ns	1.383**	0.299**	0.429**	0.916**	0.010 ns	0.330**	0.146**	SM; PM BNS

Note: BNS: basic need satisfaction; EMC: error management culture; SM: serial mediation; FM: full mediation; PM: partial mediation.

**External motivation.** Servant leadership significantly positively affected external motivation ( $b=.12$ ,  $t(618)=2.25$ ,  $p=.025$ ). However, the effect was marginal ( $R^2=0.008$ ). No mediation effects were found for this motivation type, as all indirect effects missed significance.

**Introjected motivation.** Servant leadership had a significant positive effect on introjected motivation ( $b=.23$ ,  $t(618)=4.28$ ,  $p<.001$ ). No serial mediation was found for this effect. Only the indirect pathway of the effect of servant leadership on introjected motivation via EMC was significant (indirect effect $_{X-M1-Y}=.11$ ,  $z=2.92$ ,  $p=.004$ , 95% CI=[.04;.18]). This indirect effect fully accounted for the overall impact of servant leadership on introjected motivation, with the direct effect no longer being significant ( $b=.12$ ,  $SE=.07$ ,  $p=.069$ ).

**Identified motivation.** Servant leadership had a significant positive effect on identified motivation ( $b=.54$ ,  $t(618)=9.83$ ,  $p<.001$ ). As expected, this effect was serially mediated by EMC and BNS. The indirect pathway of the effect of servant leadership on identified motivation via EMC and BNS was significant (indirect effect $_{X-M1-M2-Y}=.07$ ,  $z=4.57$ ,  $p<.001$ , 95% CI=[.05;.11]). In addition, the indirect pathways of servant leadership on identified motivation via EMC (indirect effect $_{X-M1-Y}=.12$ ,  $z=3.14$ ,  $p=.002$ , 95% CI=[.05;.20]) and via BNS (indirect effect $_{X-M2-Y}=.16$ ,  $z=5.23$ ,  $p<.001$ , 95% CI=[.11;.22]) were significant. All indirect effects partially accounted for the overall impact of servant leadership on identified motivation, with the direct effect being significantly reduced ( $b=.18$ ,  $SE=.07$ ,  $p=.006$ ).

**Intrinsic motivation.** Servant leadership had a significant positive effect on intrinsic motivation ( $b=.92$ ,  $t(618)=13.70$ ,  $p<.001$ ). As expected, this effect was serially mediated by EMC and BNS. The indirect pathway of the effect of servant leadership on intrinsic motivation via EMC and BNS was significant (indirect effect $_{X-M1-M2-Y}=.15$ ,  $z=5.66$ ,  $p<.001$ , 95% CI=[.10;.20]). In addition, the indirect pathway of servant leadership on intrinsic motivation via BNS (indirect effect $_{X-M2-Y}=.32$ ,  $z=6.61$ ,  $p<.001$ , 95% CI=[.23;.42]) was significant. Both indirect effects partially accounted for the overall impact of servant leadership on intrinsic motivation, with the direct effect being significantly reduced ( $b=.44$ ,  $SE=.08$ ,  $p<.001$ ).

## Discussion Study 1

Our study investigated if and how servant leadership contributes to creating a positive EMC and satisfying employees' basic needs to promote employee motivation. We included EMC as another relevant factor to expand previous research and considered EMC and BNS as serial mediators for the relationship between servant leadership and motivation.

As in previous studies (Chiniara & Bentein, 2016; Gagné et al., 2015), we found positive associations between servant leadership, BNS, and autonomous forms of motivation, whereas there were negative correlations with amotivation. Consequently, our study once more emphasizes the importance of BNS and a positive leadership style regarding employee motivation, which has already been shown to be associated with many beneficial work-related outcomes like performance (Liden et al., 2014; Saleem et al., 2020) and employee attitudes (Ozyilmaz & Cicek, 2015).

In addition to BNS, our study examined EMC in this context for the first time. As expected, servant leadership also had a positive effect on EMC. Compared to BNS, the positive impact of servant leadership on EMC was even stronger. This finding suggests that servant leadership not only contributes to positive outcomes regarding the employees (here: basic needs) but also to the organizational culture (here: error management). Further, EMC could also directly explain some variance of amotivation, introjected, and identified motivation. As EMC was negatively associated with amotivation and positively with introjected and identified motivation, positive EMC improves employee motivation, more precisely, employees' autonomous motivation. In addition, EMC also needs to be considered when it comes to BNS. Our findings suggest that EMC can be seen as another essential predictor of BNS.

Moreover, a combined perspective on EMC and BNS supported our serial mediation hypothesis for three of the five motivation types, i.e. amotivation, identified, and intrinsic motivation. This implies that employee motivation is not only directly affected by servant leadership, but indirect effects must also be taken into account. In particular, BNS and EMC need to be considered simultaneously when examining the impact of servant leadership on different types of motivation.

Lastly, results showed that the different types of motivation need to be considered separately. The indirect effects of servant leadership are not the same for the different types of motivation. The more autonomous motivation gets, the more positive the effects of servant leadership become. This leads us to the conclusion that the more intrinsically employees are motivated, the more they benefit from servant leadership. This does not apply, though, to employees with less autonomous (i.e. external and introjected) forms of motivation, who seem to benefit less from servant leadership. Results of the mediation analysis and indirect effects of BNS and EMC also varied for the different types of motivation. EMC and BNS serially mediated the relationship between servant leadership and amotivation, identified, and intrinsic motivation. For external motivation, no mediation was found. Introjected motivation was fully mediated by EMC. Thus, the different types of motivation need to be considered separately, as the effects of meditation might vary.

This study was conducted during the first lockdown of the Coronavirus pandemic. Although neither the economic nor the psychological effects of the crisis were tangible at this point, looking back shows the particular importance of the present study, which examined employee motivation and possible influencing factors during this crisis. Especially now, it is a relevant question of how employees stay motivated in the face of all the uncertainties and additional psychological stress factors caused by the crisis. The current study shows associations that appeared at the time of the pandemic. Thus, the derived practical implications might especially promote employee motivation and associated work-relevant factors in crises and challenging times. Therefore, we replicated the results in a second study one year later.

## Study 2

### Method

#### Sample

Data collection for the second study was conducted during the third lockdown in 2021 in Germany (March 08 to May 16). Participants were 686 (70% female) undergraduate students from the FOM University in Germany ( $M_{age}=26.38$ ,  $SD_{age}=4.63$ ,  $Range_{age}=18-56$ ). As study programs at this university are designed to combine study and work, 96% of the participants worked at least part-time (average weekly working hours  $M=32.82$ ,  $SD=7.90$ ,  $Range=15-55$ ). 9% of the participants were on short-time work due to the Coronavirus pandemic. The number of respondents working from home has slightly increased compared to study 1 (47%). Again, 6% of the sample worked from home before the outbreak of COVID-19. As in Study 1, participants were rewarded with credits for their participation. The process of obtaining participants' consent was the same as in Study 1.

#### Measures and data analysis

We applied the same measures for servant leadership ( $\alpha=.93$ ), BNS ( $\alpha=.81$ ), EMC ( $\alpha=.89$ ), amotivation ( $\alpha=.84$ ), external ( $\alpha=.73$ ), introjected ( $\alpha=.68$ ), identified ( $\alpha=.84$ ) and intrinsic motivation ( $\alpha=.94$ ) as in Study 1. Again, all study materials, as well as the data, can be found in the online repository (<https://osf.io/nmuby/>).

### Results

As in Study 1, we found significant positive correlations between servant leadership and autonomous forms of motivation. Regarding amotivation, we found significant negative correlations. Contrary to study 1, no correlation was found between servant leadership and external motivation; there was only a significant association between servant leadership and introjected motivation. Again, this association was weaker compared to autonomous forms of motivation. Similar patterns were found for the relationships between BNS or EMC, respectively, and the different forms of motivation (see Table 1).

#### Mediation analyses

In order to analyze the hypothesized relationships between servant leadership and the different types of motivation, we performed two serial mediation analyses following the same procedure as in Study 1. The results are displayed in Table 3.

**Table 3.** Results of serial mediation for study 2 between servant leadership and different types of employee motivation with EMC as mediator 1 and BNS.

Motivation type	a1 [EMC]	a2 [BNS]	b1 [EMC]	b2 [BNS]	d	c'	c	a1*b1 [EMC]	a2*b2 [BNS]	a1*d*b2 [serial]	Result
Amotivation	0.325**	0.304**	-0.046ns	-0.872**	0.154**	-0.268**	-0.593**	-0.015 ns	-0.265**	-0.044**	SM; PM BNS
External	0.325**	0.304**	0.261**	-0.190*	0.154**	0.025 ns	0.042 ns	0.085**	-0.055*	-0.010 ns	PM BNS; PM EMC
Introjected	0.325**	0.304**	0.233**	0.162 ns	0.154**	0.088 ns	0.221**	0.076*	0.049 ns	0.008 ns	FM EMC
Identified	0.325**	0.304**	0.036ns	0.799**	0.154**	0.213**	0.508**	0.012 ns	0.243**	0.040**	SM; PM BNS
Intrinsic	0.325**	0.304**	-0.076ns	1.377**	0.154**	0.384**	0.848**	-0.025 ns	0.419**	0.069**	SM; PM BNS

Note: BNS: basic need satisfaction; EMC: error management culture; SM: serial mediation; FM: full mediation; PM: partial mediation.

**Amotivation.** Servant leadership had a significant negative effect on amotivation ( $b=-.59$ ,  $t(684)=-11.67$ ,  $p<.001$ ). As theorized, this effect was serially mediated by EMC and BNS. The indirect pathway of the effect of servant leadership on amotivation via EMC and BNS was significant (indirect effect $_{X-M1-M2-Y}=-.05$ ,  $z=-3.44$ ,  $p=.001$ , 95% CI=[-.08;-.02]). In addition, the indirect pathways of servant leadership on amotivation via BNS (indirect effect $_{X-M2-Y}=-.25$ ,  $z=-7.43$ ,  $p<.001$ , 95% CI=[-.32;-.19]) was significant. Both indirect effects partially accounted for the overall impact of servant leadership on amotivation, with the direct effect being significantly reduced ( $b=-.28$ ,  $SE=.06$ ,  $p<.001$ ).

**External motivation.** Servant leadership had no significant effect on external motivation ( $b=.04$ ,  $t(684)=0.82$ ,  $p=.415$ ). No serial mediation was found for this effect. Still, both indirect pathways of servant leadership on external motivation via EMC (indirect effect $_{X-M1-Y}=.09$ ,  $z=2.80$ ,  $p=.005$ , 95% CI=[.02;.15]) and via BNS (indirect effect $_{X-M2-Y}=-.06$ ,  $z=-2.01$ ,  $p=.044$ , 95% CI=[-.11;-.004]) were significant. Both indirect effects fully accounted for the overall impact of servant leadership on external motivation ( $b=.02$ ,  $SE=.07$ ,  $p=.726$ ).

**Introjected motivation.** Servant leadership had a significant positive effect on introjected motivation ( $b=.22$ ,  $t(684)=4.23$ ,  $p<.001$ ). No serial mediation was found for this effect. Only the indirect pathway of the effect of servant leadership on introjected motivation via EMC was significant (indirect effect $_{X-M1-Y}=.07$ ,  $z=2.27$ ,  $p=.023$ , 95% CI=[.01;.14]). This indirect effect fully accounted for the overall impact of servant leadership on introjected motivation, with the direct effect no longer being significant ( $b=.09$ ,  $SE=.07$ ,  $p=.220$ ).

**Identified motivation.** Servant leadership had a significant positive effect on identified motivation ( $b=.51$ ,  $t(684)=9.61$ ,  $p<.001$ ). As expected, this effect was serially mediated by EMC and BNS. The indirect pathway of the effect of servant leadership on identified motivation via EMC and BNS was significant (indirect effect $_{X-M1-M2-Y}=.04$ ,  $z=3.37$ ,  $p=.001$ , 95% CI=[.02;.07]). In addition, the indirect pathway of servant leadership on identified motivation via BNS (indirect effect $_{X-M2-Y}=.23$ ,  $z=6.19$ ,  $p<.001$ , 95% CI=[.16;.31]) was significant. Both indirect effects partially accounted for the overall impact of servant leadership on autonomous motivation, with the direct effect being significantly reduced ( $b=.23$ ,  $SE=.07$ ,  $p=.001$ ).

**Intrinsic motivation.** Regarding intrinsic motivation, results were similar to study 1. Servant leadership had a significant positive effect on intrinsic motivation ( $b=.85$ ,  $t(684)=13.38$ ,  $p<.001$ ). As expected, this effect was serially mediated by EMC and BNS. The indirect pathway of the effect of servant leadership on autonomous motivation via EMC and BNS was significant (indirect effect $_{X-M1-M2-Y}=.08$ ,  $z=3.52$ ,  $p<.001$ , 95% CI=[.04;.12]). In addition, the indirect pathway of servant leadership on identified motivation via BNS (indirect effect $_{X-M2-Y}=.40$ ,  $z=8.03$ ,  $p<.001$ , 95% CI=[.31;.51]) was significant. Both indirect effects partially accounted for the overall impact of autonomy support on autonomous motivation, with the direct effect being significantly reduced ( $b=.40$ ,  $SE=.08$ ,  $p<.001$ ).

## Discussion Study 2

Study 2 aimed to replicate the results of the first survey approximately one year later. When the second study was conducted, again, several different anti Coronavirus regulations were in effect in Germany (Lermer et al., 2021). In addition to a lockdown that affected parts of public life, companies were required to allow their employees to work from home offices (Corona Datenplattform, 2021). Compared to the first study, the proportion of employees working from home has slightly increased to just under 50% of respondents. Similar to other countries, companies had to adapt quickly and repeatedly to changing regulations. These change processes were particularly challenging for leaders because they had to navigate these uncertain times. We assumed that the effects of the Coronavirus crisis were tangible at this point and wanted to examine if the servant leadership style also works in times of crisis.

The results of Study 2 mostly replicate our findings of Study 1. Servant leadership was again negatively correlated to amotivation and increasingly positive to more autonomous types of motivation. Only external motivation was not significantly associated with servant leadership. Additionally, servant leadership was significantly associated with EMC and BNS. Thus, EMC and BNS again tend to be significantly higher when servant leadership is practiced. Contrary to Study 1, servant leadership was slightly more strongly associated with BNS than with EMC.

Again, the relationship between servant leadership and the different motivation types has to be considered in detail. EMC and BNS serially mediated the relationship between servant leadership and amotivation, identified as well as intrinsic motivation. Autonomous motivation can be increased, whereas amotivation can be reduced through the effects of servant leadership, EMC, and BNS. Thus, employee motivation can be affected by improving EMC and BNS. This underpins the findings of Study 1, showing the critical role EMC and BNS play for employee motivation. Further, BNS was again significantly positively associated with identified and intrinsic motivation, whereas there was a significant negative relationship with amotivation and external motivation. Thus, our study again emphasizes the importance of BNS and a positive leadership style. In addition, we showed that EMC has to be seen as a relevant factor in this context, as EMC was again significantly associated with BNS.

In contrast to Study 1, EMC was significantly positively associated with external and introjected motivation and negatively associated with amotivation. This might indicate that the effects of the organizational culture (i.e. error management) on motivation can vary. The results could also have been caused by the fact that about 50 percent of employees were not physically present in the company at the time of the study and hadn't been for some time, as 43 percent of employees were already working from home during the first study one year before. It seems reasonable that organizational culture, in particular, can be sensitive to long-lasting changes, such as working remotely, which could explain the varying associations regarding EMC for the different measurement times during the crises.

## General discussion

The present studies investigated the relationship between servant leadership behavior and employee motivation from a self-determination theory perspective, including EMC. In total, four major findings arise from this research:

1. First, EMC and BNS were considered mediators in the relationship between servant leadership and motivation. As in previous studies (Brière et al., 2021; Canavesi & Minelli, 2022) and supporting our Hypotheses H1, H2, and H5, we found positive associations between servant leadership, BNS, and autonomous forms of motivation, whereas there were negative correlations with amotivation in both studies. Thus, servant leadership style was shown to be positively correlated to employees' BNS, which in turn is related to many beneficial work-related outcomes such as performance, job satisfaction, or organizational commitment (Grünwald et al., 2024; Van den Broeck et al., 2010, 2021). In addition to BNS, our study examined EMC in this context for the first time. Supporting Hypothesis H3, servant leadership also had a positive effect on EMC. Servant leadership positively affected EMC almost as much as BNS in Study 2; in Study 1, its positive association with EMC was even greater than with BNS. Thus, in addition to increasing BNS of employees, a servant leadership style also improves a positive EMC in organizations. This is important, as EMC itself could also directly explain some variance of introjected, identified, and amotivation in study 1. However, this effect was inconsistent across our samples since EMC was only significantly positively correlated to external and introjected motivation in study 2. Thus, Hypothesis H6 was only partially supported. These results indicate that the effects of EMC can vary and might be due to the different measurement times during the pandemic (beginning vs. one year later after a long-lasting lockdown). Here, future research could be helpful to obtain further insights.
2. As a second major finding supporting Hypothesis H4, both studies confirmed a positive association between EMC and BNS. This represents an extension of existing research, as previous outcomes of EMC primarily relate to employee creativity (Geng & Tang, 2019), employee well-being (Zhang & Song, 2020), motivation (Schlamann et al., 2023), or performance-related outcomes (Keith & Frese, 2011; van Dyck et al., 2005). This indicates that an organization should be considered as a whole. Besides the leadership style, EMC should be taken into account as well. Thus, employees' BNS can be increased, which is especially important during times of crisis, as BNS is connected to more autonomous forms of motivation (Van den Broeck et al., 2021), performance (Ryan et al., 2022), and employee well-being (Van den Broeck et al., 2016), among others.
3. Third, we found a serial mediation for the relationship between servant leadership and three of the five different motivation types, i.e. amotivation, identified, and intrinsic motivation, for both studies.

This partially supports Hypothesis H7 and implies that EMC and BNS should be considered simultaneously. It can be assumed that servant leaders, through their behavior, create an environment in which employees' needs are sufficiently met. In addition, they also make a safe working atmosphere and consequently contribute to a more positive culture. Instead of promoting a climate of fear and uncertainty, they establish a constructive way of dealing with mistakes. This, in turn, positively affects the satisfaction of employees' needs. In this way, a high quality of motivation can be maintained by promoting autonomous regulation and avoiding amotivation.

4. As a fourth major finding we found different indirect effects of servant leadership and different mediation effects for the different types of motivation. The effects of servant leadership increase for more autonomous forms of motivation, i.e. more intrinsically motivated employees benefit more from servant leadership. The effects of BNS and EMC also varied for the different forms of motivation, tending to be negatively associated with amotivation and positively correlated with more autonomous forms of motivation. Nevertheless, in summary, servant leadership, BNS, and EMC could serve as protective factors concerning amotivation, consequently influencing matters like fluctuation (Imran et al., 2017; Miao et al., 2020) and performance (Cerasoli et al., 2014; Thibault Landry et al., 2017).

### **Theoretical contributions**

Our research has several theoretical contributions. First, both studies tie in with the vast body of research on BNS and the different forms of motivation. Here, previous findings could be fully replicated (cf. Ryan et al., 2022). Also, we could establish the typical finding that BNS functions as a mediator for the relationship between leadership behavior and employee motivation (e.g. Jiang & Wei, 2024; Kovjanic et al., 2012; Vandercammen et al., 2014). Second, regarding the positive effects of servant leadership on BNS and more autonomous forms of motivation, the findings of our studies also fit into the existing research (Xue et al., 2022). However,—to the best of our knowledge—both studies, for the first time, examined the effects of servant leadership on all five different motivation forms according to self-determination theory. Previous studies only differentiated between autonomous vs. controlled motivation (Slemp et al., 2018) or focused on intrinsic motivation (Bande et al., 2016). The current research approach was thus more nuanced, underlining the importance of taking a multidimensional perspective rather than a one-size-fits-all solution. Third, regarding EMC, we could establish a positive association with BNS and servant leadership. Introducing EMC as a positive outcome of servant leadership and a mediator in the relationship between leadership and motivation types is a novel contribution to the literature. These findings thus expand existing literature as previous studies mainly focused on direct outcomes of EMC (e.g. Keith & Frese, 2011; van Dyck et al., 2005; Zhang & Song, 2020). Both studies present some first evidence that servant leadership behavior can be seen as a significant antecedent of EMC. In addition, this research—again, to the best of our knowledge—is the first to combine EMC with BNS. Thus, the effect of EMC on employee motivation can, in turn, be embedded in and explained from a self-determination theory perspective. Accordingly, results suggest that certain features of the organizational culture, such as EMC, should be considered as a mechanism to explain the positive association between servant leadership and BNS. This is in line with other findings that suggest a mediating role of organizational culture on the positive outcomes of servant leadership (Carter & Baghurst, 2014; Ebener & O'Connell, 2010). In addition, we found a serial mediation via EMC and BNS between servant leadership with amotivation, identified, and intrinsic motivation for both studies. This expands the understanding of how managers affect their employees' BNS and their motivation. The partial mediation suggests that EMC and BNS contribute to explaining the relationship between servant leadership and motivation. However, there might be additional processes or variables that also influence this association. For example, servant leadership was shown to affect justice perceptions of employees (Mayer et al., 2008), which positively impacted their motivation.

### **Practical implications**

Organizations can use the findings of our study to increase their employees' motivational quality. This is important for a company's success as numerous studies have shown that more autonomous forms of

motivation are related to many beneficial work-related outcomes, such as performance, job satisfaction, or organizational commitment (Grünwald et al., 2024; Van den Broeck et al., 2010, 2021). This, in turn, emphasizes the importance of meeting employees' needs for autonomy, competence, and relatedness, as well as establishing a positive and constructive error management culture. Here, the results of our research stress that managers play a crucial role and that servant leadership behaviors are especially beneficial to improving EMC and BNS. This applies even more in times of crisis (Mayer, 2010). Thus, our study's most important practical implication is that organizations should strive to establish and support servant leadership behaviors. Since servant leadership can enhance work motivation by increasing BNS, it might also prevent the decrease of motivation by creating a safe environment that allows errors to be made. To achieve that, we are proposing several measures at the individual and organizational level.

On the individual level, our research points out that managers are required to provide orientation for employees and must respond even more strongly to the needs of their team members. The results of our studies, conducted during the pandemic, indicate that servant leadership can be a promising approach in this context due to its positive correlation with BNS and EMC. On a concrete level, managers who want to improve their skills as servant leaders could start by focusing on five behaviors that were most discriminative for servant leadership compared to other leadership styles (Parolini et al., 2009). Accordingly, servant leaders clearly concentrate on meeting the needs of individuals and on building allegiance with others instead of the organization. In addition, servant leaders should ensure that their first inclination is to serve rather than lead. Regarding influence on their employees, servant leaders use contemporary means to ensure their members feel sufficient freedom. On a more abstract level, our results suggest that managers should constantly reflect on whether and how a specific behavior is beneficial or harmful for EMC in their teams or their employees' BNS. The principles of EMC (e.g. transparency about errors, support for and between team members, errors as a learning opportunity), as well as the basic needs autonomy, competence, and relatedness, can thus serve as a guideline for aligning one's behavior as a manager. In addition, it must be noted that the effects in both studies varied for the different types of motivation. This might indicate that not all employees benefit equally from the same leadership style as well as organizational culture. Thus, individual differences concerning employee motivation could be taken into account. Here, Joshua Howard and his research team opened a promising avenue. Using latent profile analysis, they identified four motivation profiles that characterize employees in terms of the different motivation types according to self-determination theory (Howard et al., 2016). Also, they could show that these profiles were consistent over several months, suggesting high stability (Howard et al., 2021). These findings can guide servant leaders who aim to individualize their leadership style regarding individual differences among their employees.

On the organizational level, the results of our study have different implications for structures, functions, and processes. As servant leadership plays a crucial role in improving the motivational quality of employees, organizations should strive to hire and develop more servant leaders. For example, HRM should look for specific servant leader features of applicants more often during the hiring process. Usually, extraversion is seen as the strongest predictor for the emergence of successful leadership behavior. However, in the context of servant leadership, studies have shown that extraversion is negatively related to servant leadership (Hunter et al., 2013). Instead, agreeableness was repeatedly found to be positively associated with a servant leadership style (Blake et al., 2022). Accordingly, the agreeableness of applicants for management positions should be considered more. Additionally, HRM can provide training for existing management personnel within their organizations. Here, the results of our study imply that strategies and behaviors to establish a more positive EMC and improve employees' BNS should be emphasized. Businesses are becoming more aware of the importance of EMC. Facebook, for example, put the slogan 'fail harder' on their office walls to cultivate a good error culture (Ziegler, 2015). However, and this is of utmost importance, only putting sayings on the walls is not enough. In fact, the results of our study underpin that managers need to follow those slogans on a behavioral level and develop and implement an appropriate error culture by acting as role models. Here, error management training can be beneficial (Klamar et al., 2024). Then, positive effects on employees' BNS and motivational quality can emerge. Lastly, and in addition to that, the evaluation and compensation of managers could be directly tied to the extent of how much they contribute to a positive error culture and their employees' need satisfaction.

### **Limitations and future directions**

To the best of the authors' knowledge, this study was the first to investigate the combined effects of BNS and EMC from a self-determination perspective. However, certain limitations must be taken into account. First, it must be considered that our study used a cross-sectional approach. Although both samples comprised a relatively broad selection of employees working in different organizations and findings across the two samples are very similar, no causal conclusions can be made. Therefore, future studies should analyze the proposed effects from a longitudinal perspective to better understand the associations between the relevant variables. Additionally, future studies should also combine different data collection methods to reduce common method bias (Conway & Lance, 2010). Second, both samples were not balanced regarding the gender of our participants as most of the sample consisted of women. As there were some sex differences for three of the five different forms of motivation (i.e. amotivation: women score lower; introjected and identified motivation: women score higher), we controlled for gender in the mediation analyses, respectively. Here, no significant changes regarding the above-reported effects could be found. Third, the sample was recruited through an online university pool. However, since courses at this university are designed to combine study and work, most of the participants worked at least part-time with an average of over 30 hours per week (study 1:  $M=32.43$ ,  $SD=9.00$ ; study 2:  $M=32.82$ ,  $SD=7.90$ ), which clearly distinguishes the dataset from classic student samples and is thus almost representative of the German average of  $M=34.70$  (Statistisches Bundesamt, 2023). Despite the limitations above, our study reveals promising research avenues concerning error management climate and basic need satisfaction. In general, a better understanding of EMC and BNS will be critical future assets for organizations as they decrease amotivation and increase autonomous motivation, which is essential to increasing innovation and creativity. Future research should focus more on what dimensions of (servant) leadership behavior have the strongest impact on EMC. Here, a mixed-method approach could be valuable. For example, the critical incident technique (Bott & Tourish, 2016; Flanagan, 1954) could be used to identify relevant leadership behaviors that influence EMC in positive and negative ways. In addition, examining other antecedents of EMC besides servant leadership would be intriguing. Furthermore, it would be interesting to focus on organizations that specifically suffer from a negative EMC to investigate whether a negative EMC impacts the BNS and motivational status of the employees.

### **Conclusion**

Using two cross-sectional samples of employees working in various organizations, our study emphasizes the importance of servant leadership for both BNS and EMC. When managers engage in servant leadership behaviors, employees' high motivation quality (i.e. autonomous motivation) can be preserved. Both BNS and EMC function as serial mediators for this relationship.

### **Ethical approval**

Our study was conducted in full compliance with the ethical guidelines of the German Psychological Society (DGPs) and the American Psychological Association (APA). At the time of data collection, it was not common practice at most German universities to obtain ethical approval for studies that did not contain sensitive personal data, did not involve vulnerable groups, and did not pose risks to participants. Therefore, in accordance with the ethical guidelines of the Department of Psychology at LMU Munich, ethical approval was not required for this study. Only anonymous questionnaires were used for the study. No identifying information was obtained from participants.

### **Authors' contributions**

Conceptualization, M.F.C.H., J.v.G., and E.L.; Methodology and analyses, M.F.C.H. and S.F.H.; Writing—original draft, M.F.C.H., K.C.G., and J.v.G.; Writing—review & editing, all authors; All authors have read and agreed to the final version of the manuscript.

### **Disclosure statement**

The authors declare no conflict of interest.

## Funding

No funding was received.

## About the authors

**Dr. Matthias F. C. Hudecek** is a researcher at the FHNW School of Applied Psychology in Olten, Switzerland. His research focuses on mobility, artificial intelligence, and digitization. In addition, he investigates the self-determination theory in the organizational context.

**Klara C. Grünwald**, M.Sc, is a PhD Candidate at the University of Regensburg, Germany, and a Research Assistant at the Institute of Information Systems and Digital Business at the University of St. Gallen, Switzerland. Her main research interests focus on (generative) AI in the organizational context and the self-determination theory.

**Prof. Dr. Johannes von Gahlen** is a Professor of Business Psychology at the University of Applied Sciences in Neu-Ulm, Germany. His teaching and research fall into the scope of cognitive science with a focus on work performance, employee motivation, and leadership.

**Prof. Dr. Eva Lermer** is a Professor of Business Psychology at the Technical University of Applied Sciences in Augsburg, Germany. She holds a PhD in Psychology from the University of Munich (LMU). Her research interests lie in the fields of organizational psychology, positive psychology, decision-making, and human-AI interaction.

**Prof. Dr. Silke F. Heiss** has been a Professor of Business Psychology at the FOM University of Applied Sciences in Munich since 2014. Her research interests include the topics of organizational development, leadership, employee commitment, and psychological aptitude diagnostics.

## ORCID

Matthias F. C. Hudecek  <http://orcid.org/0000-0002-7696-766X>

## Data availability statement

The data described in this article are openly available in the Open Science Framework at <https://osf.io/nmuby/>.

## References

- Ahmed, F., Xiong, Z., Faraz, N. A., & Arslan, A. (2023). The interplay between servant leadership, psychological safety, trust in a leader and burnout: Assessing causal relationships through a three-wave longitudinal study. *International Journal of Occupational Safety and Ergonomics: JOSE*, 29(2), 912–924. <https://doi.org/10.1080/10803548.2022.2086755>
- Ali, A., Abbas, S. F., Khattak, M. S., Arfeen, M. I., Ishaque Chaudhary, M. A., & Yousaf, L. (2022). Mediating role of employees' intrinsic motivation and psychological safety in the relationship between abusive supervision and innovative behavior: An empirical test in IT sector of Pakistan. *Cogent Business & Management*, 9(1), 2039087. <https://doi.org/10.1080/23311975.2022.2039087>
- Allen, G. P., Moore, W. M., Moser, L. R., Neill, K. K., Sambamoorthi, U., & Bell, H. S. (2016). The role of servant leadership and transformational leadership in academic pharmacy. *American Journal of Pharmaceutical Education*, 80(7), 113. <https://doi.org/10.5688/ajpe807113>
- Andreassen, C. S., Hetland, J., & Pallesen, S. (2010). The relationship between 'workaholism', basic needs satisfaction at work and personality. *European Journal of Personality*, 24(1), 3–17. <https://doi.org/10.1002/per.737>
- Bakir, D. (2022). *Trigema-Chef Wolfgang Grupp beklagt Verzehnfachung seiner Gasrechnung*. <https://www.stern.de/wirtschaft/news/trigema-chef-wolfgang-grupp-beklagt-verzehnfachung-seiner-gasrechnung-32721334.html>
- Balasubramanian, S., & Fernandes, C. (2022). Confirmation of a crisis leadership model and its effectiveness: Lessons from the COVID-19 pandemic. *Cogent Business & Management*, 9(1), 2022824. <https://doi.org/10.1080/23311975.2021.2022824>
- Bande, B., Fernández-Ferrín, P., Varela-Neira, C., & Otero-Neira, C. (2016). Exploring the relationship among servant leadership, intrinsic motivation and performance in an industrial sales setting. *Journal of Business & Industrial Marketing*, 31(2), 219–231. <https://doi.org/10.1108/JBIM-03-2014-0046>
- Blake, A. B., Luu, V. H., Petrenko, O. V., Gardner, W. L., Moergen, K. J. N., & Ezerins, M. E. (2022). Let's agree about nice leaders: A literature review and meta-analysis of agreeableness and its relationship with leadership outcomes. *The Leadership Quarterly*, 33(1), 101593. <https://doi.org/10.1016/j.leaqua.2021.101593>
- Bott, G., & Tourish, D. (2016). The critical incident technique reappraised: Using critical incidents to illuminate organizational practices and build theory. *Qualitative Research in Organizations and Management: An International Journal*, 11(4), 276–300. <https://doi.org/10.1108/QROM-01-2016-1351>

- Brière, M., Le Roy, J., & Meier, O. (2021). Linking servant leadership to positive deviant behavior: The mediating role of self-determination theory. *Journal of Applied Social Psychology, 51*(2), 65–78. <https://doi.org/10.1111/jasp.12716>
- Briner, R. B., & Rousseau, D. M. (2011). Evidence-based I–O psychology: Not there yet. *Industrial and Organizational Psychology, 4*(1), 3–22. <https://doi.org/10.1111/j.1754-9434.2010.01287.x>
- Brohi, N. A., Jantan, A. H., Qureshi, M. A., Bin Jaffar, A. R., Bin, A., J., & Bin Ab Hamid, K. (2018). The impact of servant leadership on employees attitudinal and behavioural outcomes. *Cogent Business & Management, 5*(1), 1542652. <https://doi.org/10.1080/23311975.2018.1542652>
- Bundesamt, S. (2023). *Wöchentliche arbeitszeit*. <https://www.destatis.de/DE/Themen/Arbeit/Arbeitsmarkt/Qualitaet-Arbeit/Dimension-3/woechentliche-arbeitszeit.html>
- Canavesi, A., & Minelli, E. (2022). Servant leadership: A systematic literature review and network analysis. *Employee Responsibilities and Rights Journal, 34*(3), 267–289. <https://doi.org/10.1007/s10672-021-09381-3>
- Carter, D., & Baghurst, T. (2014). The influence of servant leadership on restaurant employee engagement. *Journal of Business Ethics, 124*(3), 453–464. <https://doi.org/10.1007/s10551-013-1882-0>
- Cerasoli, C. P., Nicklin, J. M., & Ford, M. T. (2014). Intrinsic motivation and extrinsic incentives jointly predict performance: A 40-year meta-analysis. *Psychological Bulletin, 140*(4), 980–1008. <https://doi.org/10.1037/a0035661>
- Chiniara, M., & Bentein, K. (2016). Linking servant leadership to individual performance: Differentiating the mediating role of autonomy, competence and relatedness need satisfaction. *The Leadership Quarterly, 27*(1), 124–141. <https://doi.org/10.1016/j.leaqua.2015.08.004>
- Conway, J. M., & Lance, C. E. (2010). What reviewers should expect from authors regarding common method bias in organizational research. *Journal of Business and Psychology, 25*(3), 325–334. <https://doi.org/10.1007/s10869-010-9181-6>
- Corona Datenplattform. (2021). *Themenreport 02, homeoffice im verlauf der corona-pandemie*. [https://www.bmwk.de/Redaktion/DE/Downloads/l/infas-corona-datenplattform-homeoffice.pdf?\\_\\_blob=publicationFile&v=4](https://www.bmwk.de/Redaktion/DE/Downloads/l/infas-corona-datenplattform-homeoffice.pdf?__blob=publicationFile&v=4)
- Cumming, G. (2014). The new statistics: Why and how. *Psychological Science, 25*(1), 7–29. <https://doi.org/10.1177/0956797613504966>
- Cusin, J., & Goujon-Belghit, A. (2019). Error reframing: Studying the promotion of an error management culture. *European Journal of Work and Organizational Psychology, 28*(4), 510–524. <https://doi.org/10.1080/1359432X.2019.1623786>
- De Clercq, D., Bouckenoghe, D., Raja, U., & Matsyborska, G. (2014). Servant leadership and work engagement: The contingency effects of leader–follower social capital. *Human Resource Development Quarterly, 25*(2), 183–212. <https://doi.org/10.1002/hrdq.21185>
- De Cooman, R., Stynen, D., Van den Broeck, A., Sels, L., & De Witte, H. (2013). How job characteristics relate to need satisfaction and autonomous motivation: Implications for work effort: Job characteristics and work effort. *Journal of Applied Social Psychology, 43*(6), 1342–1352. <https://doi.org/10.1111/jasp.12143>
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227–268. [https://doi.org/10.1207/S15327965PLI1104\\_01](https://doi.org/10.1207/S15327965PLI1104_01)
- Desrumaux, P., Lapointe, D., Ntsame Sima, M., Boudrias, J.-S., Savoie, A., & Brunet, L. (2015). The impact of job demands, climate, and optimism on well-being and distress at work: What are the mediating effects of basic psychological need satisfaction? *European Review of Applied Psychology, 65*(4), 179–188. <https://doi.org/10.1016/j.erap.2015.06.003>
- Dimitrova, N. G., van Hooft, E. A. J., van Dyck, C., & Groenewegen, P. (2017). Behind the wheel: What drives the effects of error handling? *The Journal of Social Psychology, 157*(6), 658–672. <https://doi.org/10.1080/00224545.2016.1270891>
- Dirani, K. M., Abadi, M., Alizadeh, A., Barhate, B., Garza, R. C., Gunasekara, N., Ibrahim, G., & Majzun, Z. (2020). Leadership competencies and the essential role of human resource development in times of crisis: A response to Covid-19 pandemic. *Human Resource Development International, 23*(4), 380–394. <https://doi.org/10.1080/13678868.2020.1780078>
- Ebener, D. R., & O'Connell, D. J. (2010). How might servant leadership work?: How Might Servant Leadership Work? *Nonprofit Management and Leadership, 20*(3), 315–335. <https://doi.org/10.1002/nml.256>
- Edmondson, A. C. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly, 44*(2), 350–383. <https://doi.org/10.2307/2666999>
- Edmondson, A. C. (2011). Strategies for learning from failure. *Harvard Business Review, 89*(4), 48–55, 137.
- Edmondson, A. C. (2019). *The fearless organization: Creating psychological safety in the workplace for learning, innovation, and growth*. John Wiley & Sons, Inc.
- Edmondson, A. C., & Moingeon, B. (1996). When to learn how and when to learn why: Appropriate organizational learning processes as a source of competitive advantage. In B. Moingeon & A. C. Edmondson (Eds.), *Organizational learning and competitive advantage* (pp. 17–37). SAGE Publications Ltd. <https://doi.org/10.4135/9781446250228.n2>
- Eva, N., Robin, M., Sendjaya, S., Dierendonck, D., van., & Liden, R. C. (2019). Servant leadership: A systematic review and call for future research. *The Leadership Quarterly, 30*(1), 111–132. <https://doi.org/10.1016/j.leaqua.2018.07.004>
- Farnese, M. L., Zaghini, F., Caruso, R., Fida, R., Romagnoli, M., & Sili, A. (2019). Managing care errors in the wards: The contribution of authentic leadership and error management culture. *Leadership & Organization Development Journal, 40*(1), 17–30. <https://doi.org/10.1108/LODJ-04-2018-0152>
- Fischer, S., Frese, M., Mertins, J. C., & Hardt-Gawron, J. V. (2018). The role of error management culture for firm and individual innovativeness: Error management culture. *Applied Psychology, 67*(3), 428–453. <https://doi.org/10.1111/apps.12129>

- Flanagan, J. C. (1954). The critical incident technique. *Psychological Bulletin*, 51(4), 327–358. <https://doi.org/10.1037/h0061470>
- Ford, J. D., & Ford, L. W. (2012). The leadership of organization change: A view from recent empirical evidence. In A. B. (Rami) Shani, W. A. Pasmore, & R. W. Woodman (Hrsg.), (Eds.), *Research in organizational change and development*. (Bd. 20, pp. 1–36). Emerald Group Publishing Limited. [https://doi.org/10.1108/S0897-3016\(2012\)0000020004](https://doi.org/10.1108/S0897-3016(2012)0000020004)
- Frese, M., & Keith, N. (2015). Action errors, error management, and learning in organizations. *Annual Review of Psychology*, 66(1), 661–687. <https://doi.org/10.1146/annurev-psych-010814-015205>
- Gagné, M., Forest, J., Vansteenkiste, M., Crevier-Braud, L., van den Broeck, A., Aspel, A. K., Bellerose, J., Benabou, C., Chemolli, E., Güntert, S. T., Halvari, H., Indiyastuti, D. L., Johnson, P. A., Molstad, M. H., Naudin, M., Ndao, A., Olafsen, A. H., Roussel, P., Wang, Z., & Westbye, C. (2015). The Multidimensional Work Motivation Scale: Validation evidence in seven languages and nine countries. *European Journal of Work and Organizational Psychology*, 24(2), 178–196. <https://doi.org/10.1080/1359432X.2013.877892>
- Gallup. (2023). State of the global workplace 2023 report. In *The voice of the world's employees*. Gallup, Inc.
- Gandolfi, F., Stone, S., & Deno, F. (2017). Servant leadership: An ancient style with 21st century relevance. *Revista De Management Comparat International/Review Of International Comparative Management*, 18(4), 350–361.
- Geng, Z., & Tang, H. (2019). How does error management culture motivate employee radical creativity?. *An Expectancy Mechanism*. *Academy of Management Proceedings*. 2019(1), 14533. <https://doi.org/10.5465/AMBPP.2019.14533abstract>
- Greenleaf, R. K., Covey, S. R., & Senge, P. M. (2002). *Servant leadership: A journey into the nature of legitimate power and greatness* (L. C. Spears, 25th anniversary edition). Paulist Press.
- Grisaffe, D. B., VanMeter, R., & Chonko, L. B. (2016). Serving first for the benefit of others: Preliminary evidence for a hierarchical conceptualization of servant leadership. *Journal of Personal Selling & Sales Management*, 36(1), 40–58. <https://doi.org/10.1080/08853134.2016.1151303>
- Grünwald, K. C., Van den Broeck, A., Colledani, D., Lermer, E., Falvo, R., & Hudecek, M. F. C. (2024). Validation of the German work-related basic need satisfaction scale (W-BNS-G). <https://doi.org/10.31219/osf.io/wx7rj>
- Hardré, P. L., & Reeve, J. (2009). Training corporate managers to adopt a more autonomy-supportive motivating style toward employees: An intervention study. *International Journal of Training and Development*, 13(3), 165–184. <https://doi.org/10.1111/j.1468-2419.2009.00325.x>
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). Guilford Press.
- Hite, L. M., & McDonald, K. S. (2020). Careers after COVID-19: Challenges and changes. *Human Resource Development International*, 23(4), 427–437. <https://doi.org/10.1080/13678868.2020.1779576>
- Hoch, J. E., Bommer, W. H., Dulebohn, J. H., & Wu, D. (2018). Do ethical, authentic, and servant leadership explain variance above and beyond transformational leadership? A meta-analysis. *Journal of Management*, 44(2), 501–529. <https://doi.org/10.1177/0149206316665461>
- Howard, J. L., Gagné, M., Morin, A. J. S., & Van Den Broeck, A. (2016). Motivation profiles at work: A self-determination theory approach. *Journal of Vocational Behavior*, 95–96, 74–89. <https://doi.org/10.1016/j.jvb.2016.07.004>
- Howard, J. L., Morin, A. J. S., & Gagné, M. (2021). A longitudinal analysis of motivation profiles at work. *Motivation and Emotion*, 45(1), 39–59. <https://doi.org/10.1007/s11031-020-09852-4>
- Hu, J., & Liden, R. C. (2011). Antecedents of team potency and team effectiveness: An examination of goal and process clarity and servant leadership. *The Journal of Applied Psychology*, 96(4), 851–862. <https://doi.org/10.1037/a0022465>
- Hunter, E. M., Neubert, M. J., Perry, S. J., Witt, L. A., Penney, L. M., & Weinberger, E. (2013). Servant leaders inspire servant followers: Antecedents and outcomes for employees and the organization. *The Leadership Quarterly*, 24(2), 316–331. <https://doi.org/10.1016/j.leaqua.2012.12.001>
- Imran, R., Allil, K., & Mahmoud, A. B. (2017). Teacher's turnover intentions: Examining the impact of motivation and organizational commitment. *International Journal of Educational Management*, 31(6), 828–842. <https://doi.org/10.1108/IJEM-05-2016-0131>
- Jensen, U. T., & Bro, L. L. (2018). How transformational leadership supports intrinsic motivation and public service motivation: The mediating role of basic need satisfaction. *The American Review of Public Administration*, 48(6), 535–549. <https://doi.org/10.1177/0275074017699470>
- Jiang, X., & Wei, Y. (2024). Linking servant leadership to followers' thriving at work: Self-determination theory perspective. *Frontiers in Psychology*, 15, 1384110. <https://doi.org/10.3389/fpsyg.2024.1384110>
- Joseph, E. E., & Winston, B. E. (2005). A correlation of servant leadership, leader trust, and organizational trust. *Leadership & Organization Development Journal*, 26(1), 6–22. <https://doi.org/10.1108/01437730510575552>
- Kassis, W., Graf, U., Keller, R., Ding, K., & Rohlf, C. (2019). The role of received social support and self-efficacy for the satisfaction of basic psychological needs in teacher education. *European Journal of Teacher Education*, 42(3), 391–409. <https://doi.org/10.1080/02619768.2019.1576624>
- Keith, N., & Frese, M. (2011). Enhancing firm performance and innovativeness through error management culture. In N. M. Ashkanasy, C. P. M. Wilderom, & M. F. Peterson Eds.), *The handbook of organizational culture and climate* (2nd ed., pp. 137–157). Sage.

- Klamar, A., Horvath, D., Frese, M., & Keith, N. (2024). Different approaches to learning from errors: Comparing the effectiveness of high reliability and error management approaches. *Safety Science*, 177, 106578. <https://doi.org/10.1016/j.ssci.2024.106578>
- Kovjanic, S., Schuh, S. C., Jonas, K., Quaquebeke, N. V., & Van Dick, R. (2012). How do transformational leaders foster positive employee outcomes? A self-determination-based analysis of employees' needs as mediating links. *Journal of Organizational Behavior*, 33(8), 1031–1052. <https://doi.org/10.1002/job.1771>
- Kruse, P., & Wegge, J. (2024). A constructive error management culture promotes innovation and corporate social responsibility: A multi-level analysis in 10 countries. *German Journal of Human Resource Management: Zeitschrift Für Personalforschung*, 38(2), 111–139. <https://doi.org/10.1177/23970022231226318>
- Langhof, J. G., & Güldenber, S. (2020). Servant Leadership: A systematic literature review—toward a model of antecedents and outcomes. *German Journal of Human Resource Management: Zeitschrift Für Personalforschung*, 34(1), 32–68. <https://doi.org/10.1177/2397002219869903>
- Lataster, J., Reijnders, J., Janssens, M., Simons, M., Peeters, S., & Jacobs, N. (2022). Basic psychological need satisfaction and well-being across age: A cross-sectional general population study among 1709 dutch speaking adults. *Journal of Happiness Studies*, 23(5), 2259–2290. <https://doi.org/10.1007/s10902-021-00482-2>
- Lermer, E., & Hudecek, M. F. C. (2022). *Globale Herausforderungen psychologisch verstehen und bewältigen*. Ernst Reinhardt Verlag.
- Lermer, E., Hudecek, M. F. C., Gaube, S., Raue, M., & Batz, F. (2021). Early and later perceptions and reactions to the COVID-19 pandemic in Germany: On predictors of behavioral responses and guideline adherence during the restrictions. *Frontiers in Psychology*, 12, 769206. <https://doi.org/10.3389/fpsyg.2021.769206>
- Leroy, H., Anseel, F., Gardner, W. L., & Sels, L. (2015). Authentic leadership, authentic followership, basic need satisfaction, and work role performance: a cross-level study. *Journal of Management*, 41(6), 1677–1697. <https://doi.org/10.1177/0149206312457822>
- Liden, R. C., Wayne, S. J., Liao, C., & Meuser, J. D. (2014). Servant leadership and serving culture: influence on individual and unit performance. *Academy of Management Journal*, 57(5), 1434–1452. <https://doi.org/10.5465/amj.2013.0034>
- Manganelli, L., Thibault-Landry, A., Forest, J., & Carpentier, J. (2018). Self-determination theory can help you generate performance and well-being in the workplace: A review of the literature. *Advances in Developing Human Resources*, 20(2), 227–240. <https://doi.org/10.1177/1523422318757210>
- Mayer, D. M. (2010). Servant leadership and follower need satisfaction. In D. van Dierendonck & K. Patterson (Eds.), *Servant leadership: Developments in theory and research* (pp. 147–154). Palgrave Macmillan UK. [https://doi.org/10.1057/9780230299184\\_12](https://doi.org/10.1057/9780230299184_12)
- Mayer, D. M., Bardes, M., & Piccolo, R. F. (2008). Do servant-leaders help satisfy follower needs? An organizational justice perspective. *European Journal of Work and Organizational Psychology*, 17(2), 180–197. <https://doi.org/10.1080/13594320701743558>
- Miao, S., Rhee, J., & Jun, I. (2020). How much does extrinsic motivation or intrinsic motivation affect job engagement or turnover intention? A comparison study in china. *Sustainability*, 12(9), 3630. <https://doi.org/10.3390/su12093630>
- Mishra, M. (2022). *End of COVID pandemic is "in sight"-WHO chief*. <https://www.reuters.com/business/healthcare-pharmaceuticals/who-chief-says-end-sight-covid-19-pandemic-2022-09-14/>
- Ng, J. Y. Y., Ntoumanis, N., Thøgersen-Ntoumani, C., Deci, E. L., Ryan, R. M., Duda, J. L., & Williams, G. C. (2012). Self-determination theory applied to health contexts: A meta-analysis. *Perspectives on Psychological Science: A Journal of the Association for Psychological Science*, 7(4), 325–340. <https://doi.org/10.1177/1745691612447309> 26168470
- Olafsen, A. H., Halvari, H., Forest, J., & Deci, E. L. (2015). Show them the money? The role of pay, managerial need support, and justice in a self-determination theory model of intrinsic work motivation. *Scandinavian Journal of Psychology*, 56(4), 447–457. <https://doi.org/10.1111/sjop.12211>
- Ozyilmaz, A., & Cicek, S. S. (2015). How does servant leadership affect employee attitudes, behaviors, and psychological climates in a for-profit organizational context? *Journal of Management & Organization*, 21(3), 263–290. <https://doi.org/10.1017/jmo.2014.80>
- Parolini, J., Patterson, K., & Winston, B. (2009). Distinguishing between transformational and servant leadership. *Leadership & Organization Development Journal*, 30(3), 274–291. <https://doi.org/10.1108/01437730910949544>
- Provera, B., Montefusco, A., & Canato, A. (2010). A 'no blame' approach to organizational learning: A 'no blame' approach to organizational learning. *British Journal of Management*, 21(4), 1057–1074. <https://doi.org/10.1111/j.1467-8551.2008.00599.x>
- Putz, D., Schilling, J., Kluge, A., & Stangenberg, C. (2013). Measuring organizational learning from errors: Development and validation of an integrated model and questionnaire. *Management Learning*, 44(5), 511–536. <https://doi.org/10.1177/1350507612444391>
- Rahmadani, V. G., Schaufeli, W. B., Ivanova, T. Y., & Osin, E. N. (2019). Basic psychological need satisfaction mediates the relationship between engaging leadership and work engagement: A cross-national study. *Human Resource Development Quarterly*, 30(4), 453–471. <https://doi.org/10.1002/hrdq.21366>
- Rami, U., & Gould, C. (2016). From a "culture of blame" to an encouraged learning from failure culture. *Business Perspectives and Research*, 4(2), 161–168. <https://doi.org/10.1177/2278533716642651>

- Rigby, C. S., & Ryan, R. M. (2018). Self-determination theory in human resource development: New directions and practical considerations. *Advances in Developing Human Resources*, 20(2), 133–147. <https://doi.org/10.1177/1523422318756954>
- Rosen, C. C., Ferris, D. L., Brown, D. J., Chen, Y., & Yan, M. (2014). Perceptions of organizational politics: A need satisfaction paradigm. *Organization Science*, 25(4), 1026–1055. <https://doi.org/10.1287/orsc.2013.0857>
- Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48(2), 1–36. <https://doi.org/10.18637/jss.v048.i02>
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *The American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
- Ryan, R. M., Duineveld, J. J., Di Domenico, S. I., Ryan, W. S., Steward, B. A., & Bradshaw, E. L. (2022). We know this much is (meta-analytically) true: A meta-review of meta-analytic findings evaluating self-determination theory. *Psychological Bulletin*, 148(11-12), 813–842. <https://doi.org/10.1037/bul0000385>
- Saleem, F., Zhang, Y. Z., Gopinath, C., & Adeel, A. (2020). Impact of servant leadership on performance: The mediating role of affective and cognitive trust. *SAGE Open*, 10(1), 215824401990056. <https://doi.org/10.1177/2158244019900562>
- Schlamann, H., Brandenberg, T., & Marquardt, N. (2023). From an error management culture to performance—an empirical study on the influence of motivation and learning. *International Journal of Business and Applied Social Science*, 9(2), 16–38. <https://doi.org/10.33642/ijbass.v9n2p2>
- Sendjaya, S. (2015). *Personal and organizational excellence through servant leadership: learning to serve, serving to lead, leading to transform* (1st ed.). Springer International Publishing.
- Sendjaya, S., & Pekerti, A. (2010). Servant leadership as antecedent of trust in organizations. *Leadership & Organization Development Journal*, 31(7), 643–663. <https://doi.org/10.1108/01437731011079673>
- Sihombing, S., Astuti, E. S., Al Musadieq, M., Hamied, D., & Rahardjo, K. (2018). The effect of servant leadership on rewards, organizational culture and its implication for employee's performance. *International Journal of Law and Management*, 60(2), 505–516. <https://doi.org/10.1108/IJLMA-12-2016-0174>
- Skarlicki, D. P., Kay, A. A., Aquino, K., & Fuschey, D. (2017). Must heads roll? A critique of and alternative approaches to swift blame. *Academy of Management Perspectives*, 31(3), 222–238. <https://doi.org/10.5465/amp.2015.0118>
- Slemp, G. R., Kern, M. L., Patrick, K. J., & Ryan, R. M. (2018). Leader autonomy support in the workplace: A meta-analytic review. *Motivation and Emotion*, 42(5), 706–724. <https://doi.org/10.1007/s11031-018-9698-y>
- Song, C., Park, K. R., & Kang, S.-W. (2015). Servant leadership and team performance: The mediating role of knowledge-sharing climate. *Social Behavior and Personality: An International Journal*, 43(10), 1749–1760. <https://doi.org/10.2224/sbp.2015.43.10.1749>
- Stone, G. A., Russell, R. F., & Patterson, K. (2004). Transformational versus servant leadership: A difference in leader focus. *Leadership & Organization Development Journal*, 25(4), 349–361. <https://doi.org/10.1108/01437730410538671>
- Sulea, C., van Beek, I., Sarbescu, P., Virga, D., & Schaufeli, W. B. (2015). Engagement, boredom, and burnout among students: Basic need satisfaction matters more than personality traits. *Learning and Individual Differences*, 42, 132–138. <https://doi.org/10.1016/j.lindif.2015.08.018>
- Thibault Landry, A., Gagné, M., Forest, J., Guerro, S., Séguin, M., & Papachristopoulos, K. (2017). The relation between financial incentives, motivation, and performance: An integrative SDT-based investigation. *Journal of Personnel Psychology*, 16(2), 61–76. <https://doi.org/10.1027/1866-5888/a000182>
- Usman, M., Cheng, J., Ghani, U., Gul, H., & Shah, W. U. (2023). Social support and perceived uncertainties during COVID-19: Consequences for employees' wellbeing. *Current Psychology (New Brunswick, N.J.)*, 42(12), 10248–10259. <https://doi.org/10.1007/s12144-021-02293-3>
- van Breda-Verduijn, H., & Heijboer, M. (2016). Learning culture, continuous learning, organizational learning anthropologist. *Industrial and Commercial Training*, 48(3), 123–128. <https://doi.org/10.1108/ICT-11-2015-0074>
- Van den Broeck, A., Ferris, D. L., Chang, C.-H., & Rosen, C. C. (2016). A review of self-determination theory's basic psychological needs at work. *Journal of Management*, 42(5), 1195–1229. <https://doi.org/10.1177/0149206316632058>
- Van den Broeck, A., Howard, J. L., Van Vaerenbergh, Y., Leroy, H., & Gagné, M. (2021). Beyond intrinsic and extrinsic motivation: A meta-analysis on self-determination theory's multidimensional conceptualization of work motivation. *Organizational Psychology Review*, 11(3), 240–273. <https://doi.org/10.1177/20413866211006173>
- Van Den Broeck, A., Vansteenkiste, M., De Witte, H., & Lens, W. (2008). Explaining the relationships between job characteristics, burnout, and engagement: The role of basic psychological need satisfaction. *Work & Stress*, 22(3), 277–294. <https://doi.org/10.1080/02678370802393672>
- Van den Broeck, A., Vansteenkiste, M., De Witte, H., Soenens, B., & Lens, W. (2010). Capturing autonomy, competence, and relatedness at work: Construction and initial validation of the Work-related Basic Need Satisfaction scale. *Journal of Occupational and Organizational Psychology*, 83(4), 981–1002. <https://doi.org/10.1348/096317909X481382>
- Van Dierendonck, D. (2011). Servant leadership: A review and synthesis. *Journal of Management*, 37(4), 1228–1261. <https://doi.org/10.1177/0149206310380462>
- van Dierendonck, D., Stam, D., Boersma, P., de Windt, N., & Alkema, J. (2014). Same difference? Exploring the differential mechanisms linking servant leadership and transformational leadership to follower outcomes. *The Leadership Quarterly*, 25(3), 544–562. <https://doi.org/10.1016/j.leaqua.2013.11.014>
- van Dyck, C., Frese, M., Baer, M., & Sonnentag, S. (2005). Organizational error management culture and its impact on performance: A two-study replication. *The Journal of Applied Psychology*, 90(6), 1228–1240. <https://doi.org/10.1037/0021-9010.90.6.1228>

- Vandercammen, L., Hofmans, J., & Theuns, P. (2014). The mediating role of affect in the relationship between need satisfaction and autonomous motivation. *Journal of Occupational and Organizational Psychology*, 87(1), 62–79. <https://doi.org/10.1111/joop.12032>
- Verdorfer, A. P., & Peus, C. (2014). The measurement of servant leadership. *Zeitschrift Für Arbeits- Und Organisationspsychologie A&O*, 58(1), 1–16. <https://doi.org/10.1026/0932-4089/a000133>
- Wang, X., Guchait, P., & Paşamehmetoğlu, A. (2020). Why should errors be tolerated? Perceived organizational support, organization-based self-esteem and psychological well-being. *International Journal of Contemporary Hospitality Management*, 32(5), 1987–2006. <https://doi.org/10.1108/IJCHM-10-2019-0869>
- Xue, H., Luo, Y., Luan, Y., & Wang, N. (2022). A meta-analysis of leadership and intrinsic motivation: Examining relative importance and moderators. *Frontiers in Psychology*, 13, 941161. <https://doi.org/10.3389/fpsyg.2022.941161>
- Zeeshan, S., Ng, S. I., Ho, J. A., & Jantan, A. H. (2021). Assessing the impact of servant leadership on employee engagement through the mediating role of self-efficacy in the Pakistani banking sector. *Cogent Business & Management*, 8(1) <https://doi.org/10.1080/23311975.2021.1963029>
- Zhang, Z., & Song, P. (2020). Multi-level effects of humble leadership on employees' work well-being: The roles of psychological safety and error management climate. *Frontiers in Psychology*, 11, 571840. <https://doi.org/10.3389/fpsyg.2020.571840>
- Ziegler, H. (2015). Versuch macht klug. Wagen Eins. *Das Magazin Der Deutschen Bahn Für Geschäftsreisende*, 2, 16–18.