What Are the Effects of Leader Mindfulness on Leader-Follower Communication Patterns and Digital Team Performance?

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Abstract

In order to meet nowadays demands of digitalisation and globalisation, organizations make increasingly use of digital teams. However, research on how fruitful leader-follower interactions can be promoted in such teams still remains scarce. This study examined how respectful inquiry (RI) and psychological safety sequentially combine to mediate the relationship between leader mindfulness and team performance in a digital environment. By means of an online multi-group experiment with 56 teams, we examined direct and indirect effects of the three-path mediation model. Results support direct effects of, firstly, the mindfulness induction on RI and, secondly, team psychological safety on performance. Contrary to our predictions, the three-path mediation model could not be supported. Yet, our findings highlight particularly the importance of mindfulness in fostering effective communication strategies, thereby contributing to theory and practice.

Keywords: respectful inquiry; leadership; psychological safety; team performance; digital teams

"Leadership is enacted through communication" (Barge, 1994, p. 21). Even though this quote is more than 25 years old, it is still highly relevant in today's corporate world. What has changed is that, nowadays, we work in a fast and ever-changing environment characterised by digitalisation. In fact, digital teams, that is, a group of people working together from geographically dispersed locations by means of online communication (Maznevski & Chudoba, 2000), are now an integral part of most organizations. This is shown by a survey indicating that 98% of the respondents state that they have some kind of digital team in their organization (i4cp, 2019). Consequently, leader-follower communications take increasingly place online, moving away from the "traditional" face-to-face interactions (Kelloway, Barling, Kelley, Comtois, & Gatien, 2003). Scholars have defined this type of leadership as "e-leadership" (Avolio, Kahai, & Dodge, 2000) or "remote leadership" (Kelley & Kelloway, 2012; Kelloway et al., 2003).

As exemplified by the quote of Barge (1994), communication is key; not only in traditional leader-follower interactions, but also in virtual interactions. Previous research has shown that leaders' communication style can have an impact on important individual outcomes like employee commitment (Mayfield & Mayfield, 2002), innovative behaviour (Mayfield & Mayfield, 2004), performance (Kacmar, Witt, Zivnuska, & Gully, 2003), change readiness (Gilley, Gilley, & McMillan, 2009; Young & Post, 1993) and decision making (Mayfield & Mayfield, 2016). This, in turn, has more far-reaching consequences for the whole organization, for instance increased organizational performance (Alfalla-Luque, Marin-Garcia, & Medina-Lopez, 2015), decreased employee turnover, and better reputation (Mayfield & Mayfield, 2002), and eventually sustained competitive advantage. Moreover, fruitful leader-follower interactions are especially crucial in digital environments as shown by numerous articles focusing on the topic of remote or e-leadership (e.g. Avolio, Sosik, Kahai, & Baker, 2014; Kelloway et al., 2003; Tyran, Tyran, & Sheperd, 2003; Zimmerman, Witt, & Gill, 2008).

Notably, given the importance of leaders as well as communication for successful interactions in digital teams, it is surprising that the explicit role of leader communication in a digital environment has largely remained unexplored. Past research mainly focused on identifying the most effective leadership styles of digital leaders and, to a lesser extent, concrete behaviours. Especially the transformational leadership style has been discussed by many scholars (e.g. Hoyt & Blascovich, 2003; Huang, Kahai, & Jestice, 2010; Purvanova & Bono, 2009; Ruggieri, 2009). As a consequence, the managerial implications focused more on selecting those who fit these characteristics of an effective digital team leader the most.

However, interventions aimed specifically at promoting effective leader behaviours in leader-follower interactions and, in turn, performance, are lacking.

In order to address this issue, the present study proposes mindfulness as a potential means and crucial factor for improving leader-follower communication, thereby leading to better team outcomes. Mindfulness can be described as a "non-judgmental, present moment awareness" (Kabat-Zinn, 1994, p. 4). Often, mindfulness interventions at the workplace are associated with positive outcomes for employees like increased job performance (Dane & Brummel, 2013) and stress reduction (e.g. Pipe et al., 2009). Importantly, initial research has already shown that trait mindfulness is associated with listening behaviour, a crucial aspect of effective communication (Jones, Bodie, & Hughes, 2016). Hence, *intra*personal effects of mindfulness have been well established. However, moving beyond the individual and examining whether this also extends to *inter*personal effects, and, more specifically, to team outcomes is still missing (Reb, Sim, Chintakanada, & Bhave, 2015). Therefore, the current study aims at testing whether a mindfulness induction might be a means by which leaders' communication behaviour, and, in turn, team performance can be increased in a digital environment. Furthermore, scholars have pointed out that the underlying mechanisms of mindfulness and, particularly, its role in leadership as well as empirical evidence has remained scarce (Reb, Chaturvedi, Narayanan, & Kudesia, 2018; Sutcliffe, Vogus, & Dane, 2016). Following this call, the present research additionally addresses *how* active listening promoted through mindfulness affects team performance and suggests an additional mediating mechanism: psychological safety. Indeed, leader's behaviour has been shown to affect psychological safety which, in turn, is positively associated with team outcomes (Carmeli, Reiter-Palmon, & Ziv, 2010).

To resume, by means of an online multi-group experiment, the present study aims to empirically investigate the impact of mindfulness practice on leader-follower communication and, in turn, psychological safety, and how this affects team performance in a digital environment. Thereby, important contributions to the literature and practical implications can be formulated. Firstly, the study results might add to the leadership literature by providing a deepened understanding of the interpersonal role of leader mindfulness and its mechanisms and consequences by providing empirical evidence. Secondly, the study adds to the teamwork literature by exploring these relationships in a digital environment, thus, making important contributions to the on-going discussion of how to make digital teams more effective. Lastly, it has practical implications for leaders by providing them with guidelines on how to communicate more effectively with their followers, thus, increasing their performance.

Theory & Hypotheses

Respectful Inquiry

Undoubtedly, the daily work of people in leadership positions (hereafter, *leaders*) involves a fair amount of communication, mainly with subordinates (hereafter, *followers*; Tengbald, 2006). Communication is, however, not a one-way street of only talking. Notably, listening actively and attentively what the other person has to say is equally, maybe even more important. Very recently, a new construct called 'respectful inquiry' (hereafter, *RI*) emerged, highlighting the motivational aspects of question asking and listening behaviours of leaders (Van Quaquebeke & Felps). RI is conceptualised as a "multidimensional construct of asking questions in an open way and subsequently listening attentively" (Van Quaquebeke & Felps, 2018, p. 7). Importantly, it accentuates active listening behaviour which can be described as an "accepting and non-judgmental approach of attending to an individual" (Lloyd, Boer, & Voelpel, 2015, p. 2). It is manifested in verbal and non-verbal signs of acknowledgement (Brownell, 1990) involving eye contact, empathetic facial expressions, nodding (non-verbal) or verbal expressions of reassurance (e.g. "uh huh", "I understand"). Another aspect of active listening includes rephrasing what the other person said in order to seek understanding (Drollinger & Comer, 2013). Due to the fact that the construct of RI is so novel, empirical evidence for it is still lacking. However, one can draw inferences from scientific literature on listening behaviour which has been studied extensively.

In fact, active listening has been noted a key competence for leaders and as highly important for supportive interactions in an organizational setting (Bodie & Jones, 2012; Bodie, Vickery, & Gearhart, 2013; Lloyd et al., 2015), also in digital teams (Gibson & Cohen, 2013; Grosse, 2002). Indeed, those who listen more actively are also more likely to be perceived as leaders (Bechler & Johnson, 1995; Johnson & Bechler, 1998). Early leadership theories like the behavioural approach already ascribe to communication, and therefore listening, a crucial role (Landy & Conte, 2016). More specifically, within the behavioural approach, a specific leader behaviour emerged called 'participative behaviour' (Likert, 1967). It describes leaders' role in encouraging followers to give their input in decision-making, but more importantly, it initiates two-way communication with the followers which should result in increased team effectiveness (Landy & Conte, 2016; Likert, 1967).

Empirically, many beneficial outcomes have been associated with active listening in the work context making its crucial role more apparent. On the individual level, it can reduce emotional exhaustion in followers (Lloyd, Boer, Keller, & Voelpel, 2014). Furthermore, it increases employee's satisfaction with the leader (Lloyd et al., 2015) as well as relationship

quality and trust (Drollinger & Comer, 2013). Through its effects on the individual employee, active listening can benefit the whole organization in terms of decreased turnover intentions as well as increased organizational citizenship behaviour (Lloyd et al., 2014). In contrast to its counterpart, inattentive listening has been associated with negative attitudinal consequences like feeling hurt or offended (Clark, 1999) and it can even lead to poor job performance (Ingram, Schwepker, & Huston, 1992). Given the magnitude of the effects of active listening and the emergence of RI, there is a call for the necessity to examine what can promote active listening or RI in leaders, with one of the potential promoting factors being mindfulness.

Mindfulness

Mindfulness has gained enormous recognition among scientists in the last years. It describes an attentive, non-judgmental state of consciousness characterised by a focus on the present moment and its unfolding experiences (Kabat-Zinn, 2003; Kabat-Zinn, 2005; Rosch, 2007). Mindfulness is rooted in the Buddhist tradition and had its first clinical application in form of Mindfulness Based Stress Reduction (MBSR; Kabat-Zinn, 1990), initially aimed at relieving patients from suffering (Kabat-Zinn, 1993). Since then, it has been adapted to other clinical and non-clinical contexts (Kabat-Zinn, 2003).

But how does mindfulness actually work? One of the main mechanisms involves a shift in perspective (Shapiro, Carlson, Astin, & Freedman, 2006). That is, people engaged in mindfulness take a meta-perspective, disengaging from their thoughts and objectively viewing their experiences as they unfold. In other words, it means becoming a witness to one's own thoughts. Mindfulness involves not interpreting the internal and external experiences, thereby being non-judgmental (Good et al., 2015). Furthermore, it unfolds its effects by preventing automatic thought processes, thus, promoting self-regulation (Glomb, Duffy, Bono, & Yang, 2012). Accordingly, researchers have shown that mindfulness leads to less impulsive behaviour (Papies, Barsalou, & Custers, 2012) and implicit biases (Lueke & Gibson, 2015).

The promising effects of mindfulness in the clinical setting have sparked interest in work and organizational psychologists. Meanwhile, mindfulness has reached global companies like Google or General Mills which have already taken advantage of mindfulness at the workplace (Sutcliffe et al., 2016). Studies show that the work-related effects of mindfulness reach from stress reduction (Allen et al., 2015) to increased job satisfaction and decreased emotional exhaustion (Hülsheger, Alberts, Feinholdt, & Lang, 2013) to increased work engagement (Leroy, Anseel, Dimitrova, & Sels, 2013), and, finally, to better job performance (Dane & Brummel, 2013).

Lately, researchers have started to examine mindfulness from a leadership perspective. However, there seem to be only few empirical studies examining leader mindfulness (Reb et al., 2018). Interestingly, those few studies show that it is very promising. Indeed, dispositional mindfulness in leaders is related to servant leadership behaviour which fosters a more other-oriented perspective (Verdorfer, 2016), better leadership performance (King & Haar, 2017), as well as positive follower outcomes (Reb, Narayanan, & Chaturvedi, 2014). Yet, these studies have only focused on trait mindfulness in leaders, while Nübold, Van Quaquebeke, and Hülsheger (2019) take a different approach showing that mindfulness can be trained, thereby altering leader behaviour in terms of increasing authentic leadership.

Mindfulness and RI

To resume, many researchers have shown that mindfulness can induce all sorts of positive effects within the individual, possibly also active listening, and thus, RI. Mindfulness results in a more other-oriented view characterised by openness and acceptance (Bishop et al., 2004; Shapiro & Mariels, 2013). In fact, shifting the perspective away from the self towards the other person is a prerequisite for active listening (Goh, 2012) in order to then extract meaning and make sense of what is being said and respond accordingly (Egan, 2010; Reb et al., 2015). Goh (2012) argues that yet another mechanism how mindfulness can lead to enhanced active listening is by taking a meta-perspective and observing oneself. Thereby, the person can identify so-called 'bad-habits' including mind-wandering, multi-tasking or thinking ahead. By being aware of these automatic thought processes, one can consciously respond and not give in to one's habits. Often, having this self-insight is the first step in changing one's behaviour. In line with cognitive dissonance theory (Festinger, 1957), through mindfulness, people might become aware of the fact that they are bad listeners, leading them to change their behaviour accordingly, thus, resolving the cognitive dissonance.

Findings support this idea; for instance, Verdorfer (2016) showed that dispositional mindfulness reduces egocentric tendencies, thereby increasing a more other-oriented attitude. There is also initial empirical support by a study of Jones et al. (2016) regarding the direct link between trait mindfulness and active listening. They tested whether five facets of mindfulness can predict empathy and active listening and whether these, in turn, predict further outcomes. Results showed that two facets of mindfulness, namely observing and describing, predicted both empathy and active listening. Going beyond the effects of trait mindfulness and observing how a mindfulness manipulation can affect leader behaviour, Nübold and colleagues (2019) successfully increased authentic leadership through induced state mindfulness. In fact, authentic leadership is related to active listening in the sense that it involves a component called

'balanced processing.' That is, the ability to take different perspectives into account, thereby responding more objectively and consciously (Kernis & Goldman, 2006; Nübold et al., 2019). Building upon the theoretical as well as empirical evidence, we, therefore, argue that a mindfulness intervention for leaders can positively influence the way they engage in RI as rated by external observers.

Hypothesis 1. A mindfulness induction will have a positive effect on leaders' engagement in respectful inquiry.

RI and Psychological Safety

Leaders' behaviours and, more specifically, the way leaders communicate can have a great influence on their followers. One follower outcome that has been shown to be influenced by leaders' behaviours and which is central to the present research is psychological safety. That is, the belief held by team members that the team is a safe space, allowing for risk-taking, respect, trust, and in which people can be authentic without being afraid of negative consequences (Edmondson, 1999; Kahn, 1990). Drawing upon social learning theory, individuals can learn from observed experience, for instance by observing others' modelling behaviours (Bandura, 1977). Accordingly, by engaging in supportive leadership behaviours like listening, leaders might be a role model to their followers signalling that they are allowed to speak up and communicate honestly (Newman, Donohue, & Eva, 2017).

Scholars already highlighted the importance of leaders in promoting a climate of psychological safety (Carmeli, Brueller, & Dutton 2008; Carmeli & Gittell, 2009). If the leader is being perceived as supportive and as having an open-minded attitude towards questions and challenges, the followers might feel safer. Empirical studies have shown that humble leadership (Walters & Diab, 2016), ethical leadership (Sağnak, 2017) and inclusive leadership (Carmeli et al., 2010) all positively relate to psychological safety experienced by their followers. Especially inclusive leadership supports this notion as it indirectly includes the construct of active listening. Importantly, it describes a behaviour that signals openness towards the followers' opinions and inputs and gives them a feeling of being listened to (Edmondson, 2004; Nembard & Edmondson, 2006). Recently, one study has provided more direct empirical support for the effect of active listening on psychological safety. Castro, Anseel, Kluger, Lloyd, and Levi (2018) asked team members to fill in surveys assessing their perception of supervisor listening, psychological safety, and creativity. Results of this study showed that listening behaviour positively relates to psychological safety, which mediates the indirect effect of supervisor listening on employee creativity. Likewise, we argue in the present study that leader RI should increase perceptions of psychological safety in their followers.

Hypothesis 2. Leaders' engagement in respectful inquiry is positively related to followers' perceptions of psychological safety.

Psychological Safety and Team Performance

Psychological safety is likely to influence team performance via the mediating mechanism of team learning. Theoretically, team members who feel psychologically safe perceive themselves as being respected and do not have to fear any negative consequences associated with speaking up. Consequentially, they are increasingly likely to seek feedback and embrace errors (Edmondson, 1999). This, in turn, enhances team learning as team members are more likely to collectively share information (Ellis et al., 2003), which eventually leads to increased team performance. Indeed, empirical studies have already supported the idea that psychological safety fosters team learning, and, in turn, team performance (Edmondson, 1999; Carmeli et al., 2008). Furthermore, psychological safety has been empirically associated with creativity (Carmeli et al., 2010), follower engagement (Walters & Diab, 2016), employee voice behaviour (Walumbwa & Schaubroeck, 2009), and perceived team effectiveness (Appelbaum et al., 2019). All in all, the beneficial outcomes of psychological safety emphasise its importance in the organizational context. Therefore, given the numerous advantageous effects psychological safety can have on individuals and also the whole team, we hypothesise that feelings of psychological safety should enhance team performance.

Hypothesis 3. Followers' perception of psychological safety is positively related to team performance in a digital setting.

Three-Path Mediation Model

Relational leadership theory highlights the importance of not only studying leader-follower interactions, but also the underlying mechanisms (Carmeli et al., 2010). Hence, building upon the previous hypotheses, a causal chain is proposed, starting with the mindfulness induction impacting psychological safety via RI, which, in turn, translates into higher team performance. That is, a leader trained in mindfulness might be more other-oriented and respond more consciously resulting in paying more attention to what the follower has to say (Glomb et al., 2012; Shapiro et al., 2006). Through active listening, leaders then signal their followers that what they say is heard, appreciated and accepted, thereby inducing a feeling of psychological safety (Newman et al., 2017). When psychological safety is high, that is, when the followers believe they are surrounded by a psychologically safe climate, they are more likely to speak up and seek feedback which fosters learning and, in turn, performance (Edmondson, 1999). As a conclusion of all the above presented arguments, we propose a three-path mediation model in

which inducing mindfulness in leaders will positively influence digital team performance through the mediating mechanism of, first, RI and, second, psychological safety.

Hypothesis 4. A mindfulness induction will have a positive effect on team performance via respectful inquiry as a first and psychological safety as a second mediator in a digital environment.

All in all, the four hypotheses together build an integrated research model as presented in Figure 1.

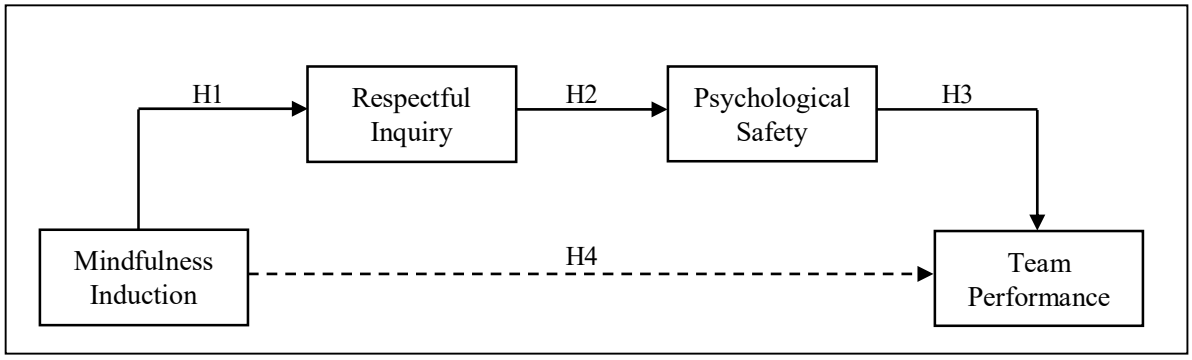

Figure 1. Hypothesised Model. The figure shows the hypothesised effects of a mindfulness induction for leaders on team performance in a digital environment.

Note. The solid lines represent direct and the dashed line represents indirect relationships.

Method

Sample

Participants were 174 psychology students from a Western European university who took part in the two-hour study in order to meet course requirements. Participants were randomly assigned to 58 teams with each team being composed of one leader and two followers. Two groups (n = 6) had to be excluded due to technical difficulties during the study, as the amount of data available from these groups was deemed insufficient for analyses. Thus, the final sample (N = 168) compromised 56 leaders (70.5% female) and 112 followers (73.2% female). The average ages of the leader and follower samples were 22.02 years (SD = 1.51) and 22.16 years (SD = 1.43), respectively. Both samples predominantly consisted of German (73.2 % and 66.1%) or Dutch (12.5% and 14.3%) participants.

Design and Procedure

Data were gathered during an online multi-group laboratory research project using a between-subjects design with time-separated multi-source measures. The study included an experimental manipulation of leader state mindfulness, so that leaders were randomly assigned to either an intervention group or an active control group. The present research received approval by the

Ethics Review Committee Psychology and Neuroscience (ERCPN-188_01_02_2018). An overview of the study procedure is presented in Table 1.

Table 1
Overview of the Study Procedure

Preparation Phase	Mindfulness Manipulation	Team Task	Post-Phase
• Baseline survey • Role assignment	• 15 minutes mindfulness *or* mind-wandering exercise	• Practise task • Scenario alpha • In-between survey • Scenario phi • Post-survey	• Coding of RI behaviours

Note. RI = Respectful Inquiry

Preparation. One week before the experiment, participants received an email with information about the experiment, an informed consent form, and a baseline survey. During this survey, participants were asked to rate on a 7-point Likert scale how comfortable they would be with leading the group. The participant of the group with the highest score was nominated leader. Three days prior to the experiment, participants were notified via email which role they got assigned to. They also received information about when exactly to enter the virtual room on an online video-chat platform called 'Blackboard Collaborate Ultra'. We sent a reminder email to each participant a day before the experiment.

Experiment. Shortly before the start of the experiment, we sent an email to the leader including a link to the session. Upon leaders' arrival, they received an information sheet containing a link to an audio file (i.e., either mindfulness or mind-wandering) which they should listen to for the next 15 minutes. After having completed the exercise, we asked them to fill in a short questionnaire (manipulation check). Those participants assigned the follower roles also received an email with a link to a session where the leader and followers eventually met each other. They received the instruction to switch on their microphones and cameras and they were informed that the session will be recorded for future references. After they had received a short explanation of the upcoming team assignment, each participant completed an individual practice task. Before starting the first scenario (alpha), we reminded the participants to complete the task as fast and accurately as possible. After completion of scenario alpha, participants received a short online questionnaire sent via a link (in-between survey). Next, they were asked to complete the second scenario (phi) under the same instructions. Finally, all participants were

asked to complete a final questionnaire (post-survey). Participants were thanked for their participation and debriefed.

Materials. Due to the fact that the study was conducted online, it was necessary for participants and experimenters to have a device with internet access as well as a camera and microphone. Furthermore, participants received a manual for technical instructions involving information on how to join the online session, how to ask questions, and how to leave the session.

The mindfulness manipulation. During the mindfulness manipulation, the leader received one of two audio files, depending on the randomly assigned condition. Both audio files were equivalent to the ones used by Hafenbrack, Kinas, and Barsade (2014) and each involved a spoken 15 minutes induction. The mindfulness induction was used for the experimental condition and included a focused-breathing exercise in which participants should focus on experiencing the physical sensations of their breath. The mind-wandering induction used for the active control condition involved the instructions of letting the mind wander freely and thinking about anything they wanted to. In fact, studies using these audio files for manipulating mindfulness showed that they yielded the desired effect (Hafenbrack et al., 2014; Hafenbrack & Vohs, 2018). Moreover, the use of randomisation together with an active control group enhances internal validity of the study as the effects of the intervention can be more securely isolated from other influences (Jamieson & Tuckey, 2017).

The team task. The team assignment consisted of a modified version of the Maastricht University Emergency Management Simulation (MUEMS; Thommes & Uitdewilligen, 2019) which aims at simulating real-world decision-making scenarios. Three different roles were assigned to the participants: the leader acted as a fire brigade commander, whilst the roles of the chemical specialist and police officer were designated for the followers. Each role came with unique knowledge and expertise which was unknown to the other team members. More specifically, each role involved simple cost calculations relating to their role, so that for instance the fire commander was able to calculate how many fire trucks were needed. Before starting the scenarios, each team member received an individual practice task in order to get familiarised with their role and calculations. Results of these practise tasks were immediately checked by the experimenter to ensure that they understand their roles. Next, the participants had to complete two scenarios ‘alpha’ and ‘phi’ as a team. The overall goal was the same in each scenario, namely, to make accurate and quick decisions, so that the impact of a fire outbreak could be prevented, and the costs could be kept at a minimum. Each scenario had a time limit of 20 minutes, and the experimenter notified the team after ten and two minutes about their

remaining time. The two scenarios differed in terms of difficulty, so that scenario alpha was easier than scenario phi.

Measures

Manipulation check. Immediately after the mindfulness or mind-wandering induction, leaders rated their experience during the previous exercise using a 5-point Likert scale ranging from 1 (*very slightly or not at all*) to 5 (*extremely*). The two items concerning mindfulness were adapted from Hafenbrack and Vohs (2018): "During the exercise I focused on my breathing" and "During the exercise I focused on the present moment." Likewise, items for mind wandering were adapted from Long and Christian (2015) and included "During the exercise I thought about anything I wanted to" and "During the exercise I left my mind wander freely." The internal consistency for this scale was .82.

Respectful inquiry. Leader-follower interactions were videotaped during both scenarios in order to obtain behavioural data on leaders' engagement in RI. After the experiment, the interactions were coded by two external observers based on a coding scheme specifically developed for this purpose which can be found in the Appendix. That is, we mainly focused on three behaviours that were conceptually identified under the construct of 'RI' by Van Quaquebeke and Felps (2018), namely question asking, question openness, and active listening. In line with Van Quaquebeke and Felps's (2018) argumentation, we defined "asking a question" as a necessary precondition for RI. Subsequently, based on Van Quaquebeke and Felps (2018), we sequentially differentiated between high and low question openness, and then between active or no/low listening, verbal *or* non-verbal active listening, and, finally, verbal *and* non-verbal active listening. This classification resulted in five categories with each receiving a different weighting score receptive to their level of RI. The lowest RI category with a weighting score of 1 was "high question openness + no/low active listening." This combination reflects a certain 'blowback effect' in which the low listening contradicts the purpose of an open question (Van Quaquebeke & Felps, 2018). Next, "low question openness + no/low active listening" received a weighting score of 2, "low question openness + high verbal *or* non-verbal active listening" received a weighting score of 3, and "high question openness + high verbal *or* non-verbal active listening" received a weighting score of 4. Lastly, the highest RI category with a weighting score of 5 was "high question openness + high verbal *and* non-verbal active listening."

A subset of the team data (n = 5) was used for training purposes of the coders and another 15% of the data (n = 9) served for establishing interrater reliability. The resulting intraclass correlation (ICC) was .98, which exceeds the conventionally acceptable value of .70

(Dixon & Cunningham, 2006). Furthermore, we calculated the ICCs for each category separately, resulting in ICC scores of .92, .89, .97, .92, and .80, for categories 1-5, respectively.

Team psychological safety. Three items of Edmondson's (1999) team psychological safety scale were adapted to the context of the present study. The scale was administered to the followers twice, in the in-between survey as well as in the post survey. Participants were instructed to rate the extent to which the statements are applicable to their team by means of a 5-point Likert scale ranging from 1 (*very inaccurate*) to 5 (*very accurate*). Example items included "If I made a mistake on this team, it was held against me" and "Working with members of this team, my expertise was valued and utilized." The internal consistency for this scale was .54 for the in-between survey and .63 for the post-survey.

As the level of analysis for this construct was the team level, we also aggregated team members' perceptions of psychological safety to the team level (Newman et al., 2017). We computed ICCs for both surveys in order to justify aggregation. For the psychological safety construct in the in-between survey, we found an ICC score of .07 which can be classified as acceptable according to Bliese (2000). However, the ICC score for the same construct in the post survey has a value of -.19. A negative ICC score is possible and may be due to chance (Liljequist, Elfving & Skavberg Roaldsen, 2019) or it reflects that "two members chosen randomly from any class vary almost as much as any two randomly chosen members of the whole population" (Taylor, 2000, p. 8). Possibly, this low agreement might be due to the short period of contact between the followers with their group members.

Team performance. Team performance was operationalised by decision accuracy during scenario alpha and phi. Decision accuracy describes the costs of the team made relative to the minimal amount of costs they would have incurred in case they had made the optimal combination of decisions, averaged over scenarios. The team performance score was calculated at the end of the experimental phase by z-standardising the raw performance scores per team, inverting them, and then averaging them over scenarios. Higher performance scores reflect better team performance.

Results

Descriptive Statistics

Table 2 shows means, standard deviations and correlations among study variables. The results show a positive and significant correlation between condition and RI (r = .53, p < .01). Furthermore, psychological safety is positively and significantly correlated with team performance (r = .34, p = < .05). Surprisingly, RI is not significantly correlated with

psychological safety (r = -.02, p = > .05), as would be expected from hypothesis 2; however, this relationship is still tested for significance in the further analyses.

Table 2
Means, Standard Deviations and Correlations Among Study Variables

		M	*SD*	1	2	3	4	5	6	7	8
1	Gender Leader [a]	1.73	.45	—							
2	Gender Followers [a]	1.71	.31	.12	—						
3	Age Leader	22.02	1.51	-.05	.11	—					
4	Age Followers	22.16	.98	-.09	-.32*	.02	—				
5	Condition [b]	.50	.51	.04	.09	.01	.07	—			
6	Respectful Inquiry	37.03	12.47	.09	.01	-.04	-.09	.53**	—		
7	Psychological Safety	4.44	.32	-.07	.09	-06	-.07	-.20	-.02	—	
8	Team Performance	.00	.79	-.24	-.15	-,38**	.07	-.07	-.13	.34*	—

Note. N = 56 at the team level. [a] 1 = male, 2 = female. [b] 0 = control, 1 = experimental.
* $p < .05$. ** $p < .01$.

Manipulation Check

In order to investigate whether the mindfulness manipulation had an effect, we conducted a manipulation check. Overall, participants in the mindfulness condition reported a greater focus on the present moment, bodily sensations and breathing, and less mind-wandering (M = 3.54, SD = .17), compared to the active control condition (M = 2.66, SD = .73). The effect of mindfulness induction was, therefore, significant, $F(1,53) = 16.54$, p = .00. Furthermore, we tested for a significant difference also on item level. Results indicated that participants in the mindfulness condition also showed a greater mean on the mindfulness items (M = 3.99, SD = .94), compared to the control group (M = 3.0, SD = .93), which reached statistical significance, $F(1,53) = 15.08$, p = .00. Similarly, participants in the control condition had a significant greater mean on the mind-wandering items (M = 4.02, SD = 1.03), compared to those in the mindfulness condition (M = 3.37, SD = 1.21), $F(1,53) = 4.56$, p = .04. Hence, we can conclude with certainty that the mindfulness intervention is effective in facilitating changes in state mindfulness.

Analysis Strategy and Hypothesis Testing

In order to test our hypotheses and the three-path mediation model, we first examined the direct effects of hypotheses 1-3 using linear regression. Then, we used the PROCESS macro (Hayes, 2013) to evaluate the indirect mediation effect (H4). PROCESS macro is a plug-in for the programme SPSS developed by Hayes (2013). Advantages of this method is that both mediators' indirect effects can be isolated (Hayes, Montoya, & Rockwood, 2017), and it allows for serial mediation, which is specified as 'model 6'. Furthermore, it is user-friendly, and it uses

the bootstrapping procedure (Hayes et al., 2017). PROCESS is claimed to be superior for testing mediation effects as compared to other methods like the one introduced by Baron and Kenny (1986; Huertas-Valdivia, Llorens-Montes, & Ruiz-Moreno, 2018). Lastly, PROCESS has already been used in multiple studies (e.g. Cano et al., 2016; Huertas-Valdivia et al., 2018; Jennings et al., 2015).

Table 3
Regression Analysis and Serial Mediation Analysis Results

Hypothesis	Path/effect	*B*	*SE*	*t*	*p*	*LLCI*	*ULCI*
H1	C → RI	13.02	2.86	4.56	.00**	—	—
H2	RI → PS	.00	.00	-.126	.90	—	—
H3	PS → TP	.83	.32	2.64	.01*	—	—
H4	C → RI → PS → TP	.03	.05	—	—	-.08	.13

Note. C = Condition; RI = Respectful Inquiry; PS = Psychological Safety; TP = Team Performance; B = unstandardised B; SE = coefficients standard error; LLCI = lower limit confidence interval; ULCI = upper limit confidence interval.
* $p < .05$. ** $p < .01$.

Starting off with the direct effects, hypothesis 1 proposed that a mindfulness induction, and thus, the condition (i.e. experimental vs. control) has a positive direct effect on RI. As shown in Table 3, the regression analysis revealed that the condition is significantly and positively related to RI ($B = 13.02$, $p = .00$). Thus, we can conclude that H1 is supported and state mindfulness can indeed increase leaders' engagement in RI behaviours.

Next, we examined whether RI has a positive direct effect on followers' perception of psychological safety as stated in hypothesis 2. As can be derived from Table 3, we found that RI is, in fact, not related to psychological safety ($B = .00$, $p = .90$). Therefore, H2 is not supported.

Furthermore, hypothesis 3 suggested a direct positive relationship between psychological safety and digital team performance. The significance test revealed that psychological safety was indeed related to team performance ($B = .83$, $p = .01$), providing support for H3. Consequentially, followers' perception of psychological safety is positively related to performance in a digital team.

Finally, hypothesis 4 stated that RI and psychological safety serially mediate the relationship between condition (mindfulness induction) and team performance. By using the PROCESS macro (Hayes, 2013) model 6, we re-sampled 5,000 times and examined for 95% confidence intervals. In order to test for significance, one can assume that if zero falls outside

this interval, the effect is significant (Preacher & Hayes, 2008). The results from Table 3 show that zero falls inside the confidence interval (B = .03 [CI = -.08; .13]). As a result, we can conclude that the indirect effect of mindfulness condition on team performance via RI and psychological safety was not significant. Consequently, the three-path mediation (H4) is not supported.

Discussion

To date, empirical research on factors promoting effective leader-follower communication in digital teams has been neglected. Yet, it is already established that the ways leaders communicate with their subordinates is of crucial importance, leading to various beneficial outcomes on an individual, team, and organizational level (Lehmann-Willenbrock, Meinecke, Rowold & Kauffeld, 2015; Zacher & Jimmieson, 2013; Zhan, Wang & Shi, 2012). Therefore, the objective of this study was to examine whether mindfulness practice for leaders might be a means to increase team performance in a digital environment. Based on theory and research, we hypothesised a three-path mediation model stating that a mindfulness induction for leaders should lead to better digital team performance through leaders' engagement in RI, and followers' perception of psychological safety. The results from an online laboratory study with 56 teams show that, firstly, the mindfulness intervention for leaders indeed leads to an increased engagement in RI behaviours, and secondly, team psychological safety predicts better team performance. Besides these two direct effects, none of the other hypotheses could be supported. Consequently, we do not find conclusive empirical evidence for the proposed three-path mediation model in this study.

Overall, we find support for the notion that leaders receiving a mindfulness induction prior to their team interaction were more likely to show RI behaviours compared to those listening to a mind-wandering induction, as perceived by an observer. In other words, practising mindfulness in terms of a short breathing exercise helps leaders to be perceived as better listeners. Importantly, the present research helps to clarify the nature of RI which is an entirely new construct (Van Quaquebeke & Felps, 2018). More specifically, we propose and empirically validate an antecedent of RI, namely mindfulness. Furthermore, the results advance previous research by moving beyond the effects of trait mindfulness on active listening (Jones et al., 2016). That is, the results demonstrate that people do not necessarily have to possess a certain disposition for mindfulness or active listening, but they can actually be trained in RI through a short mindfulness exercise. These results are also important as they demonstrate that, while many previous studies used a longer intervention for mindfulness, typically five- to eight-week programs (Aikens et al., 2014; Grégoire, & Lachance, 2014; Huang, Li, Huang, & Tang, 2015),

even a very brief audio mindfulness exercise of 15 minutes is effective in inducing changes in state mindfulness. Therefore, it is a very cost-effective method and easier to implement compared to longer intervention types, although the sustainability of the effects would still need to be tested. Future research might want to investigate what other types of leader behaviour can be influenced or learned through mindfulness interventions. For instance, Nübold and colleagues (2019) showed that it can also increase authentic leadership behaviours. Moreover, the fact that mindfulness can increase leaders' listening behaviours combined with the finding that active listeners come across as better leaders (Bechler & Johnson, 1995; Johnson & Bechler, 1998) suggests a reinforcing process. Hence, it would be interesting for future research to extend the present study by investigating follower ratings of leader effectiveness or satisfaction with the leader.

The present research confirmed another direct effect, namely that psychological safety is significantly and positively related to better team performance. In other words, those teams with a greater climate of psychological safety also performed better in the team tasks. This outcome supports previous findings showing that psychological safety leads to increased team performance possibly through team learning and feedback seeking behaviours (Edmondson, 1999; Carmeli et al., 2008). Importantly, this finding also advances previous research by showing that this relationship even holds in digital environments. More specifically, past studies investigating outcomes of psychological safety (e.g. Appelbaum et al., 2019; Carmeli et al., 2010; Walters & Diab, 2016; Walumbwa & Schaubroeck, 2009) and specifically the psychological safety – team performance relationship (e.g. Brueller & Carmeli, 2011; Hirak, Peng, Carmeli, & Schaubroek, 2012; Ortega, Van den Bossche, Sanchez-Manzanares, Rico, & Gil, 2014) exclusively assumed that the team members interact with each other face-to-face. Hence, our findings are novel in showing that the positive outcomes of psychological safety are not bound to a context in which personal contact is required, but it seems also beneficial in teams that are geographically dispersed. Future studies might want to research further to what extent distance effects this relationship and whether it might be an even more important factor in digital compared to traditional teams.

Opposed to our prediction, the increase in RI originating from the mindfulness induction did not influence followers' evaluation of psychological safety. Put differently, whether the leader increasingly engages in RI behaviour or not does not affect followers' perception of their team as a safe space. Here, we propose three possible explanations for the absence of a significant effect. Firstly, it might be possible that the followers were not aware of leaders' listening behaviours because RI has been rated by trained external coders based on a coding

scheme, not by the followers. Naturally, whether changes in leader behaviour influence followers' outcomes depends on the followers' own perceptions. Nevertheless, the objective rating used in the present study has advantages as well. For instance, it overcomes biases like the halo effect where an overall impression of someone influences how specific attributes of this person are perceived (Nisbett & Wilson, 1977). Therefore, future studies should consider including two types of ratings of RI, an external rater as well as a self-report measure, in order to verify whether followers actually perceive better listeners as such, and in turn, whether this influences their perception of psychological safety.

Secondly, another reason could be the context of the study in which the leaders interact with the followers on an online video-chat platform. Past studies looking at the effects of leader active listening on follower outcomes mostly relied on personal contact between the team members (e.g. Lloyd et al., 2014). However, a unique feature of the present study is that the leader-follower interaction actually takes place online. In fact, this scenario increasingly mimics today's reality in the corporate world (Avolio et al., 2000; Kelley & Kelloway, 2012; Kelloway et al., 2003), therefore increasing the ecological validity of the study (Schmuckler, 2001). Even though nonsignificant, this finding might highlight the importance of face-to-face or personal contact between leaders and followers in order to create a climate of psychological safety within the team. Hence, it confines the finding of Castro et al.'s (2018; study 2) who showed that supervisor listening behaviour is positively related to psychological safety. It might be that this only applies to traditional teams interacting proximally with each other. Future research might want to examine whether distance (face-to-face vs. digital teams) can be a potential moderating factor in the leader RI – psychological safety relationship.

Thirdly, the previously mentioned study by Castro et al. (2018; study 2) involved teams stemming from the same organizations which means they probably already worked with each other for a longer time. Yet, in the present study team interaction was limited to about 40min due to time constraints of the experiment. As a consequence, the influence of the leader might not be strong enough in such a short time in order to induce perceptions of psychological safety in their followers. In fact, supervisors interact with their employees for a much longer time in real-life work settings. Again, future studies might want to explore whether the time span of interaction could be a possible boundary condition when looking at the effect of leader listening on perceptions of psychological safety.

Limitations & Future Research

Naturally, the present study does not come without limitations which, in turn, inform future research. Firstly, our research is limited in the sense that it only supports short term effects of

leader mindfulness on RI. That is, the time period between the mindfulness induction and observation of RI behaviour was about maximum 70 minutes. Thus, it still remains unclear whether and how long these effects persist. Additional research needs to clarify whether the mindfulness intervention extends beyond immediate effects, for instance by using a longitudinal study design following up on RI behaviour over time. Longitudinal studies have the advantage of identifying the timing and chronicity of events (Caruana, Roman, Hernández-Sánchez, & Solli, 2015). Furthermore, future research could also compare different mindfulness intervention lengths in case it shows that our brief 15 minutes mindfulness induction does not lead to any long-term effects. For instance, Aikens and colleagues (2014) successfully used a modified version of the usually very time-consuming MBSR (Kabat-Zinn, 1990) and made it more user-friendly by decreasing time commitment and delivering it online.

Secondly, the present research might be limited to specific sample characteristics, thereby threatening external validity and confining the extent to which the findings can be generalised. More specifically, the study exclusively used students as research participants which can be seen as problematic when generalising the findings to an adult working population (Gallander Wintre, North & Sugar, 2001). Yet, Druckman and Kam (2009) argue that student samples are not per se a threat to external validity and they are sometimes even desirable. Additionally, we assigned roles according to preference, so that those who feel more comfortable with a leadership position were also given the role of the leader. Like this, we tried to mimic more realistic leader-follower interactions. Nevertheless, future research might bring clarity by replicating the study with actual leaders and employees as participants.

Furthermore, the sample consisted mostly of German participants which makes it difficult to generalise the findings to a world-wide scale. For instance, listening is a social construct shaped by culture, especially its non-verbal aspect (Imhof, 2003). In fact, the listening skills of leaders differ depending on culture (Roebuck, Bell, Raina & Lee, 2016). Therefore, future studies could extend the present findings by taking a cross-cultural perspective and examining a possible moderating effect of culture in the leader mindfulness – RI relationship.

Implications

The present research has several implications. A first theoretical implication of our research is that it adds to the conceptualization of the fairly new construct ‘RI’. Even though Van Quaquebeke and Felps (2018) firstly introduced the concept of RI and lay its theoretical foundation, to date, no past study has investigated this construct as a study variable in an empirical research design. Therefore, we provide the first benchmark of measuring this construct by means of a coding scheme which is specifically developed based on the

conceptualization of Van Quaquebeke and Felps (2018). In contrast, past studies investigating active listening often used self-report scales (e.g. Lloyd et al. 2014; Lloyd et al., 2015) which are prone to common method bias (Drollinger & Comer, 2013).

A further theoretical implication of the present research is that it also contributes to the teamwork literature. Here, we not only confirm the link between psychological safety and team performance, but, crucially, we also extend it to a different and novel context, namely to digital environments. This is important because teamwork increasingly happens online (i4cp, 2019), and the present study adds to the on-going discussion about what factors make these teams more effective (Dulebohn & Hoch, 2017; Furst, Blackburn & Rosen, 1999). Consequently, organizations might want to increase the focus on digital team members' perceptions of psychological safety. In turn, this does not only benefit the employees themselves, but the overall organizations, as an increase in digital team performance leads to a competitive advantage in the global corporate world (Kankanhalli, Tan & Wei, 2007).

The importance of the present findings is not solely theoretical but has also practical implications. The role of mindfulness on leader-follower interactions provides key insights for organizations, particularly for personnel development. As previously mentioned, past research often examined which leadership styles are most promising in order to inform personnel selection in choosing the best candidate (Hoyt & Blascovich, 2003; Huang et al., 2010; Ruggieri, 2009; Purvanova & Bono, 2009). However, here we find that active listening is a behaviour or skill which can be learned. More specifically, the results imply that leaders can be trained through mindfulness to be better listeners. As this skill does not come naturally for everyone, it is important for those who are already in leadership positions and who want to develop themselves further, for instance by engaging in more RI behaviours like active listening. Notably, mindfulness interventions are very cost-effective methods to do so as it is shown here that already a brief 15 minutes breathing exercise yields the desired effect.

Conclusion

To date, the influence of leader behaviour and, more specifically, communication, in digital teams has largely remained unexplored. In order to fill this gap, the aim of the current study was to develop a more thorough understanding of leader-follower interactions in digital environments. The findings of the present research add to this topic in several ways. First, mindfulness has been shown to be an effective means to increase leaders' engagement in RI. Secondly, team psychological safety, even though not influenced by RI, exerts its positive effects on performance also in the absence of proximal face-to-face contact. As a consequence,

these insights can be implemented in organizations by informing human resource practitioners as well as helping to improve theory and research on digital team effectiveness.

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Appendix

<table>
<tr><th colspan="3"></th><th>Score</th><th>Frequency</th></tr>
<tr><td rowspan="4">Necessary Pre-Condition: Asking a Question</td><td rowspan="2">Low Question Openness
Asking a closed or rhetorical question</td><td>No/Low Listening
- Being distracted, e.g. by looking at something else, gazing off
- Interrupting the response</td><td>2</td><td></td></tr>
<tr><td>Verbal <u>OR</u> Nonverbal Listening
Showing interest by providing that one is listening
Verbally
- Affirmative phases, like “indeed”, “yes”, “hmm”, “I understand”
- Summarising/paraphrasing an idea
- Building up on an idea just mentioned by follower
- Using follow-up questions
Non-verbally
- Head nodding, smiling, leaning forward, mirroring</td><td>3</td><td></td></tr>
<tr><td rowspan="2">High Question Openness
Showing interest by inviting elaborate response
- Open questions (Wh-questions)
- Requesting expertise/opinion
- Tone of voice invites more elaborate response</td><td>No/Low Listening
- Being distracted, e.g. by looking at something else, gazing off
- Interrupting the response</td><td>1</td><td></td></tr>
<tr><td>Verbal <u>OR</u> Nonverbal Listening
Showing interest by providing that one is listening
Verbally
- Affirmative phases, like “indeed”, “yes”, “hmm”, “I understand”
- Summarising/paraphrasing an idea
- Building up on an idea just mentioned by follower
- Using follow-up questions
Non-verbally
- Head nodding, smiling, leaning forward, mirroring</td><td>4</td><td></td></tr>
<tr><td colspan="2">Verbal <u>AND</u> Nonverbal Listening
Verbally
- Affirmative phases, like “indeed”, “yes”, “hmm”, “I understand”
- Summarising/paraphrasing an idea
- Building up on an idea just mentioned by follower
- Using follow-up questions
Nonverbally
- Head nodding, smiling, leaning forward, mirroring</td><td>5</td><td></td></tr>
</table>